INTERNATIONAL
VETİstanbul group
congress 2014
28–30 april 2014
ISTANBUL, TURKEY
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Book of Abstracts
International VETistanbul Group Congress 2014

28-30 April, 2014
Istanbul, Turkey

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*Alphabetically listed by the according to the family name

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Prof. Dr. Bülent EKİZ, Turkey
Dr. Karlo MURATOĞLU, Turkey
Dear Respectable Colleagues and Guests,

First of all, I greet you all with my heart. Also, I would like to thank you for taking place on our side due to the contribution given to the establishment of VETistanbul Group.

Known as, VETistanbul Group was established, under the coordination of Istanbul University, with joint decision of Veterinary Faculty of the University of Sarajevo, Saint Petersburg State Academy of Veterinary Medicine, Stara Zagora Trakia University, Ss. Cyril and Methodius University in Skopje, Sofia University of Forestry, University of Prishtina and Azerbaijan State Agricultural University, last year in 2013. I especially want to express our appreciation to perform the first joint meeting in Istanbul which is one of the objectives of the group and is open to every academician.

Despite being organized for the first time, participation of about 200 academicians with about 40 oral and 90 poster presentations from geography of the word from different 15 countries located between Mexico and Kazakhstan gives great satisfaction. We hope that this congress will be expanded much more in the future.

On behalf of our group, I wish my endless thanks and success to all organizations and individuals, to the participants and academicians who have contributed to the organization of International VETistanbul Group Congress 2014.

Kind regards.

Prof. Dr. Halil GÜNENŞ
Dean
Chair of the Organizing Committee
Programme of the Congress

28 April, 2014
08:00-09:30 Registration and Welcome
09:30-10:00 Opening Ceremony
10:00-11:30 Session 1
11:30-12:00 Coffee Break / Poster Walk
12:00-13:30 Session 2
13:30-14:30 Lunch
14:30-18:30 Afternoon trip to Faculty of Veterinary Medicine and Animal Hospital
18:30-19:00 Transfer to the Restaurant
19:00-23:30 Dinner

29 April, 2014
09:00-10:30 Session 3
10:30-11:00 Coffee Break / Poster Walk
11:00-12:30 Session 4
12:30-12:45 Coffee Break / Poster Walk
12:45-13:30 Sponsor Session
13:30-14:45 Lunch
14:45-16:15 Session 5
16:15-16:30 Coffee Break / Poster Walk
16:30-17:30 Closing Ceremony and General Evaluation
17:30-18:30 Transfer to the hotel
19:00-20:00 Transfer to the Restaurant for Gala Dinner
20:00-24:00 Gala Dinner

30 April, 2014
Social Programme
Scientific Programme

28 April, 2014.

Session 1.

Chairpersons: Prof. Dr. Seyyal AK & Prof. Dr. Ilia TSACHEV
Hours: 10:00 - 11:30 (28 April, 2014)

Canine and Equine vector-borne diseases of zoonotic concern: News & experience
Speaker: Ilia Tsachev (Bulgaria)

The effect of the probiotic strain Enterococcus faecium DSM 7134 on performances and protein status in experimental t-2 mycotoxicoses in broiler chicks
Speaker: Katerina Blagoevska (Republic of Macedonia)

Q fever in cattle in Trakia District of Turkey
Speaker: Seda Mavili (Turkey)

Biochemical identification and antimicrobial profile of Gram negative bacterial species isolated from the gallbladder of finishing pigs in Central Greece
Speaker: Grammato Evangelopoulou (Greece)

Dermanyssus gallinae in layer farms in Kosovo: a potential risk for high Salmonella occurrence and transmission
Speaker: Afrim Hamidi (Kosovo)

Science based solutions for brucellosis surveillance in Mediterranean countries
Speaker: Sabina Šerić-Haračić (Bosnia and Herzegovina)

Session 2.

Chairpersons: Prof. Dr. Kemal AK & Prof. Dr. Larisa KARPENKO
Hours: 12:00 - 13:30 (28 April, 2014)

Preservation techniques in veterinary anatomy
Speaker: Nedžad Hadžiomerović (Bosnia and Herzegovina)

Effect of glauconite on the metabolism of sheep
Speaker: Ruslan Salykov (Kyrgyzstan)

Seasonal variations in metabolic profile of Chios sheep
Speaker: Irena Celeska (Republic of Macedonia)

Effect of probiotics on enrofloxacin disposition in gastro-intestinal tract of poultry
Speaker: Ivelina Pavlova (Bulgaria)

Pharmacokinetics of enrofloxacin in ducks with steatosis after force-feeding
Speaker: Neno Stoyanov Bratoev (Bulgaria)

Echinococcus granulosus and intestinal helminthes of dogs in Republic of Kosovo
Speaker: Mentor Alishani (Kosovo)

Impact of echinococcosis on quality of cattle meat in the South Eastern Kazakhstan
Speaker: Altay Yegemberdievich Ussenbayev (Kazakhstan)
29 April, 2014.

Session 3a.

Chairpersons: Prof. Dr. Alev AKDOĞAN KAYMAZ & Assoc. Prof. Dr. Hajrudin BESIROVIC
Hours: 09:00 - 10:30 (29 April, 2014)

Dairy cow lameness – perception and challenges
Speaker: Trojachanec Plamen (Republic of Macedonia)

Effect of xylazine-ketamine anesthesia on blood ACTH, cortisol, adrenaline, insulin and glucose in ovariohysterectomized cats
Speaker: Bogdan Yanev Aminkov (Bulgaria)

Research on contributing factors to the displacement of abomasum in dairy cattle farms in Kosovo
Speaker: Behlul Behluli (Kosovo)

Polycythemia vera in a cat
Speaker: Sinem Ülgen (Turkey)

Color flow and Continuous-wave (CW) Doppler echocardiography in healthy warmblood horses
Speaker: Sasho Petkov Sabev (Bulgaria)

Evaluation of Bcl-2, Bcl-XL and bax expression and apoptotic index in canine mammary tumours
Speaker: Funda Yıldırım (Turkey)

Session 3b.

Chairpersons: Prof. Dr. Zehra HAJRULAI-MUSLIU & Assoc. Prof. Dr. Afrim HAMIDI
Hours: 09:00 - 10:30 (29 April, 2014)

An investigation on general hygiene status of air in domestic refrigerators
Speaker: Yusuf Bicer (Turkey)

Importance of organic food production for Bosnia and Herzegovina
Speaker: Faruk Čaklovica (Bosnia and Herzegovina)

Antimicrobial effect of oregano essential oil against Vibrio parahaemolyticus on mussels (Mytilus galloprovincialis) during refrigerated storage
Speaker: Nikolaos Solomakos (Greece)

Salmonella levels in broiler spleens and ground chicken
Speaker: Cagatay Celik (Turkey)

Isolation and antimicrobial activity of some strains of Enterococci from artisanal white brined cheese in Republic of Macedonia
Speaker: Sandra Mojsova (Republic of Macedonia)

Effect of oregano essential oil on mussels (Mytilus galloprovincialis) during refrigerated storage
Speaker: Nikolaos Solomakos (Greece)
Session 4.
Chairpersons: Prof.Dr. Ragıp KILIÇARSLAN & Prof.Dr. Ali AYDIN
Hours: 11:00 - 12:30 (29 April, 2014)

Histological analysis of equine placenta  
Speaker: Anna Potapova (Russia)

Evaluation of pregnancy in queen by Doppler ultrasonography  
Speaker: Zeynep Günay (Turkey)

Preventive measures of obstetric pathology in high-productive cows by using beta-carotene in during dry stable period  
Speaker: Taisiia Dmitrieva (Russia)

Evaluation of follicular development by growth factors and hormone concentrations during breeding season in mares  
Speaker: Gamze Evkuran Dal (Turkey)

Monitoring of dairy cows fertility performances using real-time ultrasonography  
Speaker: Toni Dovenski (Republic of Macedonia)

Effects of cysteamine on sheep embryos oocyte cleavage rates  
Speaker: Özen Banu Özdaş (Turkey)

Session 5.
Chairpersons: Prof.Dr. Vedat SAKIC & Prof.Dr. Galip DÜNYAMALIYEY
Hours: 14:45 - 16:15 (29 April, 2014)

“One health” approach as optimal system for sound health and economic growth  
Speaker: Nihad Fejzic (Bosnia and Herzegovina)

Traditional knowledge of the Kyrgyz people in veterinary and livestock breeding  
Speaker: Askarbek Z. Tulobaev (Kyrgyzstan)

Assessment of animal welfare using ANI system in different types of beef cattle housing systems  
Speaker: P. Dilara Akin (Turkey)

Development of the industrial technology and experimental studies of functional feed additives for poultry from Chankanay zeolites (Kazakhstan)  
Speaker: Nurzhan Sarsembaeva (Kazakhstan)

Effects of slaughter weight and gender on finishing performance and carcass quality of light lambs  
Speaker: Nursen Dogan (Turkey)

Effect of glutathione on kinematic parameters of frozen-thawed spermatozoa from ovchepolian pramenka rams  
Speaker: Martin Nikolovski (Republic of Macedonia)

Kinetic parameters of cryopreserved Holstein-Friesian and Simmental bull spermatozoa  
Speaker: Mickov Ljupco (Republic of Macedonia)
# ABSTRACTS

## Oral Presentations

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-01</td>
<td>Canine and equine vector-borne diseases of zoonotic concern: News &amp; experience</td>
<td>Ilia Tsachev</td>
<td>2</td>
</tr>
<tr>
<td>O-02</td>
<td>The effect of the probiotic strain <em>Enterococcus faecium</em> DSM 7134 on performances and protein status in experimental t-2 mycotoxoses in broiler chicks</td>
<td>Katerina Blagoevska, Florina Popovska-Percinik, Aleksandar Dodovski, Miroslav Radeski, Andreja Blagoevski, Lupco Mickov, Dragomir Jeremić, Velimir Stojkovski</td>
<td>3</td>
</tr>
<tr>
<td>O-03</td>
<td>Q fever in cattle in Trakia District of Turkey</td>
<td>Z. Seda Mavili, Serkan İkiz</td>
<td>4</td>
</tr>
<tr>
<td>O-04</td>
<td>Biochemical identification and antimicrobial profile of Gram negative bacterial species isolated from the gallbladder of finishing pigs in Central Greece</td>
<td>Grammato Evangelopoulos, Filioussis Georgios, Spyridon Kritas, Alexander Govaris, Angeliki R. Burriel</td>
<td>5</td>
</tr>
<tr>
<td>O-05</td>
<td><em>Dermanyssus gallinae</em> in layer farms in Kosovo: a potential risk for high Salmonella occurrence and transmission</td>
<td>Afrim Hamidi, Driton Sylejmani, Avni Robaj, Olivier Sparagano</td>
<td>6</td>
</tr>
<tr>
<td>O-06</td>
<td>Science based solutions for brucellosis surveillance in Mediterranean countries</td>
<td>Sabina Šerić-Haračić, Nihad Fejić</td>
<td>7</td>
</tr>
<tr>
<td>O-07</td>
<td>Preservation techniques in veterinary anatomy</td>
<td>Rizah Avdić, Nedžad Hadžiomerović, Amelia Katica, Nadžida Mlača, Pamela Bejdić, Faruk Tandir, Velida Ćutahija</td>
<td>8</td>
</tr>
<tr>
<td>O-08</td>
<td>Effect of glauconite on the metabolism of sheep</td>
<td>Ruslan Salykov, Nuria S. Joldoshalieva, Tursunai A. Bektemirova</td>
<td>9</td>
</tr>
<tr>
<td>O-09</td>
<td>Seasonal variations in metabolic profile of Chios sheep</td>
<td>Irena Celeska, Danijela Kirovski, Igor Ulchar, Igor Dzadzovski, Aleksandar Janevski, Velimir Stojkovski</td>
<td>11</td>
</tr>
<tr>
<td>O-10</td>
<td>Effect of probiotics on enrofloxacin disposition in gastro-intestinal tract of poultry</td>
<td>Ivelina Pavlova, Svetla Danova, Hristo Naidenski, Aneliya Milanova</td>
<td>13</td>
</tr>
<tr>
<td>O-11</td>
<td>Pharmacokinetics of enrofloxacin in ducks with steatosis after force-feeding</td>
<td>Neno Stoyanov Bratoev, Lubomir Dimitrov.Lashev</td>
<td>14</td>
</tr>
<tr>
<td>O-12</td>
<td><em>Echinococcus granulosus</em> and intestinal helminthes of dogs in Republic of Kosovo</td>
<td>Mentor Alishani, Kurtesh Sherif</td>
<td>15</td>
</tr>
<tr>
<td>O-13</td>
<td>Impact of echinococcosis on quality of cattle meat in the South Eastern Kazakhstan</td>
<td>N. B. Sarsembayeva, J. Valieva, A.E. Ussenbayev, K.B. Byashev</td>
<td>16</td>
</tr>
<tr>
<td>O-14</td>
<td>Dairy cow lameness – perception and challenges</td>
<td>Plamen Trojachanec, Ksenija Ilievsk, Vladimir Petkov, Snjezana Trojachanec, Branko Atanasov, Toni Dovenski</td>
<td>17</td>
</tr>
<tr>
<td>O-15</td>
<td>Effect of xylasine-ketamine anesthesia on blood ACTH, cortisol, adrenaline, insulin and glucose in ovariohysterectomized cats</td>
<td>Nadya Zlatezarova Zlateva, Bogdan Yanev Aminkov</td>
<td>18</td>
</tr>
</tbody>
</table>
Research on contributing factors to the displacement of abomasum in dairy cattle farms in Kosovo
Behulu Behulu, Agim Rexhepi, Afrim Hamidi, Kurtesh Sherifi

Polycythemia Vera in a Cat
Alper Bayrakal, Sinem Ülgen, Abdullah Kayar, Onur Iskefli, Kivilcim Sonmez, Gülbin Sennazli, Kürşat Özer

Color flow and Continuous-wave (CW) Doppler echocardiography in healthy warmblood horses
Sasha Petkov Sabev

Evaluation of Bcl-2, Bcl-XL and Bax expression and apoptotic index in canine mammary tumours
Funda Yildirim, Kivilcim Sonmez, Hande Ozyogurtcu, Gulbin Sennazli, Aydin Gurel, Mehmet Can Gunduz, Besim Hasan Sontas

An investigation on general hygiene status of air in domestic refrigerators
A. Ezgi Telli, H. Ahu Kahraman, Yusuf Bicer, Umit Gurbuz

Importance of organic food production for Bosnia and Herzegovina
Faruk Čaklovica, Muhamed Smajlović, Davor Alagić, Kenan Čaklovica Enida Članjak, Berin Rahmanović, Adnan Aljagić

Antimicrobial effect of oregano essential oil against Vibrio parahaemolyticus on mussels (Mytilus galloprovincialis) during refrigerated storage
Lefteris Triantafyllou, Nikolaos Solomakos, Andreana Pexara, Alexander Govaris

Salmonella levels in broiler spleens and ground chicken
Cagatay Celik, Diezhang Wu, Yue Cui, Walid Q. Alali

Isolation and antimicrobial activity of some strains of Enterococci from artisanal white brined cheese in Republic of Macedonia
Sandra Mojsova, Pavle Sekulovski, Dean Jankulovski, Ljupco Angelovski, Marija Ratkova, Mirko Prodanov, Jovanka Gavriloova

Effect of oregano essential oil on mussels (Mytilus galloprovincialis) during refrigerated storage
Lefteris Triantafyllou, Nikolaos Solomakos, Andreana Pexara, Alexander Govaris

Histological Analysis of Equine Placenta
Anna Potapova

Evaluation of pregnancy in queen by doppler ultrasonography
Melih Uçmak, Özge Yılmaz, Gamze Evkuran Dal, Zeynep Güney, Esra Karaçam, Mehmet Can Gündüz

Preventive measures of obstetric pathology in high-productive cows by using betacarotene in during dry stable period
Taisiia Dmitrieva

Evaluation of follicular development by growth factors and hormone concentrations during breeding season in mares
Gamze Evkuran Dal, Güven Kaşıkçı

Monitoring of dairy cows fertility performances using real-time ultrasonography
Toni Dovenski, Plamen Trojancanec, Branko Atanasov, Martin Nikolovski, Vladimir Petkov

Effects of cysteamine on sheep embryos oocyte cleavage rates
Sinem Özlem Enginler, Özen Banu Özdağ, Asiye İzem Sandal, Ramazan Arıcı, Mehmet Can Gündüz, Alper Baran, Çağatay Tek, Mehmet Ragip Kiliçarslan, Kemal Ak
“One health” approach as optimal system for sound health and economic growth
Nihad Fejzic, Sabina Seric - Haracic

Traditional knowledge of the Kyrgyz people in veterinary and livestock breeding
Askarbek Z. Tulobaev, Ruslan Salykov, Gulnaz Askarbek

Assessment of animal welfare using ANI system in different types of beef cattle housing systems
Pembe Dilara Akin, Omur Kocak, Hulya Yalcintan, Bulent Ekiz

Development of the industrial technology and experimental studies of functional feed additives for poultry from Chankanay zeolites (Kazakhstan)
N. B. Sarsembayeva, A. E. Ussenbayev, K. B. Byashev, A. Paritova, D. Ganiev

Effects of slaughter weight and gender on finishing performance and carcass quality of light lambs
Nursen Dogan, Bulent Ekiz, Hulya Yalcintan, Omur Kocak, Alper Yilmaz

Effect of glutathione on kinematic parameters of frozen-thawed spermatozoa from ovchepolian pramenka rams
Martin Nikolovski, Ljupco Mickov, Monika Dovenska, Vladimir Petkov, Branko Atanasov, Toni Dovenski

Kinetic parameters of cryopreserved holstein-friesian and simmental bull spermatozoa
Ljupco Mickov, Branko Atanasov, Nikola Adamov, Vladimir Petkov, Martin Nikolovski, Katerina Blagoevska, Toni Dovenski

Innovative methods in preparing long lasting anatomical models used in the study process
Nikolay Tsandev, Dimitar Kostov, Angel Pavlov

Comparative study of the mast cells’ number and their distribution in the porcine pelvic urethra after using of different fixatives and stainings
Genadi Kostadinov, Angel Vodenicharov, Rosen Dimitrov, Laska Kostadinova, Daniela Sevrieva, Kamelia Stamatova-Yovcheva, Hristo Hristov, Nikolai Tsandev

Some anatomical, microscopic and radiographic features of the glandular stomach (proventriculus) in domestic canari bird (Serinus canaria)
Hristo Hristov, Radoslav Mihaylov, Dijana Vladova, Rosen Dimitrov, Tzvetan Chaprazov, Kamelia Stamatova-Yovcheva, Genadi Kostadinov

Sex determination of prehistorical bovine found in “Azmashka” settlement hill by metapodial bones
Dimitar Kostov, Nikolay Tsandev

Some ultrasonographic features of bulbourethral glands in the domestic rabbit
Rosen Dimitrov, Kamelia Stamatova
<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-06</td>
<td>Weight, vascularisation, lymph nodes and innervation of some fat depots in New Zealand white rabbits</td>
<td>Penka Yonkova Yonkova, Rosen Stefanov Dimitrov, Kamelia Dimcheva Stamatova-Yovcheva, Miroslav Stefanov, Ekaterina Georgieva Vachkova Valentin Marinov Semerdjiev, Ayşe Serbest, Ilker Arican</td>
</tr>
<tr>
<td>P-07</td>
<td>Histopathological changes of the kidneys in T-2 mycotoxicosis in broilers</td>
<td>Florina Popovska-Percinic, Katerina Blagoevska, Aleksandar Dodovski, Andreja Blagoevski, Velimir Stojkovski, Vlatko Ilieski, Lazo Pendovski, Monika Dovenska, Trpe Ristoski</td>
</tr>
<tr>
<td>P-08</td>
<td>Anti-inflammatory effect of Morinda citrifolia (noni) juice on carrageenan induced inflammation model in rats</td>
<td>Elif Ilkay Ikitimur-Arumutak, Funda Yiğit, Demet Sensoy</td>
</tr>
<tr>
<td>P-09</td>
<td>Distribution categories of Veterinary Medicines in Republic of Macedonia</td>
<td>Romel Velev, Natasha Krleska-Veleva</td>
</tr>
<tr>
<td>P-10</td>
<td>Melatonin protective effect on rat’s organs aluminium accumulation</td>
<td>Florin Muselin, Eugenia Dumitrescu, Romeo Cristina, Alexandru Doma, Alexandra Trif</td>
</tr>
<tr>
<td>P-11</td>
<td>Insights into the development of a new D,L-α-tocopherol acetate/natural zeolite drug- delivery system for application in Veterinary Medicine</td>
<td>Zvezdelina Lyubenova Yaneva, Nedyalka Valkanova Georgieva</td>
</tr>
<tr>
<td>P-12</td>
<td>Albendazole sensitive vs. resistant nematodes -mitochondrial ultra-structural changes</td>
<td>Romeo T. Cristina, Eugenia Dumitrescu, Marius Pentea, Adrian Stancu, Florin Muselin</td>
</tr>
<tr>
<td>P-13</td>
<td>The consequences of chronic aluminium sulphate intake on sexual cycle’s duration and regularity in female rats</td>
<td>Eugenia Dumitrescu, Romeo T. Cristina, Florin Muselin, Alexandru Octavian Doma, Alexandra Trif</td>
</tr>
<tr>
<td>P-14</td>
<td>Growth performance of broilers after treatment with probiotics and antibiotics</td>
<td>Ivelina Pavlova, Svetlo Danova, Aneliya Milanova</td>
</tr>
<tr>
<td>P-15</td>
<td>Pharmacokinetics of a novel controlled-release formulation of doxycycline hclate per oral via in dogs</td>
<td>Sara Melisa Arciniegas Ruiz, Dinorah Vargas Estrada, Lilia Gutiérrez Olvera, Maria Josefa Bernad Bernad</td>
</tr>
<tr>
<td>P-16</td>
<td>Distribution of culicoides latreille, 1809 (Diptera: Ceratopogonidae) species in south and South-Eastern Turkey, with special reference to bovine ephemeral fever</td>
<td>Bilal Dik, Dilek Muz, Mustafa Muz, Uğur Uslu</td>
</tr>
<tr>
<td>P-17</td>
<td>Some biochemical parameters in yearling sheep naturally infected by Coenurus cerebralis</td>
<td>Uğur Uslu, Pınar Peker Akalin, Vahdettin Altunok</td>
</tr>
<tr>
<td>P-18</td>
<td>Coccidiosis (Apicomplexa, Coccidia, Eimeriidae) of the poultry and the effect on it the medicinal plants</td>
<td>Zhala Hasanova, Elshad Ahmadov, Sevda Samedova, Shafiga Topchiyeva</td>
</tr>
<tr>
<td>P-19</td>
<td>The effect of different storage temperatures and times on the viability of Helicobacter pullorum</td>
<td>Beren Basaran Kahrman, Kemal Metiner, Belgi Diren Sigirci, Baran Celik, Mehmet Cemal Adiguzel, Arzu Funda Baggigil, Serkan Ikiz, Naciye Yakut Ozugr, Seyyal Ak</td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>P-20</td>
<td>Efficacy of a water-based disinfectant on reduction of egg shell</td>
<td>Uçkun Sait Uçan, Ali Gök</td>
</tr>
<tr>
<td></td>
<td>bacterial contamination</td>
<td></td>
</tr>
<tr>
<td>P-21</td>
<td>Diagnosis of Q fever and brucellosis in the aborted ovine fetuses by</td>
<td>Simten Yeşilmen, Turan Yaman, Servet Bademkiran</td>
</tr>
<tr>
<td></td>
<td>microbiological, pathological, immunohistochemical methods</td>
<td></td>
</tr>
<tr>
<td>P-22</td>
<td>Serological and bacteriological study of avian mycoplasmosis by Mycoplasma</td>
<td>Nouzha Heleili, Bakir Mamache, Ammar Ayachi</td>
</tr>
<tr>
<td></td>
<td>synoviae in Eastern Algeria</td>
<td></td>
</tr>
<tr>
<td>P-23</td>
<td>Antibacterial and antifungal activity of ethanolic Allium tuncelianum</td>
<td>Kemal Metiner, Oktay Özkan, Seyyad Ak</td>
</tr>
<tr>
<td></td>
<td>extract</td>
<td></td>
</tr>
<tr>
<td>P-24</td>
<td>Situation with brucellosis in Macedonia since introduction of rev1</td>
<td>Krstevs'ki Kiril, Djadov'ski Igor, Cvetkovikj Iskra, Janevski Aleksandar, Mrenoshki Slavcho, Mitrov Dine, Naletoski Ivancho</td>
</tr>
<tr>
<td></td>
<td>vaccination (epidemiological update)</td>
<td></td>
</tr>
<tr>
<td>P-25</td>
<td>Determination of antibacterial activities of different Thymus praecox</td>
<td>Oktay Özkan, Kemal Metiner, Asım Kart</td>
</tr>
<tr>
<td></td>
<td>subsp. grossheimii var. grossheimii extracts.</td>
<td></td>
</tr>
<tr>
<td>P-26</td>
<td>Evaluation of wild birds in Lake Van Basin in terms of some</td>
<td>Banur Boyunekara, Timur Gülhan</td>
</tr>
<tr>
<td></td>
<td>pathogenic agents</td>
<td></td>
</tr>
<tr>
<td>P-27</td>
<td>Species distribution of methicillin resistant staphylococci isolated</td>
<td>Arzu Funda Bağcigil, Serkan İkiz, Özlem Güzel, Çağla Parkan Yaramış, Atila Ilgaz</td>
</tr>
<tr>
<td></td>
<td>from animals, environmental samples and staffs.</td>
<td></td>
</tr>
<tr>
<td>P-28</td>
<td>Examination of vancomycin resistant enterococci (VRE) isolated from</td>
<td>Arzu Funda Bağcigil, Lora Koenhems, Baran Çelik, Erman Or, Seyyad Ak</td>
</tr>
<tr>
<td></td>
<td>canine and feline fecal swabs</td>
<td></td>
</tr>
<tr>
<td>P-29</td>
<td>Isolation and identification of mycoplasmas from pneumonic lungs of</td>
<td>Mehmet Ali Türkyılmaz, Arzu Funda Bağcigil, Atila Ilgaz</td>
</tr>
<tr>
<td></td>
<td>cattle by 16s rDNA PCR and DGGE</td>
<td></td>
</tr>
<tr>
<td>P-30</td>
<td>A serological investigation of epizootic hemorrhagic disease virus</td>
<td>Nural Erol, Mehmet Tolga Tan, Bahattin Taylan Koc</td>
</tr>
<tr>
<td></td>
<td>infection in sheep, goats and camels in the Aydin Province</td>
<td></td>
</tr>
<tr>
<td>P-31</td>
<td>Effects of general and local anaesthesia on innate and cell-mediated</td>
<td>Galina Simeonova, Dinko Dinev, Maria Andonova</td>
</tr>
<tr>
<td></td>
<td>immunity in dogs</td>
<td></td>
</tr>
<tr>
<td>P-32</td>
<td>Comparison the effects of halothane anaesthesia in horses with and</td>
<td>Galina Simeonova, Makram Sleiman</td>
</tr>
<tr>
<td></td>
<td>without dexmedetomidine continuous rate infusion</td>
<td></td>
</tr>
<tr>
<td>P-33</td>
<td>Evaluation of the pre and post-operative clinical, hematological,</td>
<td>Caner Tayer İşler, Muhammed Enes Altuğ, Ziya Yurtal, Mehmet Zeki Yılmaz Deveci, Mustafa Cellat, Sedat Motor</td>
</tr>
<tr>
<td></td>
<td>biochemical and blood gases findings in the cattle with abomasal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>displacements</td>
<td></td>
</tr>
<tr>
<td>P-34</td>
<td>Evaluation of tear secretion and intraocular pressure in healthy and</td>
<td>Caner Tayer İşler, Muhammed Enes Altuğ, Mustafa Cellat</td>
</tr>
<tr>
<td></td>
<td>disorders with amaurosis on Holstein calves</td>
<td></td>
</tr>
</tbody>
</table>
Evaluation of the parameters of clinical, hematological biochemical and blood gas on the case of abomasal dilation and dislocation that depending on pyloris obstruction on a couple of four-month-old Holstein calves; male and female

Cafar Tayer İşler, Muhammed Enes Altuğ, Mehmet Zeki Yılmaz Deveci, Ziya Yurtal, Mustafa Cellat, Sedat Motor

C-reactive protein and blood glucose levels as markers of pancreatic necroses in dogs with various form of acute pancreatitis

Lazarin Lazarov, Teodora Mircheva, Dimitrinka Zapryanova, Galina Simeonova, Radostin Simeoneov, Yordan Nikolov

Hematological paraneoplastic syndrome and plasma VEGF in canine haemangiosarcoma

Tsanko Hristov, Rumen Binev, Georgi Mitev, Lazarin Lazarov

A perinephric pseudorenal cyst in a cat

Kutay Yıldız, Sinem Ülgen, Abdullah Kayar, Funda Yıldırım, Aydin Gurel

Superficial necrotic dermatitis in a dog

Sinem Ülgen, Utku Bakirel, Seçkin Arun, Murat Şaroğlu, Mehmet Ali Sağır

Pleural effusion in a dog

Sinem Ülgen, Utku Bakirel, Kutay Yıldız, Funda Yıldırım, İbrahim Fırat

Detection of etiological agents with transtracheal aspirates, prognostic criteria and alternative treatments of infections tracheobronchitis in dogs

Akın Kochan, Simten Yesilmen, Hasan İcen

Normal renal doppler parameter in kangal dogs: Preliminary findings

Lora Koenhemsi, Remzi Gönül, Alper Bayrakal, Taner Bahçeci, M. Erman Or

The changing patterns in referral rates of geriatric cats and dogs to an university clinic: A retrospective study

Alev Akdoğan Kaymaz, Sinem Ülgen, Alper Bayrakal, Efraim Sargın

Treatment of a giant ulceration due to self-directed aggression in a cat

Banu Dokuzeylül, Ahu Birol, M. Erman Or, H. Tamer Dodurka

Generalized tetanus: From bite wound to serious neuromuscular disorders – case report

Filipović Selma, Maksimović Alan, Lutvikadić Ismar, Šunjek Amila, Obahoš Muamer

Pets dog (Canis Lupus Familiaris) with the identification of STR analysis in forensic sciences

Eylem Gül, Sinem Ülgen, Gulten Rayılmoglu, E. Hulya Yukseloglu

Doppler evaluation of fetal and feto-maternal vessels during dystocia in four cats

Özge Turna Yılmaz, Melih Uçmak, Zeynep Gunay, Esra Caliskan Karacağ, Mehmet Erzengin

Complex gynecologic pathologies in a bitch

Zeynep Gûnay, Melih Uçmak, Funda Yıldırım, Ahmet Sabuncu, Çağatay Tek, Esra Karaçam

Preclinical developments of therapeutic agents for the treatment of canine and feline mammary cancer: A review

Tuğba Seval Fatma Toydemir, Esra Karaçam, Mehmet Erzengin, Hayri Ekici

Inflammatory mammary carcinoma-clinical outcome and medical approach in canine and feline patients

Tuğba Seval Fatma Toydemir, Esra Karaçam, İsmail Kırşan
<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-51</td>
<td>Prevalence of <em>Salmonella</em> spp., <em>Listeria monocytogenes</em> and <em>Escherichia coli</em> O157 in meat and meat products consumed in Istanbul. <em>Enver Baris Bingol, Emek Dumen, Tolga Kahraman, Meryem Akhan, Ghassan Issa, Ozer Ergun</em></td>
<td>94</td>
</tr>
<tr>
<td>P-52</td>
<td>Effect of rapid chilling and pelvic suspension on meat quality of <em>Longissimus dorsi</em> muscle of lamb. <em>Tolga Kahraman, Enver Baris Bingol, Ghassan Issa, Emek Dumen, Ergun Omer Goksoy, Serkan Kemal Buyukunal</em></td>
<td>95</td>
</tr>
<tr>
<td>P-53</td>
<td>Validation procedure for determination of zearalenone in cereals implementing commission regulation 2006/401 and commission decision 2002/657/EC. <em>Biljana Stojanovska-Dimzoska, Zehra Hajrulai-Musliu, Elizabeta Dimitrieska-Stojkovic, Risto Uzunov, Aleksandra Angeleska, Dean Jankuloski</em></td>
<td>96</td>
</tr>
<tr>
<td>P-54</td>
<td>Department of Milk Hygiene and Technology. <em>Martina Chroma, Lucia Hodulova</em></td>
<td>97</td>
</tr>
<tr>
<td>P-55</td>
<td>An evaluation of dose intensity due to natural radioactivity in the soil in the surrounding of Skopje. <em>Aleksandra Angeleska, Risto Uzunov, Zehra Hajrulai-Musliu, Elizabeta Dimitrieska-Stojkovic, Biljana Stojanovska-Dimzoska</em></td>
<td>98</td>
</tr>
<tr>
<td>P-56</td>
<td>Department of Meat Hygiene and Technology. <em>Marie Sterbova</em></td>
<td>99</td>
</tr>
<tr>
<td>P-57</td>
<td>Monitoring of antibiotic residues in poultry products (Kazakhstan). <em>N.B. Sarsembayeva, Sh.A. Mustafina, A.E. Ussenbayev, A. Slyamova, A. Urkimbayeva, A.A. Abdramanov</em></td>
<td>100</td>
</tr>
<tr>
<td>P-58</td>
<td>Determination of Methicillin-Resistant <em>Staphylococcus aureus</em> in milk by PCR method and SCCmec typing. <em>Ghassan Issa, Harun Aksu</em></td>
<td>101</td>
</tr>
<tr>
<td>P-59</td>
<td>Antibiotic resistance of <em>Staphylococcus aureus</em> strains isolated from different food. <em>Cagatay Celik, Harun Aksu</em></td>
<td>102</td>
</tr>
<tr>
<td>P-60</td>
<td>Bioactive components in goat milk. <em>A. Ezgi Telli, Yusuf Doğruer</em></td>
<td>103</td>
</tr>
<tr>
<td>P-61</td>
<td>Comparison of the aging applications in terms of sensory quality attributes in meat industry. <em>H. Ahu Kahraman, Ümit Gürbüz</em></td>
<td>104</td>
</tr>
<tr>
<td>P-62</td>
<td>Biofilm formation and occurrence of <em>Listeria monocytogenes</em> on meat and food contact and equipment surfaces in slaughterhouse. <em>Fulya Tasçı, Mert Sudağidan, Özge Gökçe</em></td>
<td>105</td>
</tr>
<tr>
<td>P-63</td>
<td>Determination of fatty acid in asparagus with gas chromatography. <em>Zehra Hajrulai-Musliu, Risto Uzunov, Aleksandra Angeleska, Elizabeta Dimitrieska-Stojkovic, Biljana Stojanovska-Dimzoska, Velimir Stojkovski</em></td>
<td>106</td>
</tr>
<tr>
<td>P-64</td>
<td>Estimation and analysis of value and structure of export and import of food in Macedonia. <em>Sekovska Blagica, Kabranova Romina, Anakiev B</em></td>
<td>107</td>
</tr>
<tr>
<td>No</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>P-66</td>
<td>Survival of <em>Listeria monocytogenes</em> in traditional semi-soft white cheese</td>
<td>Pavle Sekulovski, Zehra Hajrulai-Musliu, Dean Jankuloski, Sandra Majsova, Mirko Prodanov, Ljupco Angelovski and Marija Ratkov</td>
</tr>
<tr>
<td>P-67</td>
<td>A study on the method validation of PCR method to determine the ratio of beef % in fermented meat products</td>
<td>Ali Özcan, Uğur Günşen</td>
</tr>
<tr>
<td>P-68</td>
<td>Biofilm formation and related gene contents of foodborne <em>Staphylococcus aureus</em> strains</td>
<td>Mert Sudağidan, Orhan Yavuz, Ali Aydin</td>
</tr>
<tr>
<td>P-69</td>
<td>Antibiotic susceptibility of <em>Staphylococcus aureus</em> isolates from food contact surfaces in Turkey</td>
<td>Ali Aydin, Aysen Coban, Gulay Merve Bayrakal, Ruveyda Gunaydin, Ghassan Issa, Mert Sudağidan</td>
</tr>
<tr>
<td>P-70</td>
<td>Investigation of biofilm related gene contents in <em>Staphylococcus aureus</em> strains from food contact surfaces</td>
<td>Aysen Coban, Ghassan Issa, Gulay Merve Bayrakal, Ali Aydin, Mert Sudağidan</td>
</tr>
<tr>
<td>P-71</td>
<td>Presence of the disinfectant resistance genes in <em>Staphylococcus aureus</em> strains from food contact surfaces</td>
<td>Gulay Merve Bayrakal, Ali Aydin, Ghassan Issa, Aysen Coban, Mert Sudağidan</td>
</tr>
<tr>
<td>P-72</td>
<td>PCR-based methods for determination of Travnicki sheep cheese adulteration – preliminary results</td>
<td>Aida Hodzic, Amina Hrkovic-Porobija, Eva Pasic-Juhas, Teufik Goletic</td>
</tr>
<tr>
<td>P-73</td>
<td>Lactoflora and sensorial characteristics of experimentally produced Bosnian Soudjouk</td>
<td>Muhamed Smajlović, Hajrudin Beširević, Davor Alagić, Faruk Čaklovica, Kenan Čaklovica, Enida Članjak</td>
</tr>
<tr>
<td>P-74</td>
<td>How to make organic laying hens production in Turkey</td>
<td>Tahir Balevi, Behic Coskun</td>
</tr>
<tr>
<td>P-75</td>
<td>Biochemical and mineral profile of South Eastern Algerian Desert Goats (<em>Capra hircus</em>)</td>
<td>Nadia Hafid, Toufik Meziane, Bakir Maamache, Mabrouk Belkhiri</td>
</tr>
<tr>
<td>P-76</td>
<td>Chemical composition of meat from Algerian indigenous goat as affected by age</td>
<td>Nadia Hafid, Toufik Meziane</td>
</tr>
<tr>
<td>P-77</td>
<td>Study of fatty acid composition of mare’s milk lipids</td>
<td>Moldir Myrzabekova, Batyrkhan Burlakhiev, Assiya Serikbayeva</td>
</tr>
<tr>
<td>P-78</td>
<td>Evaluation of mercury contamination in cats using hair analysis</td>
<td>Tomáš Král, Zdenka Svobodová, Marie Ševčíková, Tereza Kalinová, Michaela Hermánová, Barbora Hrbáčková</td>
</tr>
<tr>
<td>P-79</td>
<td>Effects of heat conditioning and dietary ascorbic acid supplementation on heat shock protein 70 expression, blood parameters and fear-related behavior in broilers subjected to heat stress</td>
<td>Hayriye Deger Oral Toplu, Recai Tunca, Serap Unubol Aypak, Fethiye Coven, Erkmen Tugrul Epikmen, Solmaz Karaarslan, Orçun Yagin</td>
</tr>
<tr>
<td>P-80</td>
<td>Dairy sector in Bosnia and Herzegovina during the past decade</td>
<td>Vedad Śakić, Cazim Crnkic</td>
</tr>
<tr>
<td>P-81</td>
<td>Why should quality assurance schemes be applied on farms?</td>
<td>Nursen Dogan, Bulent Ekiz</td>
</tr>
<tr>
<td>No</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>P-82</td>
<td>Prediction of milk yield and analyzing environmental factors effecting on milk yield by three different estimation methods in brown Swiss Cattle</td>
<td>Figen Çakilli, Kozet Avanus, Halil Güneş</td>
</tr>
<tr>
<td>P-83</td>
<td>Certain finishing performance parameters and meat fatty acid composition of Hair Goat and Saanen × Hair Goat crossbred (F₁ and B₁) kids</td>
<td>Bulent Ekiz, Alper Yilmaz, Akin Yakan, Cuneyt Kaptan, Hulya Hanoglu</td>
</tr>
</tbody>
</table>
ORAL PRESENTATIONS
CANINE AND EQUINE VECTOR-BORNE DISEASES OF ZOONOTIC CONCERN: NEWS & EXPERIENCE

Ilia Tsachev

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The principal vector-borne infections in dogs and horses of zoonotic concern at a global scale are presented: Lyme disease, Granulocytic Anaplasmosis, Monocytic Ehrlichiosis, Visceral Leishmaniasis etc. More attention is paid on their significance at the Balkans and in Bulgaria in particular. The impacts of these diseases in humans with most recent available data are reviewed. The past and the present of canine vector-borne diseases in Bulgaria are described from a chronological point of view. The detection of Lyme disease and Anaplasmosis among horses in Bulgaria are reported for the first time. Many clinical cases are outlined, and the world and own experience are shared – problems, prevalence, diagnostics, therapy, prevention, and public health issues (“one health”).
THE EFFECT OF THE PROBIOTIC STRAIN ENTEROCOCCUS FAECIUM DSM 7134 ON PERFORMANCES AND PROTEIN STATUS IN EXPERIMENTAL T-2 MYCOTOXICOSES IN BROILER CHICKS

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Feeding animals with contaminated feed could lead to decreased performance efficacy, as well as to increased susceptibility to infectious diseases, as a consequence of induced oxidative stress in different tissues and organs and altered serum biochemical parameters. In the past decades, suggested physical and chemical methods for mycotoxin detoxication, turned out to be too expensive and unpractical for farm implementation. For that reason, lately the research have been focused in the use of specific dietetic additives which are capable of reducing mycotoxin absorption in animal’s gut. One of them are probiotics that are the target of research in this paper.

For that purpose 80 day-old broiler chicks, were used in the experiment. They were divided in four groups: 1) group K – control, with 0.0 mg of T-2/chick; 2) group T2/2, with 0.250 mg of T-2/chick; 3) group P-with probiotic and 0.0 mg of T-2/chick; 4) group P+T2, with probiotic and 0.250 mg of T-2/chick. T-2 toxin application was compulsive per os with syringe, in a dose of 0.250 mg, for three consecutive days. Probiotic Enterococcus faecium DSM 7134 with concentration of 3x10⁹ cfu, was administered in drinking water in quantity of 0.2 g/l, in groups P and P+T2, starting from day one till the end of the experiment. Blood samples were collected by cardiac puncture at 24 and 72 hour after application of the first toxin dose. Evaluated parameters were body weight, feed conversion, mortality, total protein and albumin. The difference between control and experimental groups, for all parameters values, were established as statistically significant at (P<0.01).

The results showed lower mortality (5%) in group receiving P+T2, compared to the group with toxin (25%). Data from body weight measurement resulted with significantly increased values in group P by 15.41% compared to group K, and in group P+T2 by 34.56%, compared to T2 group. T2 application decreases the concentration of total protein and albumin in chick’s serum, irrespective of exposition time and probiotic application. Compared to the data measured at 24 h after the first dose of toxin application, albumin concentration at 72 h in groups T2 and P+T2 was lower by 60.76% and 11.53%, respectively.

Data obtained in this research, practically confirm the potential benefit from the use of Enterococcus faecium DSM 7134 probiotic in counteracting mycotoxin effect in everyday practice in broiler production, starting from the first day post hatch.
Q FEVER IN CATTLE IN TRAKIA DISTRICT OF TURKEY

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In this study, DNA of \textit{Coxiella burnetii} was investigated from milk and blood samples taken from cattle raised in Istanbul and Trakia district of Turkey by Real-time PCR (LightCycler 2.0), and also Q-fever seropositivity was examined by ELISA.

For this purpose, cattle with and without reproductive problems (infertility, metritis and abortus) were chosen and compared. In total, 20 of 200 (10\%) sera were found to be positive by ELISA. Eleven of 100 (11\%) sera from cattle with reproductive problems were positive while 9 of 100 (9\%) sera were positive from cattle without reproductive problems. Four of 12 (33\%) sera of the aborted cattle were found to be positive. Seropositivity of aborted cattle rate was higher than the other groups and the difference was statistically significant (P<0.05). Seropositive rates of cattle according to age, presence of mastitis, presence of ticks and the provinces were examined and differences were not found statistically significant.

Complete blood counts were determined from the matching animals. RBC, HCT and HGB mean values of ELISA seropositive cattle were found to be higher than mean values of seronegative ones, while WBC and PLT mean values were lower. These differences were found to be statistically insignificant. RBC, HCT, HGB and PLT mean values of ELISA seropositive cattle with reproductive problems were found to be higher than mean values of ELISA seronegative ones, while WBC mean values were lower. Only HGB mean value difference was found to be statistically significant (P<0.05).

Genomic DNAs extracted from milk and blood samples of the animals were amplified using with IS1111 primers and samples with fluorescence increase due to SYBR Green dye were considered as \textit{C. burnetii} DNA positive. In total, 2 of 200 (1\%) milk samples were positive by real-time PCR (one with reproductive problems and one without). One of 12 (8.3\%) milk samples of the aborted cattle were positive by PCR while none of the blood samples were found to be positive.
BIOCHEMICAL IDENTIFICATION AND ANTIMICROBIAL PROFILE OF GRAM NEGATIVE BACTERIAL SPECIES ISOLATED FROM THE GALLBLADDER OF FINISHING PIGS IN CENTRAL GREECE

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The primary aim of this undertaking was to isolate and further study serovars of \textit{Salmonella} spp. colonizing the gallbladder of slaughtered pigs across Central Greece. These bacteria persist in the gallbladder reaching the small intestine via the bile ducts and been eventually excreted in the pig’s environment. During the attempts to isolate \textit{Salmonella} spp., other Gram negative bacteria were also isolated and appeared established in the pigs’ gallbladder. Thus, they were speciated and the antimicrobial profiles of all isolates were determined using 24 antibiotics.

The study involved the sampling of randomly selected pork carcasses at slaughter. The samples collected for microbiological examinations were gallbladder swabs. All samples were examined using standard culture methods, following the ISO 6579:2002 protocol. Isolated colonies were subcultured onto a variety of selective solid culture media and further speciated using the Microgen\textsuperscript{TM} GnA+B-ID Systems (Microgen Bioproducts Ltd, UK), suitable for Gram (-) bacteria. Isolates identified as \textit{Salmonella} spp. were serotyped at the \textit{Salmonella} National Reference Laboratory, Greece (NRL), using an agglutination technique. Antimicrobial susceptibilities of all Gram (-) isolates to 24 antimicrobials were determined using the disk diffusion method.

Seventy nine Gram (-) strains were isolated from the gallbladder of 123 pigs. The Microgen\textsuperscript{TM} GnA+B-ID (Microgen Bioproducts Ltd, UK) identified 43 (54.43%) as \textit{Escherichia coli}, 15 (18.9%) as \textit{Salmonella} spp., seven (7.6%) as \textit{Enterobacter} spp., from three (3.8%) as \textit{Klebsiella} spp., \textit{Citrobacter freundii}, \textit{Aeromonas hydrophila} and \textit{Cronobacter sakazakii}, one (1.3%) as \textit{E. fergusonii} (1.3%) and one (1.3%) as \textit{Trabulsiella guamensis}. From the 15 identified as \textit{Salmonella} spp., only seven (46.67%) were confirmed as \textit{Salmonella} spp. by the agglutination test. The antibiograms revealed resistant as to tetracycline 67 (84.8%) isolates, to sulfamethoxazole/trimethoprim 64 (81%), to ampicillin 64 (81%), to amoxicillin 63 (79.75%) and to chloramphenicol 50 (63.29%). Resistance to cephalosporins, quinolones and aminoglycosides (as groups) were respectively 30.35%, 18.99% and 16.46%.

This study revealed that Gram negative bacteria, belonging mainly to the family of Enterobacteriaceae, among which were potential pathogens as \textit{Salmonella} spp, \textit{E. coli}, \textit{Klebsiella} spp, \textit{Enterobacter} spp., and others, tolerate bile and get established in the pig’s gallbladder. Their high proportion of resistance to commonly used antibiotics could help their survival in the gallbladder helping them to remain in the digestive tract for long time, possibly causing systemic infections, if other factors, such as stress, also develop.
DERMANYSSUS GALLINAE IN LAYER FARMS IN KOSOVO: A POTENTIAL RISK FOR HIGH SALMONELLA OCCURRENCE AND TRANSMISSION

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The aim of this study was to link the \textit{Salmonella} occurrence in layer farms infested with \textit{D. gallinae} and the level of bio-security in farms. For this purpose in 2009, 16 layer farms from each part of Kosovo were tested for the presence of \textit{Dermanyssus gallinae} and presence of \textit{Salmonella} in \textit{D. gallinae}. In 2012, 10 farms known to be infested with \textit{D. gallinae} were tested for the presence of \textit{Salmonella} from pooled samples from different parts of the farms such as poultry feces, dust, feed, water and additional two pooled samples comprised of 200 mites of \textit{D. gallinae} were directly examined for the prevalence of \textit{Salmonella} in the outer as well as the inner part of \textit{D. gallinae}. The detection of \textit{Salmonella} from \textit{D. gallinae} positive farms in 2009 was carried out using Dneasy Tissue Kit (Qiagen). The isolation of \textit{Salmonella} from \textit{D. gallinae} from 10 farms in 2012 followed the ISO 6579/2002 procedure whereas the isolation and identification Salmonella from outside was carried out directly diffusing in MRSV whereas isolation and identification from inner part of \textit{D. gallinae} was performed after washing and crushing the surface of the arthropods. Out of 16 farms in 2009, 8 farms were infested with \textit{D. gallinae} and \textit{Salmonella} was found in 3 farm form the inner part of \textit{D. gallinae}, whereas from ten investigated farms in 2012 infested with \textit{D. gallinae}, \textit{Salmonella} was found in three farms from different sites such as: feces and dust, feed and dust and in the last farm \textit{Salmonella} was found from dust and from the inner part of \textit{D. gallinae}. The results show for the first time the direct isolation of \textit{Salmonella} from \textit{D. gallinae} using the conventional method and the high occurrence of \textit{Salmonella} in association with \textit{D. gallinae}. Results of questionnaires indicate the association of poor bio-security level on farms and the occurrence of both \textit{Salmonella} and \textit{D. gallinae} and the misuse of drugs for \textit{D. gallinae} with long time of withdrawal and public health consequences.
SCIENCE BASED SOLUTIONS FOR BRUCELLOSIS SURVEILLANCE IN MEDITERRANEAN COUNTRIES

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Brucellosis is complex, multicentric and ever-changing disease of animals and humans. Increasing requirements on animal health, welfare and production amplify challenges and difficulties of brucellosis surveillance aiming to protect human and animal health, reduce production losses, or address consequent trade limitations. Brucellosis was formally established in Mediterranean and it is still priority issue of animal and human health in many Mediterranean countries, including Bosnia and Herzegovina (BiH), regardless of over century long control efforts.

Aim of this paper was to give overview of scientific approaches used as decision support tools in planning and evaluation of brucellosis surveillance programs through example of BiH. Since ruminant brucellosis is currently endemic in BiH, several research efforts were made to explain propagation of this disease in recent decades, despite ongoing surveillance activities.

Particular interest or researchers was to expand understanding of disease epidemiology, diagnostics and evaluation of different monitoring and control approaches. We reviewed used scientific methods, provided results, practical value of study findings and impact that they had on disease management. Since many countries in the region share same concerns as well as constrains in implementation of surveillance measures, we believe that our experiences could be helpful in recognition of most common pitfalls, as well as the most efficient and cost-effective solutions. Furthermore, for diseases such as brucellosis exploring, developing and applying methods that provide insight on disease occurrence and effects on multiple levels provides greater practical value than investigating only one aspect of disease.
PRESERVATION TECHNIQUES IN VETERINARY ANATOMY

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Many of the techniques used to preserve anatomical specimens for study have not been satisfactory for long-term study of and research on bones, organs and vessels. Over many years, we have developed various new techniques to prepare and preserve anatomical specimens for studying veterinary anatomy. These practical techniques preserve the specimens indefinitely, making them useful for long-term study and display in anatomy museums. We describe the different technologies used to prepare bones and hollow organs, including methods to protect the inner and outer surfaces of the organs. We also describe the techniques used to display blood and other vessels, and the plastination technology used to protect the different specimens. We discuss the value of these specimens for education and research and the significance of the anatomy museums in which they have been placed over the past several decades. Described methods and techniques are recommended for preparation and permanent preservation of different anatomical specimens. These methods, and the specimens made by them represents irreplaceable tool in educational and research process.
EFFECT OF GLAUCONITE ON THE METABOLISM OF SHEEP

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Glaukonite is a natural mineral and a relatively new type of the mineral raw materials. The mineral is used in more than 20 industries. However, we are interested in the properties of glauconite, useful for agriculture. The deposit of glauconite is Kyzyltokoi, which is located on the border between the Alabuka and the Chatkal regions of the Jalal-Abad district of Kyrgyzstan. Samples from this deposit were analyzed with a four wavelength-dispersive JEOL JXA-8800M electron-microprobe analyzer at the Department of Geoscience, University of Shimane and 32 samples of clay, glauconite and tripoli were analyzed at BRUKER S8 TIGER XRF instrument at the Department of Geology, University of Tromsø (Norway). The percentage of glauconite sample is shown in fig. 1. The content of \(\text{K}_2\text{O}\) in glauconite is relatively high with 7,8 %.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{082a_glauc.png}
\caption{Plot of oxide contents in glauconite.}
\end{figure}

As well as the other chemical analyzes which were performed in the Central Laboratory of the State Agency for Geology and Mineral Resources of the Kyrgyz Republic, in laboratories AlexStuart, Canada and X-ray analysis in the laboratory of the Institute of Geology (Almaty, Kazakhstan), yielded positive result.

For the purpose of experience in livestock, according to the decree of the Government of the Kyrgyz Republic № 142-r from 21.10.2010, the Kyrgyz Scientific Research Institute of Veterinary has got order to research the influence of glauconite on overall health of farm animals and animal immune reactivity.

By this research was indentified that the changes in body resistance of sheep appeared with synchronously increasing the dose and duration of use of glauconite. This creates the possibility of predicting the functional state of the organism to adjust its metabolism and immune reactivity.

The conclusions, based on experience:
1. The general condition of all experimental animals, which were treated by mineral fertilizer, was satisfactory, the deviations from the physiological parameters (temperature, pulse, respiration) were not observed.

2. Based on data from physiological, hematological, immunobiological studies the optimal dose of cottages glauconite is 300 mg per 1 kg of weight, the highest weight gain and stable positive dynamics of the content of red blood cells and hemoglobin in the blood were received in this group of animals.

3. The activity of immunoenzyme organism is activated and, the concentration of red blood cells, hemoglobin, and lysozyme activity of white blood cells are increased by this mineral supplement.

4. Positive impact of fertilizing with glauconite lets to recommend this mineral for introduction into production, which will help to increase animal productivity and improve the overall resistance of organism to adverse external factors.
SEASONAL VARIATIONS IN METABOLIC PROFILE OF CHIOS SHEEP

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We studied the effects of season on metabolic profiles of Chios sheep. Blood biochemical parameters in Chios sheep in one flock in the Pelagonia, region of R. of Macedonia were measured in both early winter and early summer seasons. Severe environmental low temperature and poor nutrition feeding management during the winter season caused metabolic distress during the late pregnancy and lambing in examined sheep. As known, fetal growth is intensive at the last few weeks of pregnancy, so energy requirements for gravid uterus caused high energy demands. Metabolic disorder in the late pregnancy in sheep, especially in sheep with two or more lambs, known as gravidity toxemia is usually caused by metabolic imbalance and environmental stress. Pregnant sheep exposed on very low environmental temperatures has high metabolic energy demands and adaptation of environmental conditions. In this condition sheep usually undergone of food deprivation and falling down in severe negative energy balance. Blood samples were taken from clinically sick breeding sheep during early winter season (n=8). Serum concentrations of glucose, betahyroxybutirate (BHBA), total protein, albumin, urea, creatinine, triglyceride and cholesterol as well as activity of AST and ALKP were determined. Biochemical serum parameters were determined in the same flock during early summer period, from non-breading sheep (n=8). Marked hypoglycemia was observed in sheep with gestational toxemia during winter period under severe environmental condition when alimentary energy recourses were restricted, while during the early summer period, obtained results for serum glucose concentration showed normoglycemia. There was significant difference (\(P<0.05\)) in glycemia between breeding (1.74 ± 0.12 mmol/L) and non-breeding sheep (2.96 ± 0.17 mmol/L). Insufficient carbohydrate energy cause subcutaneous and visceral fatty tissue brake down, so, energy stored in the molecules of free fatty acids couldn't be adequate used in Krebs cycle, because of lack oxalacetate, derived from glycogenic precursors. Significantly marked hyperketonemia (1.46 ± 0.08 mmol/L) was noticed in breeding but not in non-breeding sheep (0.69 ± 0.08 mmol/L). The difference in BHBA concentrations were significant between breeding and non-breeding sheep (\(P<0.05\)), Breading sheep during the winter period falling down in severe negative energy balance because of impossible frozen food consumption and restrictive diet. BHBA is indirect indicator of negative energy balance, but season variation during early summer period showed decrease serum concentration as a result of better energy supply. Marked high serum activity of AST (172.54 ± 21.31 U/L), show serious liver impairment and insufficient liver capacity to generate glyconeogenesis as a main metabolic pathway for maintaining energy supply during the late gestation and lambing, compared with non-breeding sheep (95.86 ± 8.04 U/L) (\(P<0.05\)). This energy critical period in the sheep is further complicated with low
environmental temperature and high metabolic energy demand. Variations in environmental conditions during early summer period reflect on energy metabolism, presented through biochemical parameters. Albuminemia was significantly higher during winter period in the breading sheep as the result of dehidratation, probably pseudohyperalbuminemia (41.30 ± 3.42 g/L) compared with non-breading sheep (32.05 ±1.03 g/L) (P<0.05). Serum concentration of total proteins (68.23 ± 1.42 g/L) shows significantly higher values in non-breading sheep during early summer period because of regular alimentary protein precursors supply, compared to underfed breading sheep (57.65 ± 1.77 g/L). There is no significantly difference between serum concentrations of urea, creatinine, cholesterol and ALKP in breading sheep during the winter period (4.44 ± 0.65 mmol/L; 118.06 ± 6.99 µmol/l; 1.86 ± 0.13 mmol/L, 175.85 ± 24.86 U/L, respectively), and non-breading sheep during the summer period (5.94 ± 0.57 mmol/L; 109.82 ± 7.39 µmol/l; 1.57 ± 0.13 mmol/L; 128.35 ± 10.31 U/L respectively), although serum concentrations of triglycerides (0.19 ± 0.04 mmol/L ) in breading sheep show mild decrease values, probably from reesterification of triglycerides in hepatocytes, but it is no statistically significant compared with non-breading sheep (0.27 ± 0.04 mmol/L). The sheep in critical stage of late pregnancy and lambing were in inadequate energy status during the winter period. Their metabolic pathway was not able to survive negative energy balance compared during early summer period which favorably affect energy status of the sheep.
EFFECT OF PROBIOTICS ON ENROFLOXACIN DISPOSITION IN GASTRO-INTESTINAL TRACT OF POULTRY

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The increasing problem with antibacterial resistance requires replacement of antibiotics and new approaches for health prevention and therapy. The probiotics are one of promising alternatives. Although in some bacterial diseases they are administered simultaneously but their effect on disposition of antibacterial agents is not studied. The aim of the present work was to investigate pharmacokinetics of enrofloxacin, administered alone or in combination with probiotics in Ross 308 broiler chickens.

120 one-day-old chicks were allocated into four groups: I\textsuperscript{st} control group (without treatment); II\textsuperscript{nd} group, treated with probiotics 5-th day after hatching for 15 days via feed; III\textsuperscript{rd} group - probiotics and enrofloxacin treated; IV\textsuperscript{th} enrofloxacin treated group. Probiotics strains (lyophilized \textit{L. brevis}, \textit{L. plantarum}, \textit{L. bulgaricus}) were administered, and the treatment with enrofloxacin (10 mg/kg via drinking water, 15 days after hatching and for 5 days). Concentrations of enrofloxacin in blood and tissue (liver, duodenum and jejunum) samples were analyzed by HPLC method. Pharmacokinetic parameters were calculated with software Phoenix 2.0 by naive pooling.

Absorption rate of constant of enrofloxacin in antibiotic treated group (0.17 h\textsuperscript{-1}) was lower if compared to enrofloxacin-probiotic treated animals (0.4 h\textsuperscript{-1}) and absorption half-life were 4.12 h and 1.73 h, respectively. A tendency to lower $C_{\text{max}}$ (0.94 $\mu$g/ml) and longer $T_{\text{max}}$ (7.99 h) was observed in enrofloxacin treated chickens. These values in enrofloxacin-probiotic treated chickens were 1.03 $\mu$g/ml and 5.28 h. An opposite tendency was found for ciprofloxacin. The elimination half-life (7.7 h) was shorter in the animals treated with antibiotic, only. Higher concentrations of enrofloxacin (C\textsubscript{max} 1.42 $\mu$g/ml in liver and C\textsubscript{max} 0.66 $\mu$g/ml in duodenum) and ciprofloxacin (C\textsubscript{max} 1.28 $\mu$g/ml in liver and C\textsubscript{max} 0.34 $\mu$g/ml in duodenum) were observed in enrofloxacin+probiotic treated chickens. These values in enrofloxacin treated group were 0.52 $\mu$g/ml and 0.48 $\mu$g/ml in liver and in duodenum, respectively, and for ciprofloxacin 0.56 $\mu$g/ml in liver and 0.26 $\mu$g/ml in duodenum. Similar values were found in the jejunum of both groups.

Probiotic treatment provokes a tendency toward faster absorption of enrofloxacin at higher concentrations, and slower conversion to ciprofloxacin. Its administration prolonged the elimination half life of the parent compound. Similar data were observed in the liver and the duodenum: simultaneous administration of probiotics and enrofloxacin resulted in higher concentrations of enrofloxacin and its active metabolite which can lead to favorable results in the cure of bacterial diseases of the gastrointestinal tract of poultry.
PHARMACOKINETICS OF ENROFLOXACIN IN DUCKS WITH STEATOSIS AFTER FORCE-FEEDING

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The aim of the paper was to investigate the enrofloxacin and its main metabolite ciprofloxacin behaviour in force-fed ducks.

The pharmacokinetics of enrofloxacin was investigated in force-fed ducks after single intravenously (i.v.) and oral (p.o.) administration at a dose of 10 mg kg⁻¹ body weight. Concentrations of the drug and its metabolite ciprofloxacin in serum were determined by high-performance liquid chromatography. The values of the pharmacokinetic parameter after both application roads were calculated on the base of one- or two-compartment model. The data were compared to respective of normally fed ducks treated by the same way and dose.

The elimination half-lives after i.v. injection were 5.54 ± 2.5 h and 7.65 ± 2.95 h in normal and force fed ducks respectively. Total body clearance values were 229.8 ± 29.6 mL/h/kg and 176.19 ± 20.2 mL/h/kg. The values of the volume of distribution (Vss) were respectively 1271.9 ± 145.7 L/kg and 1436.1 ± 211.4 L/kg. After oral administration maximum serum concentrations were 1.79 ± 0.17 µg/mL, and 4.25 ± 1.21 µg/mL respectively reached at 3 h and 1.25 ± 0.88 h. The oral bioavailability was 53.3% and 53%. The serum concentrations of ciprofloxacin as metabolite were not significantly different.

The force-fed ducks distribute better enrofloxacin in the organism compared to normal ducks and eliminate it slower than normally fed. The differences mentioned could be a reason for longer enrofloxacin retention in force-fed ducks compared to normal. The force-feeding does not affect the oral enrofloxacin bioavailability.
ECHINOCOCCUS GRANULOSUS AND INTESTINAL HELMINTHES OF DOGS IN REPUBLIC OF KOSOVO

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During the period from 1 January up to 30 April 2012 were collected and analyzed 405 dog fecal samples for the presence of *Echinococcus granulosus* and other intestinal helminthes from 3 regions in Kosovo, namely Prishtina, Prizren and Gjilan. The samples were collected from different category of dogs (sheepdogs, hunting dogs, pet dogs and stray dogs). Using the flotation-ovassay technique, taeniid eggs were found in 32/405 (7.90%) out of a total of 405 dogs (taeniid eggs and eggs of *Echinococcus sp.* are morphologically indistinguishable under a binocular microscope). Eggs from other helminthes were detected as well: hookworms 129/405 (31.85%), *Trichuris* sp. 103/405 (25.43%), *Toxocara* sp. 62/405 (15.30%), *Toxascaris leonine* 15/40 (3.70%) and *Dipylidium caninum* 3/405 (0.74%). In 32/405 samples with taeniid eggs the flotation/sieving method were performed for the isolation of eggs and their DNA extraction. Using the PCR specific primers for *E. granulosus* – sheep strain „G1“, 8/405 (2%) of samples resulted positive. In the region of Prishtina from 146 samples were found 4 samples with *Taenia sp.* (2.73%) and 2 samples with *E. granulosus* (1.36%). The origin of these samples was from sheepdogs, hunting dogs, pet dogs and stray dogs. In the region of Prizren from 206 samples were found 16 samples with *Taenia sp.* (7.76%), 1 sample with *E. granulosus* (0.48%) and 4 samples resulted as a mixed infection *Taenia sp.* and *E. granulosus* (1.94%). The origin of these samples was mostly from sheepdogs and pet dogs. In the region of Gjilan from 53 samples were found 4 samples with *Taenia sp.* (7.54%) and 1 with mixed infection *Taenia sp.* and *E. granulosus* (1.88%). The origin of these samples was from sheepdogs, pet dogs and stray dogs. This study is important for the public health and veterinary institutions on estimation of prevalence and risk assessment of zoonotic diseases transmitted from dogs in Kosovo, where cystic echinococcosis, cenurosis and toxocarosis is a significant problem for humans and animals.
IMPACT OF ECHINOCOCCOSIS ON QUALITY OF CATTLE MEAT IN THE SOUTH EASTERN KAZAKHSTAN

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There was established that in markets of the south-east Kazakhstan the average contamination of cattle by Echinococcus granulosus is 4.1% with localization of cysts in livers and lungs. The amount of protein, fat and energetical value of meat of infected by echinococcosis animals considerably decreased. Besides in the muscle tissue of such animals there was a substantial increase of humidity and amount of ash as well as qualitative and quantitative changes of the amino acids profile. Along with damage to the synthesis of proteins and sharp insufficiency of vitamins A, E, B1, and B2 there was a shift in a lipidic exchange that was expressed as a noticeable reduction in the level of monounsaturated and polyunsaturated fatty acids. Thus, the meat from infected with echinococcosis cattle is an inferior quality and quantity compared to that of healthy animals.
DAIRY COW LAMENESS – PERCEPTION AND CHALLENGES

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Globalization of the milk market increases the competition among producers. This will ultimately lead to lower prices for raw milk and therefore farmers must continually strive for increased efficiency in order to maintain feasible production. On the other hand, consumers expect dairy products to be produced under conditions that ensure good animal welfare, i.e., ones that allow dairy cows to behave in a natural way and to be free from pain and suffering. From that point of view, claw disorders and lameness represent serious welfare problems for dairy cattle in terms of pain, discomfort and restricted behavior.

Lameness is unfortunately still not recognized as a major problem by most of the farmers. Though farmers estimate that 5% to 10% of their dairy cows suffer from lameness, the average is actually closer to 25-30% of the herd. In most cases it is a silent problem that constantly decreases farmers’ profits through reduced milk production, fertility, and body condition as well as the costs of veterinary treatments and extra labor, with cost estimates varying around €200 per affected cow.

The greatest incidence of lameness involves rear feet, particularly the claws and the surrounding skin. The most frequent causes of lameness are: laminitis, sole ulcer, digital dermatitis, white line disruption and to less extent foot rot.

Nutrition and feeding, genetic influence and management represent predisposing factors for development of lameness. Farm critical points e.g., housing, hygiene and comfort could alter the behavior of the dairy cows exposing the claws to the “unfriendly” environment that eventually leads to lameness. An improvement of these factors represents a bottleneck for managing animal health and welfare as well as for profitable milk production, thus deserves more attention than given by all involved “players” in the process.

Finally, as modern milk production inevitably demands massive herd enlargement in order to maintain profitable production, less attention will be paid on the individual animal and the herd will be in the center of the health and production management systems.
EFFECT OF XYLASINE-KETAMINE ANESTHESIA ON BLOOD ACTH, CORTISOL, ADRENALINE, INSULIN AND GLUCOSE IN OVARIOHYSTERECTOMIZED CATS

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A study has been carried out with fourteen healthy mature cats in order to determine the effect of xylazine-ketamine anesthetic protocol (group X/K) on the concentrations of blood adrenaline, adrenocorticotrophic hormone (ACTH), cortisol, linsulin and glucose in compare with control group (group K - without anesthesia and surgery). The animals were randomly allocated in two groups (n=7). The premedication in the experimental group was made with xylazine 2 mg/kg intramuscularly. Induction and maintenance of anesthesia were made with ketamine 10 mg/kg intramuscularly. Ovariohysterectomy was performed upon occurrence of deep anesthesia. Blood specimens were obtained at 0, 30, 60, 120 min and 24 h from the animals of two groups.

Pronounced decrease in blood ACTH, cortisol, and adrenaline in group X/K was determined 30th min. Significant hyperglycemia together with hyperinsulinemia in group X/K groups was established at the 120th min from the beginning of the anesthesia.

Anesthesia with xylazine and ketamine led to reduction of the stress hormones immediately after beginning of anesthesia and causes remarcable hyperglycemia with hyperinsulinemia.
RESEARCH ON CONTRIBUTING FACTORS TO THE DISPLACEMENT OF ABOMASUM IN DAIRY CATTLE FARMS IN KOSOVO

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Displacement of abomasum is a new problem in commercial dairy farms in Kosovo, especially in imported high milk production cows. Contributing factors differ and depend a lot on the way, how the dairy farms are managed. The aim of this study is identification of factors that contribute the occurrence of displacement of abomasum in dairy farms in Kosovo. In the period 2011-2013, a research study were conducted in 30 dairy cattle farms with cows of the Hollstein breed, to identify the factors that contribute to this pathology. In 11 of these farms, 38 cases of displacement of abomasum were found. The diagnosis of the disease was performed through auscultation/percussion in the area of last ribs and finding of the ping sound. There were 8 cases in two farms with 120 (6.6%) and 90 (8.8%) cows, 7 cases in one farm with 60 cows (11.6%), 3 cases each in two farms with 38 and 22 cows (7.8% and 13.6%, respectively), 2 cases each in three farms with 45, 24 and 17 cows (4%, 8.3% and 11.7%, respectively), and 1 case each in three farms with 27, 19 and 12 cows (3.7%, 5.2% and 8.3%, respectively). 35 cases were found in the first month post partum, while 3 cases in the last month of gravidity (right displacement of abomasum - RDA). Out of 38 cases, 7 (18.4%) were right displacement of abomasum (RDA), while 31 (81.85%) were left displacement of abomasum (LDA). The data on feeding rations were collected through a questionnaire, while AgriNIR™ Analyser was used to analyze the forage feed (hay, corn silage, grass silage, clover). Based on the questionnaires and feed analysis, the results suggest that improper feeding in farms during drying period and in the post-natal phase with concentrated feed and low quality forage feed can contribute on occurrence of displacement of abomasum. This study provides a good basis to prevent displacement of abomasum in order to reduce production and economic losses in farm, as well as to inform veterinarians and farmers with this new problem in Kosovo dairy farms.
POLYCYTHEMIA VERA IN A CAT

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Polycythemia vera (PV) characterized with excessive red blood cell production in the bone marrow, normal/decreased level of hemoglobin and increased level of hematocrit is a very rarely seen disorder in cats. By detailed examination and analysis, PV was diagnosed in 3 year old female mix breed cat which was brought to Veterinary teaching and research hospital of Istanbul University with complaints of epileptic seizure and apparent conjunctival hyperemia. No abnormal finding was gained by neurological examination. In physical examination, severe dehydration and apparent hyperemia was found in mucous membranes. In total blood count, increase in red blood cells (RBC:19.81x10\textsuperscript{3} µL), hemoglobin concentration (HGB:26g/dl) and hematocrit level (PCV: %80) were determined. Essential radiographic and ultrasonographic examinations were performed in order to distinguish PV from secondary polycthemia and no abnormal finding was detected. The most considerable sign of PV with decreased level of serum erythropoetine was also detected in our case (0.5 mIU/L). No malignancy was found in blood cytology. Erythrocyte cell hyperplasia was diagnosed in the microscobic examination of bone marrow smear. 12.2 mg/kg hydroxiurea (HYDREA\textsuperscript{®} / Bristol Meyers) and for getting seizures under control, 20 ml/kg phenobarbital (Lumineletten\textsuperscript{®} / Bayer) were prescribed and periodic phlebotomy (20 ml/gk) was suggested. This case was found worthy to be presented, as PV in cats is a very rare situation with limited case reports known.
COLOR FLOW AND CONTINUOUS-WAVE (CW) DOPPLER ECHOCARDIOGRAPHY IN HEALTHY WARMBLOOD HORSES

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Over the last 35 years the echocardiography has become an extremely valuable and standard diagnostic method in horses. The Doppler echocardiography combined with continuous-wave (CW) Doppler modes creates a unique chance to assess blood flow characteristics in the equine heart and to set a specific cardiac diagnose. These two methods bring to examiner important information about the character (laminar or turbulent), direction and velocity of the blood flow in the zone of interests. In now days is well established that valvular regurgitations are often recognized in Thoroughbred and Standardbred (Blissitt and Bonagura, 1995; Marr and Reef, 1995; Young et al., 2008). The regurgitant jets which occupied a small area behind the valves possessed a low speed and are not accompanied by cardiac murmurs and signs of cardiovascular diseases are considered to be physiological (Nakayama, 1994; Adin and McCloy, 2005). The present study aimed to explore the spreading of physiologic regurgitations in healthy warmblood horses.

In the present study are included 10 warmblood horses: 3 mares, 4 stallions, 3 geldings, aging from 4 years to 15 years. The body weight varied between 498 kg and 580 kg. All of horses were proven to be clinically healthy, with good performance and did not show any signs of cardiovascular disease (normal heart rate and breathing frequency, pink mucous membranes, normal CRT, no edemas).

The investigation was performed using ultrasonographic equipment S6V (SonoScape Ltd) and low frequency (2.0 – 4.0 MHz) linear microconvex transducer “C 311” with a maximal penetration of 30 cm. Simultaneously with echography an ECG for exact timing of the images was performed using apex/base lead. Standardized image planes were obtained as described previously (Reef, 1998; Schwarzwald, 2004). To assure an accurate estimation of flow velocities the maximal angle between ultrasound beam and blood flow did not exceed 20°.

The results from investigation in the present study are included in Table 1.

<table>
<thead>
<tr>
<th>regurgitation</th>
<th>aortic</th>
<th>pulmonic</th>
<th>mitral</th>
<th>tricuspid</th>
</tr>
</thead>
<tbody>
<tr>
<td>horses (n)</td>
<td>7</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>jet speed mean, SD (m/s)</td>
<td>0.91±0.2</td>
<td>0.35±0.07</td>
<td>0.86±0.12</td>
<td>0.66±0.15</td>
</tr>
</tbody>
</table>

Color flow Doppler and Continuous-wave – mode echocardiography are very sensitive and valuable diagnostic methods in horse cardiology. They allow discovering of regurgitant jets in obviously healthy warmblood horses. The distribution of jet localization is similar to those in other breeds.
EVALUATION OF BCL-2, BCL-XL, AND BAX EXPRESSION AND APOPTOTIC INDEX IN CANINE MAMMARY TUMOURS

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Dysregulation of programmed cell death mechanisms plays an important role in the pathogenesis and progression of mammary gland tumours. The aim of this study was to investigate the relationship between some anti-apoptotic proteins (Bcl-2, Bcl-X\textsubscript{L} and Bax), apoptotic index (AI) and histopathological diagnosis, tumour grading, tumour staging and survival time of canine mammary tumours (CMT). Twenty seven tissue samples were collected from twenty seven animals with mammary tumours. The samples were evaluated and graded histopathologically. All cases were staged according to the TNM system. The expression of Bcl-2, Bcl-X\textsubscript{L} and Bax proteins was investigated using indirect immunoperoxidase test and apoptosis was evaluated using terminal deoxynucleotidyltransferase (TdT)-mediated nick end-labelling (TUNEL) technique. Follow-up examination and survival estimation analysis were performed. While there was a significant statistical relation between Bcl-2 expression and histopathological diagnosis (P<0.005), there was no considerable association between histopathological diagnosis and Bax, Bcl-X\textsubscript{L} and AI (P>0.05). The differences between T1 and T5, T2 and T5 stages were statistically significant in terms of Bax expression (P<0.05), and Bax expressions were higher in T5 when compared with T1 or T2. No association between survival time and Bcl-2, Bax, Bcl-X\textsubscript{L} and AI was determined (P>0.05). Bcl-2 was overexpressed in highly malignant tumours such as solid and tubulopapillary adenocarcinomas and Bax had high expression levels in metastatic tumours. As a result, it is concluded that Bcl-2 and Bax expression can be accessory parameters for anticipating the biologic behaviour and prognosis of CMT but these markers alone are not sufficient for the determination of survival time.
AN INVESTIGATION ON GENERAL HYGIENE STATUS OF AIR IN DOMESTIC REFRIGERATORS

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Microorganisms in the environment represent a hidden and dangerous risk factor. Air is an important vehicle for the dissemination of bacterial contamination within many food processing environments. Inadequate domestic refrigeration or cooling is frequently cited as a possible factor in food poisoning incidents. It is clear from the many published surveys that many refrigerators throughout the world are running at higher than recommended temperatures. In this study, it was aimed to determine the general hygiene tendency of different residential areas.

Samples were chosen according to student resident group (n=30) and household residents group (n=22). The group of student was categorised to be male and female resident group in its own. For this purpose active air sampler (Biomerieux, air IDEAL LCB, La Salle F-71260) was used, that measure 190 liter volume of air, and then blown on to different mediums. Air sampler were positioned in the middle shelf of the refrigerator. Total mesophilic aerobic count, psicrophil aerobic count, Pseudomonas, yeast and mould, Enterobacteriaceae and Escherichia coli were analyzed. Temperature sensors were positioned in the middle shelf of the refrigerator. For this purpose household thermometers were used. In the study, the data obtained between the groups was evaluated with Mann-Whitney U test. The relationship between each of the data was evaluated with the Pearson's correlation test (SPSS 19.0). Data of the study was presented as medians and the P<0.05 value was adopted as statistical significance limit.

In our study temperature values inside refrigerators 88.7% of a total of 52 fridges surveyed were running above 5 °C. Refrigerator temperatures in household residents were lower than male and female students (P<0.05). Total mesophilic aerobic count in household resident were observed lower than male students (P<0.05) but there was no differences between female student and household resident (P>0.05). There were no differences between other microorganism groups. In addition, a positive correlation was observed between E. coli and TMA counts (P<0.001), Enterobacteriaceae (P<0.006).

It is thought that there is an important relationship over the role of inadequate temperature control and the number of general bacterial count which recognized as the hygienic condition. It is recommended that an effectual cleaning would be advisable in sufficient time intervals for refrigerator hygiene.
IMPORTANCE OF ORGANIC FOOD PRODUCTION FOR BOSNIA AND HERZEGOVINA

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Organic agriculture movement was established in 1940 as a response to the agriculture industrialization known as a Green Revolution. The EU adopted Regulation EEC 2092/91 on organic farming, whereas activities on the development of these works in Bosnia and Herzegovina started from 1996. The first certification organization in B&H was established in 2004 named "ORGANIC CONTROL". The aim of this organization was to develop a certification program based on international IFOAM (International Federation of Organic Agriculture Movements) standards for organic agriculture and processing.

In EU countries the production and consumption of organic food increased three times. Consumers are buying organic food for health reasons (46%) and better taste (40%) compared to conventional.

Bosnia and Herzegovina owns significant resources for successful production of organic food. In addition to this, Bosnia and Herzegovina could become a major producer of organic food and thus provide a safe and hygienic food for both domestic and foreign markets. This has multiple effects, economic as well as health ones, and these are primarily related to more successful economic development of the country and a social security of citizens.
ANTIMICROBIAL EFFECT OF OREGANO ESSENTIAL OIL AGAINST VIBRIO PARAHAEOMOLYTICUS ON MUSSELS (MYTILUS GALLOPROVINCIALIS) DURING REFRIGERATED STORAGE

Lefteris Triantafyllou, Nikolaos Solomakos, Andreana Pexara, Alexander Govaris

Vibrio parahaemolyticus is the leading cause of seafood-associated bacterial gastroenteritis worldwide. Mussels that are frequently consumed raw or undercooked, can serve as carriers of the pathogen. The essential oil (EO) of oregano (Origanum vulgare spp. hirtum) is well known for its antimicrobial activity against a broad spectrum of foodborne pathogenic bacteria. Little information exists on the antimicrobial efficiency of oregano EO against V. parahaemolyticus. The aim of this work was to evaluate the antimicrobial effect of oregano EO against V. parahaemolyticus in vitro as well as in mussels (Mytilus galloprovincialis) during refrigerated storage.

The antimicrobial effect of oregano EO at 0.2%, 0.4%, 0.6% or 0.8% against V. parahaemolyticus was examined in Tryptic Soy Broth (TSB) supplemented with NaCl 2% during incubation at 37 °C for 32 h. Mussels (M. galloprovincialis) were transferred to the laboratory under refrigeration, their shells were removed and mussels were washed. Then all mussels were exposed to ultraviolet light for 15 min to reduce background flora, inoculated with V. parahaemolyticus (ca 10⁴ cfu/g) and packed aerobically with the addition of oregano EO at 0.2% (MUEO) or without the addition of the essential oil (MUCON). Preliminary tests showed that mussels with the addition of the oregano EO up to 0.2% were organoleptically acceptable. All samples were stored at 4 °C for 14 days.

Oregano EO at all supplementation levels presented an inhibitory effect against the pathogen in TSB. Microbiological analysis of mussels showed that populations of the pathogen in MUCON samples were decreased to 3.4 log cfu/g at the end of refrigerated storage. Treatment of mussels with oregano EO at 0.2% (MUEO) exhibited a strong antibacterial activity against V. parahaemolyticus since no viable cells of the pathogen was recorded from 2nd day and up to the end of storage at 4 °C. In conclusion, the results of this study show that treatment of mussels with oregano EO at 0.2% is an efficient means for inhibiting V. parahaemolyticus in mussels during refrigerated storage.
**SALMONELLA LEVELS IN BROILER SPLEENS AND GROUND CHICKEN**

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According to 2012 USDA-FSIS data, the prevalence of *Salmonella* in ground chicken (28%) was significantly higher compared to that on post-chilled broiler carcasses (4.3%). *Salmonella* can be internalized into chicken internal organs, such as spleens. The grinding and mixing of *Salmonella* contaminated chicken parts can lead to cross contamination of ground chicken product.

We hypothesized that the presence and numbers of *Salmonella* in spleen may indicate highly contaminated flocks and consequently higher levels of ground chicken contamination. The objective of this study is to determine *Salmonella* levels (presence and numbers) in broiler spleens as predictor for *Salmonella* contamination levels in ground chicken.

In cooperation with a broiler processing plant, 10 composite spleen samples (after USDA inspection and evisceration) and ten 25g grab samples of ground chicken samples were collected per flock. The spleen outside surface was sterilized via dipping in boiling water prior *Salmonella* testing. Ground chicken samples were tested for *Salmonella* (presence and numbers) following the USDA-FSIS methods.

Two-hundred and sixty spleen composite samples and 260 ground chicken samples were collected and tested for *Salmonella*. Overall, 6.9% of spleen samples were *Salmonella* positive with a mean (log10 MPN/sample) of 0.94 (95% CI: 0.77-1.1); whereas 15.4% of ground chicken samples were *Salmonella* positive with a mean (log10 MPN/sample) of 0.89 (95% CI: 0.71-1.06).

*Salmonella* is present at a significant level in spleen indicating pathogen internalization in broilers. *Salmonella* prevalence and numbers in ground chicken were highly variable and did not correlate with the pathogen levels in spleen. This study will be helpful to identify intervention opportunities to reduce *Salmonella* prevalence in ground chicken products.
ISOLATION AND ANTIMICROBIAL ACTIVITY OF SOME STRAINS OF ENTEROCOCCI FROM ARTISANAL WHITE BRINED CHEESE IN REPUBLIC OF MACEDONIA

Sandra Mojsova, Pavle Sekulovski, Dean Jankulovski, Ljupco Angelovski, Marija Ratkova, Mirko Prodanov, Jovanka Gavrilova

University “Ss. Cyril and Methodius “Faculty of Veterinary Medicine”-Skopje Food Institute

The biopreservation of foods using bacteriocinogenic bacteria isolated directly from foods is an innovative approach. Our traditional white brined cheese offers a remarkable reservoir of “natural” microbes, including enterococci. The objectives of this study were to isolate and identify bacteriocinogenic enterococci from our traditional cheeses because they are part of the common microflora. The material of investigation was consisted of samples of fresh ripened cheese and mature cheese. A collection of 62 enterococcal isolates from artisanal white brined ewe’s milk cheese obtained from different regions of Macedonia were tested for antimicrobial activity. Enterococci were isolated on Kanamycin esculin azide agar and after identified at species level with Vi
tek 2. The isolates were tested for their sensitivity against antibiotics especially vancomycin. No one of the isolated enterococci was vancomycin resistant. We isolated 6 species of enterococcus: E. durans, E. faecium, E. faecalis, E. hirae, E. gallinarum and E. casseliflavus. The most frequently isolated were E. durans, E. faecium and E. faecalis. The isolates were screened for their antimicrobial activity against some Gram-positive and Gram-negative food-borne pathogens. The strains have showed a broad activity spectrum, mostly inhibiting the growth of L. monocytogenes, L. innocua and B. cereus. The use of bacteriocin-producing enterococci as starter culture in cheese production may prevent spoilage and growth of pathogens as well they can also serve as an anti–Listeria factor. Enterococci producing bacteriocins can be used as an protective cultures in the production of various foods.
EFFECT OF OREGANO ESSENTIAL OIL ON MUSSELS (MYTILUS GALLOPROVINCIALIS) DURING REFRIGERATED STORAGE

Lefteris Triantafyllou\textsuperscript{a}, Nikolaos Solomakos\textsuperscript{b}, Andreana Pexara\textsuperscript{b}, Alexander Govaris\textsuperscript{c}

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Aquaculture production of mussels has been increased significantly in Mediterranean countries due to their excellent nutritional value and relatively low cost. Mussels are marketed mainly as raw or unshelled refrigerated products. They have a limited shelf-life of no longer than 6-7 days under refrigerated storage and additional preservation methods have been investigated for the extension of mussels’ shelf-life. Oregano essential oil (EO) possesses strong antimicrobial and antioxidant properties and has been thoroughly studied to extend the shelf-life in a variety of foods.

The aim of this work was to study the effect of oregano essential oil in the shelf-life of mussels during refrigerated storage.

Aquaculture mussels (Mytilus galloprovincialis) were transferred to the laboratory under refrigeration, their shells were removed and mussels were washed. Then mussels were packed aerobically with the addition of oregano EO at 0.1%, 0.2% and 0.3% or without the addition of the essential oil (MUCON) and were stored at 4 °C. Initially, the organoleptic effect of the addition of oregano EO was evaluated and results showed that mussels with the addition of the oregano EO up to 0.2% (MUEO group) were organoleptically acceptable. The microbiological analysis for Total Viable Count (TVC), psychrophilic bacteria, Lactic Acid Bacteria (LAB) and Enterobacteriaceae of MUEO and CON groups was made at 2 days intervals up to the end of storage.

Sensory evaluation (odor, flavor and overall acceptability) showed that MUCON group samples remained acceptable up to the 6\textsuperscript{th} day of storage. Mussels of MUEO group were organoleptically acceptable up to the 12\textsuperscript{th} day of refrigerated storage. Microbiological analysis showed that MUEO samples yielded significantly lower (P<0.05) microbial populations than the MUCON samples of TVC counts, psychrophilic bacteria counts and Enterobacteriaceae from the 2\textsuperscript{nd} day and throughout storage, as well as for LAB the 6\textsuperscript{th} and 8\textsuperscript{th} day of storage at 4 °C.
HISTOLOGICAL ANALYSIS OF EQUINE PLACENTA

Anna Potapova

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The abstract brings out the histological method of prediction of the reproductive ability in mares. The research was performed in 30 mares. Samples of placenta tissue were taken after parturition and stained with routine methods. In result, the placenta and problems with reproductive health have a strong correlation.

Successful pregnancy can be determined by the presence of qualitative placentation. There are two types of placental structure which are detected in the third trimester - the immature structure (on the 250th – 330th days of gestation) and the mature structure (not long before parturition). The last one is presented after parturition as the evidence of antenatal well-being of fetus. Any structural changes can be interpreted as appearances of placental insufficiency. Thus, if disorders of metabolism exist, the regular process of change in equine placenta does not end by the parturition, which can be estimated in a histological analysis. The analysis shows the vascular-stromal ratio and the characteristic syncytiotrophoblast in the mature equine placenta.

We examined 30 mares that were randomly selected from the same stable. The method of the histological analysis implies the postpartum investigation procedure of fetus part of placentae. It is informative to stain placenta tissues with routine hematoxylin and eosin as well as Van Gieson’s stain and Pas-reaction. Basic indications of placental well-being are: 1) plenty of functional blood vessels in villi without over-dilatation and diapedesis; 2) presence of trophoblast knots, which is surrounded by big oblong syncytium cells; 3) absence of glycogen and glycoprotein infiltration; 4) lack of loose connective tissue. Some factors can influence the reliability of the diagnostic. It is necessary to sample plenty of tissues from fresh placenta and to use quality reagents, especially the preservative solution. Delivery injuries complicate the diagnostic as well as cases of retained placenta.

A close relationship exists between the innate predisposition to placentation disorders and recurrent abortions. It is not desirable to use mares in breeding, showing more than two placental insufficiencies in row. On the other hand, reasons for placental insufficiency can be poor conditions of environment and disruptions of feeding or overuse.

Understanding the interaction between the placenta structure and abortion manifestations will help us unravel the placentae mechanisms responsible for maintaining the health of fetus. It will also provide an opportunity to investigate new ways of abortion prevention in mares.
EVALUATION OF PREGNANCY IN QUEEN BY DOPPLER ULTRASONOGRAPHY

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Ultrasonography is a non-invasive technique which enables an accurate diagnosis of pregnancy and allows serial evaluation of the developing embryo/foetus and the extrafoetal structures. The doppler examination provides real time and functional information such as blood velocity, blood direction and blood type. Therefore, the doppler ultrasonography is helpful in studying maternal and foetal hemodynamics by investigating the most common vessels such as the uteroplacental arteries (UPA), the umbilical cord (UMB), the aorta (FA) and the caudal cava vein of the foetus (CVC). The colour doppler is used to visualize the vessels and afterwards the pulsed wave (PW) doppler is employed to measure the principal blood flow parameters such as systolic peak velocity (SPV), end diastolic velocity (EDV), pulsatility index (PI) and resistance index (RI).

10 pregnant queens which were between 2-5 years old and 3-5 kg in weight, were included in this study. The queens which the last day of mating being considered as the first day of pregnancy were evaluated on once every three days between 21st and 60th days. Blood flows of uteroplacental artery (UPA), umbilical artery (UMB), fetal caudal vena cava (CVC) and fetal aorta (AA) were evaluated by pulsatility index (PI) and resistance index (RI) parameters.

While PI and RI values of UPA were decreased throughout the pregnancy, mean PI value of the 60th day was significantly lower than the values of the first five (days 21, 24, 27, 30, 33) and mean RI value of the 60th day was significantly lower than the values of the first six (days 21, 24, 27, 30, 33, 36) (P<0.05). While PI and RI values for UMB were decreased respectively after the 42nd and 36th day of pregnancy, last two value of both PI and RI (day 57 and 60) were significantly lower (P<0.05) than all others. PI values for CVC were relatively stable throughout the pregnancy, but differences between the first four values (days 21, 24, 27, 30) and the last four values (days 51, 54, 57, 60) and differences between 45th day value and the first seven values (days 21, 24, 27, 30, 33, 36, 39) were statistically significant (P<0.05). RI values for CVC showed irregular fluctuations throughout the pregnancy. While PI values for AA were relatively stable throughout the pregnancy, 42nd day value was significantly higher (P<0.05) than the values of days 21, 24 and 33. RI values for AA were decreased after day 39 of pregnancy. Determination of the characteristics of the parameters belonging to the fetal and maternal blood flows can give an idea for progression of the gestation and approaching time of birth.
PREVENTIVE MEASURES OF OBSTETRIC PATHOLOGY IN HIGH-PRODUCTIVE COWS BY USING BETA-CAROTENE IN DURING DRY STABLE PERIOD

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This abstract includes the research information about some characteristic during dry period in cows at the end of the stall period in Leningrad region and research results to the use of synthetic beta-carotene in the preventive purpose of obstetric pathology.

The reproduction efficiency of high-productive cows depends on quality of feeding and their metabolism. Cow’s dry period is one of the complexes of productive periods which require additional preventive measure at the end of the stall period. The stall period brings out a lot of stress factors such as lack of vitamins, macro- and micronutrients in fodder, includes beta-carotene which plays the great value for cow’s metabolism. The "Carofertin" is injections drug based on the synthetic beta-carotene. This drug affects on the organism in two directions. Firstly, the synthetic beta-carotene transforms into vitamin A and then this vitamin A affects to the reproduction system. Secondly, the synthetic beta-carotene has antioxidant activity, adaptogenic effects, antimutegenic and immunomodulation effects. Carotenoids have two characteristic such as easy stereoisomerisation and a lot of unsaturated conjugate dual links. This fact explains the reason of easy oxidability of carotene and the reason of the lack of this stuff in the feed. On the other hand, it explains the reason of good electron-donor / electron-acceptor carotene characteristics. If cows fodder includes sufficient quantity of vitamin A, beta-carotene improves reproductive qualities of cows. Carotene will play the impotent role in the processes of reproduction. It cannot be fully replaced with Vitamin A.

The clinical study was carried out in ZAO “Luban” Ltd, Russia. The aim of this study was to investigate the benefits of the use of "Carofertin" for the preventive purpose of obstetric pathology in high-productive cows. There were 69 cows of black-and-white breed whose were selected for farm scale trial. Experimental cows were adult animals whose had pathology of reproductive tract after last parturition. Tests animals were divided into 3 experimental groups of 23 heads. In the first group, four parenteral "Carofertin" injections were used every 10 days during the dry stable period (dose per cow was 25 ml). In the second group three parenteral injections of vitamin A were used every 5 days during the dry stable period (dose per cow was 5 ml). The cows of third group were without medical treatment. The complex of clinical examinees methods were used for the definition of the status of tests animals.

Prophylactic effectiveness of "Carofertin" was defined for prevention of obstetric pathology of high-productive cows whose were predisposed to diseases of parturient and postnatal periods. The puerperal period, the presence of retention placenta, the presence of the uterus subinvolution, the incidence of acute puerperal endometritis were estimated. The puerperal period lasted 5.0±2.37 hours in the first group, 8.6±3.0 hours in the second group and 9.6±4.32 hours in the third group (P<0.01). The incidence of retention placenta was 21.7±0.4% in the first group, 43.5±0.41% in the second group and 65.2±0.38% in the third group (P<0.01). The incidence of uterus subinvolution was 13.0±0.34% in the first group, 43.48±0.5% in the second group and 56.5±0.49% in the third group (P<0.001). The
incidence of acute puerperal endometritis was 26.0±0.44% in the first group, 34.78±0.49% in the second group and 52.0±0.49% in the third group (P<0.001).

The level of blood carotene was increased by 4.6 times in the first group and by 1.5 times in the third group (P<0.001). The level of blood retinol was increased by 2 times in the first group and by 1.5 times in the third group (P<0.05). "Carofertin" influences to stabilization of calcium-phosphorus ratio. This process was obtained by increasing of the level of calcium by the 1.8 times and reducing of the phosphorus levels by 1.15 times (P<0.001).

A long service period induces to loss from the economic point. On the other hand, too short calving interval of high productivity causes of the reducing of the lactation period. The average rate of the service period was 110±4.66 days in the first group, 154.6±5.5 days in the second group and 189±9.4 days in the third group (P<0.01).

In the results the rate of fertility was 68±0.46% from the first insemination in the first group, 52.17±0.49% in the second group and 47.83±0.5% in the third group (P<0.01). The method of single-time insemination was used in ZAO “Luban”. The expenses payback of this methodological approach was 15.4 rouble per one paid rouble.

The necessity of application of the "Carofertin" in cows during dry period has been considered in the article. The purpose of application is to complete the needs of blood carotene, to normalize the exchange processes in an organism; to maintenance the most physiologic course of the parturition and postnatal period and to stabilized the industrial parameters.
EVALUATION OF FOLLICULAR DEVELOPMENT BY GROWTH FACTORS AND HORMONE CONCENTRATIONS DURING BREEDING SEASON IN MARES

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Gonadotropins, as well as steroids, growth factors, other peptidergic factors play important roles in local, paracrine, autocrine manner during folliculogenesis. There is insufficient information about follicular fluid composition, physiological modulators involved in follicular development and maturation in mares. The aim of the study was to investigate the follicular and luteal phase concentrations of hormone and growth factors in follicular fluid and blood serum collected during breeding season in mares, and to reveal their effects in various stages of follicular development.

Transvaginal ultrasound-guided follicular aspirations were performed from preovulatory follicle (POF) and a subordinate follicle (SOF) during follicular phase, and from any follicle in the same ovary (luteal phase follicle, LPF) during luteal phase of mares (n=25), also blood samples were collected. Follicular fluid estradiol, progesterone, anti-Müllerian hormone (AMH), insulin-like growth factor-1 (IGF-1), inhibin-A, inhibin-B, vascular endotelial growth factor (VEGF), and blood serum estradiol, progesterone, AMH were studied.

High SOF progesterone concentrations showed significant differences (P<0.001) from POF and LPF concentrations. POF AMH concentrations declined significantly (P<0.001), blood serum AMH concentrations were observed higher in follicular phase than luteal phase (P<0.05). Inhibin-B concentrations showed a significant increase in luteal phase while estradiol concentrations were lower than POF and SOF concentrations (P<0.001). There was no significant difference (P>0.05) between follicular fluid concentrations of IGF-1, inhibin-A and VEGF. Correlations were detected between progesterone and IGF-1 in preovulatory follicles; between progesterone and IGF-1, progesterone and inhibin-A, inhibin-A and inhibin-B, estradiol and AMH in subordinate follicles; between inhibin-A and inhibin-B in luteal phase follicles.

It is concluded that, in mares, ovarian activity is managed by not only hypothalamus and pituitary but also by the ovary itself. Local ovarian mechanisms as estradiol, progesterone, AMH, IGF-1, inhibin-A, inhibin-B and VEGF have direct and interaction effects on follicular growth, development, selection and ovulation.
MONITORING OF DAIRY COWS FERTILITY PERFORMANCES USING REAL-TIME ULTRASONOGRAPHY

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In the era of evident and tremendous declining of dairy cattle fertility, mainly associate with rapid increase of milk production, veterinary practitioners are confronted with increased demands to maintain satisfactory reproduction on the farms. Variety of diagnostic and management techniques, as well as therapeutic and preventive measures has been used for this purpose. The ultrasound diagnostics is one of the most useful and accurate tools in managing reproductive efficiency of dairy cows. This article aims to present current status and our experience in application of ultrasonography for early pregnancy diagnosis and sex determination, observation of follicular dynamic and changes of cyclic ovarian structures, as well as pathological conditions on reproductive organs and monitoring of early embryonic loss in dairy cows.

Detection of pregnancy is initial reason for using ultrasound machines and high level of accuracy (>90%) have been achieved on day 25. after A.I., based on the determination of the presence and viability of the conceptus inside the uterine horn. Determination of the ovarian structures on day 21 using ultrasound scanner has reached 88% general accuracy, whereas, the accuracy for detection of non pregnant cows is 100%. Visualization of the genital tubercle or the scrotum location is reliable for fetal sex determination and it is accurate over 92% between 50 to 120 days of pregnancy.

Ultrasonic imaging is a highly accurate for assessing the follicular waves and CL dynamics, as well as the reproductive pathology: ovarian cysts, luteal insufficiency, metritis, early embryonic mortality etc. Ultrasonography is also very useful for monitoring of ovarian response after treatment of reproductive failures: cystic follicles, static ovaries and estrous synchronization protocols. As a conclusion, we could emphasize that ultrasonography is valuable tool for monitoring and management of reproductive performances in the modern dairy production.
EFFECTS OF CYSTEAMINE ON SHEEP EMBRYOS CLEAVAGE RATES

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Oxidative stress during \textit{in vitro} culture leads to defects in development of gametes and embryos. Several antioxidants such as cysteamine, L-ascorbic acid, beta mercaptoethanol, cysteine, glutathione, proteins, vitamins have been used to supplement culture medias to counter the oxidative stress. The aim of this study is to detect the effect of cysteamine on maturation and subsequent cleavage rates of sheep embryos. Ten replica 604 ovaries were obtained and 2060 ovine oocytes were collected, 1818 selected oocytes were used for maturation (88.25%). The cumulus oocyte complexes were recovered by slicing method and divided into two groups. The first group was formed as supplemented with cysteamine (Group A) and second group (Group B) without cysteamine in TCM-199. The two groups were incubated for 24 h at 38.8\textdegree C in an atmosphere of 5\% CO\textsubscript{2} in humidified air for \textit{in vitro} maturation (IVM). After IVM, oocytes were fertilized with 50x10\textsuperscript{3}/mL fresh ram semen in BSOF medium for 18 h. After fertilization, maturation groups were further divided into two subgroups with different culture media: Group A1-SOF (Synthetic Oviduct Fluid), Group AII-CR1aa (Charles Rosencrans), Group B1-SOF and Group BII-CR1aa were achieved. Cleavage rates were evaluated at day 2. post insemination. The rates of cleavage were detected as 59.54\% (184/309), 55.44\% (173/312), 65.34\% (215/329), 59.34\% (200/337) respectively, with showing no statistically significant difference between the groups at the level of P>0.05. In conclusion, supplementing cysteamine to maturation media in TCM-199 did not effect the cleavage rates of sheep embryos.
“ONE HEALTH” APPROACH AS OPTIMAL SYSTEM FOR SOUND HEALTH AND ECONOMIC GROWTH

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Public health system, including veterinary public health, in countries belonging to former Yugoslavia, was based on strong central/federal legislation, organization and establishment of public companies so called “veterinary stations”, public health institutes and inspection system organized in veterinary, sanitary, agricultural and trade inspections. However, development of democratic political systems and new political setting established at the end of last century made influence on diversification and heterogenicity of sanitary and phytosanitary practices in Western Balkans (WB) countries.

In period from 1995 until 2000, differences in legislation and practice of animal health control and veterinary public health activities between countries in WB become critical, thus caused barriers and restriction in trade of live animals and animal products. Acceptance of Sanitary and Phytosanitary agreement of WTO as common rule for international trade of animal and food products promoted need for harmonisation, equivalency, transparency and risk analysis in bilateral and regional trade. However, during the same period, sanitary situation in WB, as result of different other issues, become unfavourable. Public health issues such as brucellosis, salmonella, e coli, rabies, TB and number of other diseases and health hazards increased risks for human and animal health, there was no adequate surveillance system in place, and illegal trade of animals and their products in region become tool for spreading of diseases. Communication of public health (medical) and veterinary authorities in all WB countries has been traditionally poor.

“One health approach” is relatively new concept in addressing public health issues, especially when it comes with treating and controlling diseases such as zoonoses, or potentially toxic substances as risk factor in food chain. The aim of this paper is to review animal health and public health status of Bosnia and Herzegovina, to identify current challenges and to discuss “One health” model as optimal solution for sound health and economic growth of country.
TRADITIONAL KNOWLEDGE OF THE KYRGYZ PEOPLE IN VETERINARY AND LIVESTOCK BREEDING

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Kyrgyz people have been breeding cattle for ages. There is a long Kyrgyz history about the breeding. Like other nations and people of the world in their daily life they widely use herbs, minerals and animal products for the treatment of domestic animals. In their activities the Kyrgyz breeders constantly have been facing a need to treat sick animals and to protect them from dangerous infectious diseases. Kyrgyz traditional veterinary medicine and livestock breeding has been well developed, since the roots of them reach back to ancient times. Veterinary and livestock education was carried by communicating the life experience and knowledge from one generation to another, as well by the powerful "teacher" of all time, which is a national folklore. In this research we have tried to discuss the up-to-date information about the traditional knowledge of the Kyrgyz people in ethnic veterinary medicine and livestock breeding available in the literary sources. We have studied the archival materials, ancient epics and oral folklore of the Kyrgyz people.

Traditional healers of Kyrgyz nomads treated gripes in horses, defining at least four types of gripes: 1) Tuttukma - urinary colic, and 2) Jatalak - overfeeding, and 3) Jin jatalak - satiety 4) Suu jatalak – colic caused by the cold water. They performed diagnostic manipulation - tulumdo - rectal examination, categorized and treated a variety of diseases of horses, sheep and cattle. In the treatment of non-infectious diseases of animals Kyrgyz traditional veterinary uses the most spread methods of mechanotherapy (wiring, water, oil, etc.), as well as diet and exercise. It is known from folk sources that Kyrgyz herder-healers used to deal with fractures, dislocations and other surgical diseases of animals. For the treatment of many diseases in animals a variety of medicinal plants and animal products, as well as mineral salts were commonly used. Based on the abundance of folk names, Kyrgyz knew quite a lot of contagious animal diseases and some anthropozoonosis. Efforts to prevent and treat certain infectious animal diseases by nomadic herdsmen have been quite varied; some of them are interesting in the scientific and historical aspects. There was a whole parable about gastrophilus disease. However, Kyrgyz nomads were still not capable to fight most infectious animal diseases. Perhaps that is why they asked for help from traditional healers, shamans, witches and other "representatives" of the heavenly lord - Tengri. After the adoption of Islam by the Kyrgyz, shamanism was pushed into the background, but its place was taken by the mullahs, who "treated" the patients with amulets.

Most of these medicines and veterinary practices have no scientific basis and are more of ethnographic and historical interest than medical-scientific. However, with the time, we get more and more convinced that the Kyrgyz people, as skilled herdsmen, had a rich traditional knowledge in the field of indigenous veterinary and livestock breeding, which they communicated by words to generation-to-generation because of loss of their written prescriptions, and built a powerful national folklore. In the Soviet period, the development of Kyrgyzstan ethnic veterinary and livestock breeding knowledge considered to be unscientific and in this regard, they have not been collected, analysed and documented. Thereby, there are fewer people carrying and keeping this knowledge. Therefore, we consider that it is necessary conduct wide-scale ethnic veterinary and livestock breeding research.
ASSESSMENT OF ANIMAL WELFARE USING ANI SYSTEM
IN DIFFERENT TYPES OF BEEF CATTLE HOUSING SYSTEMS

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The aim of the study was to assess the welfare status of three different types of beef cattle farms according to the ‘Animal Need Index’ (ANI) system. Beef cattle farm types were a) family type tether systems (n: 18), b) mid scale farms with tether systems (n: 10) and c) loose housing systems (n: 10). In the assessing of farms, five husbandry conditions: (1) possibility of mobility, (2) social contact, (3) condition of flooring, (4) stable climate and (5) stockman’s care were evaluated. Scores were awarded within each category for several parameters. The sum of all scores awarded in the five categories gave the overall ANI-score. Beef cattle housing types were compared among each other for all the parameters to identify the most convenient housing system according to ANI. Using the overall sum of scores allowed compensation of poor conditions in one category by better conditions in another. The scores given to loose housing system for possibility of mobility, social contact, stable climate and total scores were higher than those of tether systems. Moreover, loose housing system had higher score for quality of flooring when compared with family type tether system.

As a result of the study tether systems were found inadequate for multiple welfare categories according to ANI.
DEVELOPMENT OF THE INDUSTRIAL TECHNOLOGY AND EXPERIMENTAL STUDIES OF FUNCTIONAL FEED ADDITIVES FOR POULTRY FROM CHANKANAY ZEOLITES (KAZAKHSTAN)

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Using of kudyurits (zeolites) gives a significant economic effect reducing costs of feed for birds. The term "kudyurit" have been known since ancient times and translated from Turkish "salted place visited wild animals". Chankanay zeolite deposit is the largest in Kazakhstan and located closely to Almaty. For creation of functional feed additives (synbiotics, prebiotics) the level of dependence of sorption of fractional composition on the basis of zeolites was found. The analysis of a chemical composition and physical properties of the mineral had been made in compliance with ISO9000 and managemen
t of environment ISO14000. Three functional feed additives from Chankanay zeolites were developed for the poultry industry. The experimental results had showed significantly that in the groups of hens feed by new additives the egg shell’s thickness and strength were higher by 1% and 3.3%, respectively, than in the control group. Thus, the zeolite feeding may be used as a preventive measure of battlefield eggs’ manufacturing and improving of table eggs production efficiency.
EFFECTS OF SLAUGHTER WEIGHT AND GENDER ON FINISHING PERFORMANCE AND CARCASS QUALITY OF LIGHT LAMBS

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48 Kivircik lambs were used to investigate the effects of gender (male or female) and slaughter weight (Low=17-19 kg, Medium=21-23 kg, High=25-27 kg) on lamb growth. Lambs were kept with their dams until the approximate age of 57 d in the sheepfold. After the 57 d, lambs grazed in the pasture with their dams in the day-time until slaughter. At night, lambs and their dams were kept in different pens and lambs were fed ad-libitum with good quality alfalfa hay and concentrate feed during night. Experimental groups were determined approximately on 64.56 ± 0.95 d. Lambs reaching target final weight were determined by weekly weighing and sent to Istanbul University Veterinary Faculty’s slaughterhouse.

Average daily gain (ADG) until slaughter age was 174 g, 184 g, 166 g in Low, Medium and High groups (P>0.05). The effect of slaughter weight group on hot carcass weight and omental - mesenteric fat weight were significant (P<0.001). While High groups produced the highest values, Low group had the lowest values in both parameters. Female group had higher omental and mesenteric fat weights than the male group (P<0.001). On the other hand, slaughter weight group and gender had no significant influence on hot dressing percentage and back fat thickness (P>0.05). Differences in longissimus dorsi muscle section areas between High and Low groups were significant (P<0.05). The effects of slaughter weight group (P<0.001) and gender (P<0.05) on carcass conformation score were significant. Carcass conformation score increased with elevated carcass weight. Female lambs had higher conformation scores than males. Low group had lower fatness scores than other groups (P<0.01), whereas High and Medium groups had similar values (P>0.05). Kidney-knob and channel fat (KKCF) weights of High and Medium groups were similar, while low group had lower mean value compared with other groups (P<0.001). Female group had higher KKCF weight than male (P<0.001). Lamb carcasses from the High and Medium groups showed higher fat lightness values (L*) (P<0.01) measured from tail root, than the Low group. Conversely, Low group had higher a* values than other groups. Female lambs had lower a* and b* values than male ones.

As a conclusion; an increase in slaughter weight from 18 kg to 22 kg caused a statistically significant rise in carcass fatness level. On the other hand, similar trend was not observed for the increase of slaughter weight from 22 kg to 26 kg. Therefore, taking the high carcass weight obtained from the High group into consideration, 26 kg of slaughter weight might be recommended instead of 22 kg of slaughter weight for the purpose of more meat production per lamb. When consumer demand for lean meat is taken into consideration, slaughtering of Kivircik lambs at 18 kg might be recommended.
EFFECT OF GLUTATHIONE ON KINEMATIC PARAMETERS OF FROZEN-THAWED SPERMATOZOA
FROM OVCHEPOLIAN PRAMENKA RAMS

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Motility patterns of spermatozoa are an indicator of their fertilizing capacity. Glutathione (GSH) has been reported to induce positive effects on biological quality of the frozen-thawed spermatozoa. The aim of this study was to investigate the effects of GSH addition to semen extender on the following kinematic parameters: continuous line velocity (VSL), average path velocity (VAP), curvilinear velocity (VCL), amplitude of lateral head displacement (ALH), linearity (LIN), straightness (STR), beat cross frequency (BCF), total motility (tMOT) and progressive motility (pMOT). A soybean-lecithin based extender was used for dilution of the semen samples, fractioned in two parts, one containing GSH (5 mMol/ml) and second without GSH. The ejaculates (n=48) were collected from two rams of Ovchepolian Pramenka breed (January – May, 2013) which were classified in two groups according to the used extender: Group 1 (with GSH, n=24) and Group 2 (without GSH, n=24), and then frozen in liquid nitrogen on -196°C degrees in a programmable freezer. Assessment of the samples has been performed post-thawing (30 sec. at 37°C) on CASA equipment, acquiring kinematic parameters. Results showed that only VSL and BCF have a statistically significant difference between group 1 and group 2 (102.98±15.13 vs. 88.47±20.63, t=2.77, P<0.01 and 32.01±2.68 vs. 89.47±2.92, t=3.13, P<0.01, respectively). The summary of the investigation has highlighted these kinematic parameters as indicators that confer the positive effect of GSH as an additive to semen extenders.
KINETIC PARAMETERS OF CRYOPRESERVED HOLSTEIN-FRIESIAN AND SIMMENTAL BULL SPERMATOZOA

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Artificial insemination, as the ultimate biotechnology in the reproduction of the farm animals, is a developing industry, based on high quality control and health standards. Also, the production costs could be decreased by proper observations during the process in order to avoid issuing products which will be determined as nonconformity at the final quality check. The semen quality is highly dependable on many factors, and the breed of the sire is one of them. The objective of this study was to determine the differences in kinetic parameters of spermatozoa obtained by Holstein-Friesian and Simmental bulls. For that purpose, total of 1.010 ejaculates were assessed (913 Holstein-Friesian, 97 Simmental), by CASA (IVOS Ver. 14, Hamilton-Thorne Research, MN, USA) after the final dilution with standard commercial extender (Andromed, Minitube, Tiefenbach, Germany), and after thawing procedure, in standard count chamber. Following kinetic parameters were assessed: velocity of average path (VAP), velocity of straight line path (VCL), velocity of curvilinear path (VCL), amplitude of lateral head displacement (ALH), beat-cross frequency (BCF), straightness (STR) and linearity (LIN). There were statistically significant differences (P>0.05) in the values of the assessed parameters between frozen-thawed spermatozoa obtained from different breeds.
POSTER PRESENTATIONS
INNOVATIVE METHODS IN PREPARING LONG LASTING ANATOMICAL MODELS
USED IN THE STUDY PROCESS

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The anatomical preparations of preparations different body parts of various domestic animals are made with the help of specific methods of work with methylmetacrilate. These preparations are long lasting and suitable for educational purposes in the scope of Anatomy. They also allow very good visualization of the anatomical structures, the so made models would serve as well in the education of specialists in this field of study as they do for the students of Veterinary Medicine. With the help of these methods the exponents are highly durable, also the tissues in their content are held in fresh condition. The important thing is that the preparations do not require particular preservation conditions and do not release toxic substances or specific odour harmful for people. With the new modern technology of making long-lasting anatomical preparations, the students assimilate more effectively the study process. In mind of the world deficiency of biological material, used for teaching and the extremely growing prices, the preparations, made with innovative methods, reinstate the capitals for their preparing. It is used a complex method for involving whole organs, corps or parts of them.

The innovative methods are extremely useful for study process. The preparations, made with these methods are long-lasting and harmless for people's health. They can be used with years without specific needs.
COMPARATIVE STUDY OF THE MAST CELLS’ NUMBER AND THEIR DISTRIBUTION IN THE PORCINE PELVIC URETHRA AFTER USING OF DIFFERENT FIXATIVES AND STAININGS

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Localization and histochemical characteristics of the mast cells in the urinary genital tract and especially in the male reproductive organs in domestic animals are still insufficiently studied. The aim of the study was to establish the localization, number and some histochemical features of mast cells in the porcine pelvic urethra after using of Carnoy’s liquide and neutral formalin as fixatives, and 0.1% of toluidine blue in Mc Ilvain’s buffer (pH 3) and alcian blue – safranin (pH 1.42) as staining methods, with respective protocols.

The material for the study was provided immediately after the slaughter of 8 male swines between 7-9 months of age from the Laundress. All the animals were sacrificed for meat consumption according to the Bulgarian regulations. Tissue biopsies with size of 7-10 mm were fixed with Carnoy’s liquid and formalin at room temperature. After that the preparations were dehydrated in ascending ethanol solution, enlightened in xylene and embedded in paraffin. The cuts were with 5µm thickness and stained with alcian blue – safranin, pH 1.42 (Csaba, 1990) for the biogene amines and 0.1% solution of toluidine blue with the buffer of Mc Ilvane, pH 3 (Pearce, 1960) for metachromasia.

The data obtained convincingly showed non equal distribution of the mast cells in different urethra layers in all observed sections. The prevailing part of the mast cells were observed in the connective tissue around the glands’ lobules, and in the border between urethra and M. urethralis. Clusters of mast cells were observed close to the small and middle blood vessels in the interstitium of the urethral wall, as well as between the striate muscle cells of M. urethralis. The data obtained for mast cells’ number and percent distribution after two different fixations and staining, and statistical analysis, also evoked a special interest.

The results present original data about the direct connection between the mast cells and striated muscle cells in porcine M. urethralis, with the aim to discuss the role of the biogene amines and catecholamines in the motility of the striated muscle cells.
SOME ANATOMICAL, MICROSCOPIC AND RADIOGRAPHIC FEATURES OF THE GLANDULAR STOMACH (PROVENTRICULUS) IN DOMESTIC CANARI BIRD (SERINUS CANARIA)

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The stomach in the birds is composed of cranial glandular part (proventricle) and caudal muscle part (ventricle). The proventricle is situated in the left dorsal part of the thoracoabdominal cavity. In granivorous birds glandular stomach is less developed than muscular. Both stomach portions are separated by isthmus which are macroscopic distinguishable. The proventricle is covered by two types of epithelial cells, the first being composed of cylindrical mucine produced cells and luminal cells from the excretory ducts of the proventricular glands. Proventricular mucose acquires the relief of the papillae onto which flow the excretory ducts of the proventricular glands.

We studied 12 domestic healthy clinically sexually mature canari birds. Cage birds were kept in compliance with the requirements for breeding of the cage birds of Ordinance № 41 and were euthanized by dislocation of the cervical spine. That was in compliance with the Law for Animal Protection in Bulgaria. Following laparotomy, the proventricle was dissected from its beginning part to zona intermedia. Macroscopic results were photo-documented. Radiograms were obtained. Microscopic preparations were stained with hematoxylin and eosin, studied by light microscopy, documented with digital camera. The sizes of the investigated structure (in µm) were determined by a standardized ocular micrometer. Data were processed statistically.

Proventricle is situated on the left to the median plane, in the dorsal half of thoracic part’s body cavity from 3\textsuperscript{rd} to 7\textsuperscript{th} rib. The stomach has a shape of a cone. Its beginning is in the median plane above the bifurcation of the trachea and the transition to the muscular part of the stomach is at the level of the last rib.

Mucosal epithelium is prismatic and contains glands that resemble epithelial invaginations. Deep proventricular glands are surrounded by mucosal musculature. Glandular epithelium is single-layered cubic and the epithelium of the glandular excretory ducts is pseudostartificated.

The obtained data are morphological base for differential diagnosis of glandular and muscular stomach diseases due to the fact that they occur with similar symptoms.
SEX DETERMINATION OF PREHISTORICAL BOVINE FOUND IN “AZMASHKA” SETTLEMENT HILL
BY METAPODIAL BONES

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Often during archaeological excavation there are found big quantities of animal bones and in the
most of the cases they were bovine. Principally, they are fragmented but the proximal or distal ends
are intact. This fact concerns the metapodial bones. They are used by the scientists to determine the
gender and the height at the shoulder in prehistorical bovine. In this research a composite method is
used to determine the gender by the length of the bones and their epiphyses.

In this study we include metacarpal bones – 6 intact bones and 32 proximal bone parts from Early
Neolith (EN), 11 intact bones and 19 proximal bone parts from Early Halcolith (EH) and 10 intact bones
and 15 proximal bone parts from Late Halcolith (LH). For the determination of the gender via whole
intact bones we used two methods – Begovatov (2010) and Nobis’ (1954), while the determination of
the epiphyses was made with the help of Vasilev’s method (1981).

After the calculations the proportion of male, female and neutered animals in the mound during
different eras was determined. During EN the percentage is 50% female and 50% male (bulls and
bullocks), during EH - 81% cows and 19% bulls and bullocks while in LH the percentage is 40% cows,
40% bullocks and 20% bulls.

After the comparison of the rates was made, it was found that that the number of female animals
was growing while those of males – decreasing. This proves that from EN moving towards LH there
was purposeful breeding activities, taking place in the settlement hill.
SOME ULTRASONOGRAPHIC FEATURES OF BULBOURETHRAL GLANDS IN THE DOMESTIC RABBIT

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The bulbourethral glands are a paired organ, realizing mucinous secretion. They are located on the dorsal surface of the pelvic urethra, in the region of pelvic arc and penile root.

Ten sexually matured, clinically healthy male white New Zealand rabbits at age 18 months and with weight 2.8 kg - 3.2 kg were studied. The bulbourethral glands were investigated following anesthesia. A perineal sonographic approach was performed, by using CHISON 600 VET (China) Micrus ultrasonic equipment and a 7 MHz linear transducer C20605. Following euthanasia, the bulbourethral glands of four animals were removed surgically and studied in a liquid isotonic medium with regard to compare their sonographic features with the normal topography.

The glands were observed in two views and it was found that the perineal ultrasonography is a definitive method about visualization of the rabbit bulbourethral glands in sagittal and transversal sections. Sonographically these glands were seen as a solid homogenous finding with a relatively high echogenicity. A hyperechoic gland without hypoechoic center was found in the saggital section. In the transversal section, the normal bulbourethral glands were visualized dorsolaterally to the bulbar urethra, and a hypoechoic urethra was located ventromedially. The glandular stroma was hyperechoic, but without visible hypoechoic central part. Via ultrasonography an elongated craniocaudally and ovoidly glandular shape was found. The findings, obtained by postmortal method were also less echoic, this is probably due to the absence of preripheral tissues and the performed investigation in a liquid medium. Ultrasonographic investigation of the bulbourethral glands in the rabbit could find as definitive anatomic features of the glandular structure, as pathologic and cystic lesions.
WEIGHT, VASCULARISATION, LIMPH NODES AND INNERVATION OF SOME FAT DEPOTS IN NEW ZEALAND WHITE RABBITS

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The adipose tissue in rabbits is organized in a few subcutaneous and visceral fat depots. Each one of them has specific blood supply, limph nodes and innervation and their mass varies markedly during the postnatal development. Rabbit develops a visceral type of obesity and is suitable model for investigations of lipid metabolism disorders in men. The aim of this study is how the fat depots mass is changes in healthy New Zealand rabbits, according to the differences in body weight, vascularisation and innervation.

In this study, 44 clinically healthy New Zealand white rabbits, from both genders were used. 40 of them were divided into 4 groups (10 in each), for weight measurements of the interscapular, inguinal, pericardial and perirenal fat depots: group 1 newborns, group 2 at 1.08±0.02 kg, group 3 at 2.07±0.02 kg and group 4 at 3.09 ±0.03 kg. The fat depots were removed and their weight (in grams) were determined. All data are presented as mean ± SEM. For investigation of depot specific differences in blood supply, limph nodes and innervation, 4 rabbits with 3.07±0.02 kg body weight were used.

The results from the dissections and the weight measurements showed that in newborn rabbits subcutaneous fat depots were better developed than visceral ones. Interscapular depot was heaviest - 42% of total fat. In 2nd and 3rd group, inguinal fat mass was highest, but in 4th group, perirenal fat depot had highest weight - 61% of total fat. In 1st group adipose tissue in thoracic cavity was not be observed. In other groups it was comparatively constant – 2-4% of total fat depot mass.

The blood vessels in the perirenal depot were the largest. In the interscapular depot innervation was richest, but limph nodes not be observed. The pericardial fat supplied mainly by branches of internal thoracic artery and vein.

The subcutaneous and visceral fat depots in rabbit have specific features in its growing, vascularisation and innervation. These factors are determinative for a different lipid metabolism in each depot. The results of the present study can be used as a base for comparison with other experiments with rabbits - models for induced obesity and metabolic syndrome.
HISTOPATHOLOGICAL CHANGES OF THE KIDNEYS IN T-2 MYCOTOXICOSIS IN BROILERS

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T-2 toxin is a trichothecene mycotoxin produced by some Fusarium fungi. Many authors have examined the harmful consequences of dietary T-2 toxin after its prolonged administration, but there are few records of its toxicity after short term administration. Therefore, the aim of this study was to examine the effect of T-2 mycotoxin after short term (3 day) administration on the kidney’s morphology in experimentally induced T-2 mycotoxicosis in broilers.

One day-old broilers were divided in two groups, control and experimental group, both given feed and water ad libitum. T-2 mycotoxin was dissolved in water and given to the experimental group with daily oral gavages in doses of 0.250 mg per bird for 3 consecutive days starting from the fourth day of the experiment. Histopathological analyses of the kidneys were made 24 hours after the last application. Kidneys were fixed in buffered 10% formalin, embedded in paraffin and 5µm thick sections were stained with haematoxylin and eosin.

We’ve registered that the administration of mycotoxin provoked significant decrease of the body weight as well as absolute weight of the kidneys by 27.3% and 19.1% respectively, compared to control group, while there were no significant changes in the relative weight of this organ. Histopathological analyses of the kidneys in experimental group showed thickening of the Bowman’s membrane as well as mononuclear cell infiltration in kidney’s glomeruls. Also in the cortex, a parenchimatos degeneration of the proximal tubular epithelium was noticed, while in the medullar part of the kidneys, we’ve evidenced an interstitial nephritis.

From the obtained results it can be concluded that three day application of T-2 mycotoxin provokes only acute histopathological changes in the kidneys, but if the administration of the toxin continues it could rouse necrotic changes in this organ.
ANTI-INFLAMMATORY EFFECT OF MORINDA CITRIFORIA (NONI) JUICE ON CARRAGEENAN INDUCED INFLAMMATION MODEL IN RATS

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The fruit juice of Morinda citrifolia (noni) is used to treat diverse conditions, including hypertension, diabetes mellitus, bronchial asthma, rheumatoid arthritis, some cancers, and sexual dysfunction. It has also been reported that noni plant exhibited significant anti-inflammatory activity. This study was therefore undertaken to investigate the potential of noni juice to protect against the development of acute inflammation in response to carrageenan.

Morinda citrofolia (Noni®) was purchased from Alnoni Original Ltd., Co., (Antalya, Türkiye). Each of 0.1ml carrageenan (%1 w/v) (Sigma Co., USA) was injected to plantar tissue of the hind-paw of rats and edema was induced. Ibuprofen, an antiinflammatory drug, was used for positive control. 28 male Wistar rats (7 per group) were divided to 4 groups. Each group of rats received either saline (1.0 ml, 0.9%) or noni juice (1.0 ml/bw, 2.0 ml/bw) or Ibuprofen (40mg/kg) orally 30 min prior to injection of carrageenan (%1 w/v) into the left hind paw of each rat. Changes in paw volume were measured with a plethysmometer (Ugo Basile) at 60 min intervals over a 6-h period.

Oral administration of the noni extract inhibited the carrageenan-induced inflammatory response (P<0.05 and P<0.001) at 3rd and 4th hours. The results of this study have clearly indicated the anti-inflammatory potential of orally administered noni fruit juice extract. The results also suggest that there is a high probability for therapeutic effectiveness of the fruit juice against inflammatory conditions. This suggestion is reinforced by the demonstrated absence of toxic effects when the juice extract was given acutely and chronically via the oral route in rats.
Animal medicines play an important role in the control and prevention of disease and animal suffering but have the potential to cause harm if not used properly. The use of veterinary medicines (VM) can sometimes result in residues in foods taken from the treated animals and can seriously endangered the health of people, as potential consumers of this kind of food. Therefore, the significance of control of the VM in these animals is exceptionally high. These include statutory controls on the authorisation, distribution and use of such medicines. The aim of this paper is to show legal status regarding distribution/dispensing and administration of VM in Macedonia (RM) and its comparison with other countries in order to identify legal weaknesses.

National Law on veterinary medicinal products (VMP) (Official Gazette of the Republic Macedonia No. 42/2010 - article 47) provides legal basis for distribution of VM in categories. Following evaluation of scientific data provided by the Marketing Authorisation Holder, for each VMP is granted a specific distribution category by the Food and Veterinary Agency (FVA) when it is for first time authorised. The data was collected from the web site of sector for Public Veterinary Health in FVA and was compared with Veterinary Medicines Regulations in other countries.

All VMPs in the RM are assigned into one of six distribution categories. Only veterinary surgeons (VS) are entitled to prescribe VMPs and they must be dispensed from registered premises. The highest level of control is the VMP intended for food production animals which can be used only in veterinary premises by the VS or under their direct responsibility. This would include VMP containing controlled drugs and those intended for administration only following a diagnosis and clinical assessment by a VS. VMP which can be dispensed in veterinary pharmacies only by written prescription is intended for food production animals but is not required a clinical assessment of the animal(s). One category of VMP intended for food production animals, can be dispensed in veterinary pharmacies but do not require a prescription. VMP intended for non-food production animals may be supplied by any retailer without any restrictions, or provision of advice.

Distribution categories provide controls on the supply of veterinary medicines to help ensure that appropriate advice is given at the point of sale so that products can be used safely and effectively. Also it is a practical tool for identification of different groups of VMPs for the veterinary practitioners as well as all subjects involved in production, trade and distribution of VMPs. The results obtained given an overall picture of trends in the use of VM in RM and allows comparison of such trends in other countries.
MELATONIN PROTECTIVE EFFECT ON RAT’S ORGANS ALUMINIUM ACCUMULATION

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The study emphasize the protective effect of melatonin against the aluminium accumulation in rat’s organs. Was carried out on 28 Wistar rats divided in four groups, one control and three experimental, exposed three months at aluminium sulphate and melatonin as follows: group I: 1000 ppb aluminium as aluminium sulphate, group II: 1000 ppb aluminium and melatonin 10 mg/100 ml water and group III: melatonin 10 mg/100 ml water, the control group receiving only water. Aluminium was accumulated in liver, kidney, heart, spleen and brain of exposed rats in significantly higher amounts compared to control group, melatonin administration together with aluminium significantly reduced the aluminium level in studied organs offering protection against aluminium accumulation.
INSIGHTS INTO THE DEVELOPMENT OF A NEW D,L-Α-TOCOPHEROL ACETATE/NATURAL ZEOLITE DRUG-DELIVERY SYSTEM FOR APPLICATION IN VETERINARY MEDICINE

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Research into drug delivery for veterinary species incorporates unique challenges whilst providing opportunities for advancement in the care of animal patients. In the field of veterinary pharmaceutics and medicinal chemistry, there is great diversity of novel drug delivery systems based on biodegradable polymers, natural and modified mineral materials, site directed formulations and rumen delivery systems, which extend drug availability to the animal at the desired rate for prolonged period. The aim of the present study was to investigate a process for the development of a new drug delivery system intended for application in the veterinary medicine, emphasizing on the extend of D,L-α-tocopherol acetate encapsulation in the framework of natural Bulgarian zeolite and the antioxidant release rate in biorelevant media.

D,L-α-Tocopherol acetate (Sigma-Aldrich analytical, > 99% HPLC, watersoluble) concentrations were determined by an adapted UV-VIS spectrophotometric method using DR 5000 UV-VIS Spectrophotometer (Hach Lange, Germany) at maximum wavelength of 285 nm.

Potentiometric titration and digital microscopy methods were used for surface chemistry and morphology analysis of the natural Bulgarian zeolite (by Bentonite AD, Kurdzhal City, Bulgaria). The encapsulation procedure was accomplished by sorption of the biologically active compound on the natural Bulgarian zeolite. The sorption experiments were conducted in a standard batch adsorption system at pH 7.0 with model α-tocopherol aqueous solutions.

The analysis of the experimental results established the highest extend of α-tocopherol encapsulation – E 58.8 % at initial concentration 50 mg/L. The highest zeolite capacity for the host agent was 9.9 mg α-tocopherol/g zeolite, which is equivalent to 22 IU.

The release mechanism of the bioactive compound from the drug-delivery system was investigated by desorption studies in biorelevant media (simulated gastrointestinal fluid), prepared with buffer solution at pH 1.2. The results obtained indicated 3.00 mg/L α-tocopherol release achieved for 120 min at 37°C.

The kinetics of desorption of the bioactive substance was successfully described by a second-order polynomial mathematical model with a high correlation coefficient R² 0.9364. The latter enabled the prediction of the release kinetics of the studied newly-developed drug-carrier system.

Considering the unique properties of zeolite and the opportunities for its potential applications in the veterinary and human medicine, together with the satisfactory extend of D,L-α-tocopherol encapsulation in the zeolite matrix E 58.8 % obtained in the present preliminary study, it could be concluded that the natural Bulgarian zeolite could be successfully applied for encapsulating the bioactive compound.
ALBENDAZOLE SENSITIVE VS. RESISTANT NEMATODES - MITOCHONDRIAL ULTRA-STRUCTURAL CHANGES

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Studies about microtubule inhibitors demonstrated that the equilibrium breaking between tubulin and microtubules can induce a multitude of biochemical changes in the cells. This equilibrium breaking is also considered as the base of benzimidazoles (BZ) anthelmintic activity. The few existing studies in this topic showed that BZ do not get fixed to the tubulin of Haemonchus contortus BZ-resistant populations in comparison with the sensitive ones. This affinity modification is followed by structural modifications which can easily recognise after the optical density changes in populations: sensitive (dark zones) and in resistant (clear, unmodified zones). This finding represents the justification for this study, our aim being to demonstrate that disintegration and accumulation of the secretory grains and cell’s lysis will not take place in resistant helminths, confirming the resistance to BZ of these individuals.

H. contortus individuals were collected from sacrificed sheep used in our resistance studies. Two lots were constituted, where it was therapeutically established that six sheep developed with certainty resistance to albendazole (after 11 treatments with ABZ, 5mgkg.bw.) and six sheep were certainly sensible to ABZ. The sampling was accomplished at four, six, respectively twelve hours, taking into account that, in the liver, ABZ is quickly transformed in sulphone and sulphoxide, the peak being reached after three to six hours from administrations. The EMT technique was followed respecting all preparing phases, using EMbed Kit-812 (Electron Microscopy Sciences, USA). Sections were retrieved on 200 mesh formvar resin grids and coloured with 7.5% uranyl acetate and 0.4% lead citrate. The readings were done with TEM-Tesla BS 500 at x 7.000; x 9.000; x 10.000; x 20.000 and x 50.000 resolution.

EMT images confirmed that the sensitive trichostrongilian populations are structurally affected in short time (six hours) after the albendazole treatments. Main observed changes appeared in the intestinal mitochondria of sensitive populations were: cristae decreasing and thickening, cellular membranes thickening (especially internal membrane), accompanied by modifications of the protein enzymes metabolism, alterations of internal membrane, disappearance of cristae and of mitochondrial components’ functionality. Twelve hours after anthelmintic administration, total blocking of the metabolic functionality it was ascertained and finally, all these morph functional changes modified the mitochondria’s optical density. In the albendazole resistant populations, the optical density remained normal; and any modifications of the number, measure and functionality of the resistant nematodes’ mitochondria were not observed.
THE CONSEQUENCES OF CHRONIC ALUMINIUM SULPHATE INTAKE ON SEXUAL CYCLE’S DURATION AND REGULARITY IN FEMALE RATS

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The objective was the evaluation of aluminium impact on sexual cycle’s duration and regularity, biomarkers of female reproductive system functionality.

The study was carried out on 32 adult Wistar female rats exposed to aluminium sulphate in drinking water for six months as follows: E1 group: 200 ppb Al; E2 group: 400 ppb Al; E3 group: 1000 ppb Al; C group: tap water.

Duration of sexual cycle and sexual cycle’s stages regularity were appreciated by examination of vaginal smear cytological characteristics.

Exposure to aluminium sulphate determined:

- Increase of sexual cycle duration compared to the control but insignificant and not significantly influenced by the level of exposure;
- Modification of sexual cycles (expressed in percentages):
  - Significant decrease of sexual cycles with physiological lasting proestrus compared to control; inconclusive influence of the exposure level;
  - Presence of sexual cycles with absent proestrus only at 200 ppb Al exposure and with prolonged lasting proestrus only at 1000 ppb Al;
  - Significant decrease of sexual cycles with physiological duration estrus and significant increase of sexual cycles with prolonged duration estrus compared to control, significantly, directly, respectively inversely correlated with exposure level; presence of sexual cycles with absent estrus at 200 and 400 ppb Al, not influenced by exposure level;
  - Significant decrease of sexual cycles with physiological lasting diestrus I compared to control but in direct correlation with exposure level; presence of sexual cycles with absent diestrus I only in the group exposed to 400 ppb Al; sexual cycles with absent diestrus I were present only in the group exposed to 400 ppb Al;
  - Significant decrease of sexual cycles with physiological lasting diestrus II compared to control but in direct correlation with exposure level; presence of sexual cycles with absent diestrus II only in groups exposed to 200 and 1000 ppb Al, and in inverse correlation with exposure level; significant increase of sexual cycles with prolonged diestrus II compared to control in the groups exposed to 200 and 400 ppb Al, and in inverse correlation with exposure level.
GROWTH PERFORMANCE OF BROILERS AFTER TREATMENT WITH PROBIOTICS AND ANTIBIOTICS

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Administration of probiotics in poultry is associated with improved feed conversion and higher resistance to bacterial and protozoan disease. They influence microbiota of the gastrointestinal tract and are often prescribed with antibiotics in order to decrease adverse effects of antibacterial treatment. Therefore, the aim of the present investigation was to evaluate the effect of enrofloxacin and doxycycline combination with 3 probiotic strains (\textit{L. brevis}, \textit{L. plantarum}, \textit{L. bulgaricus}) on the feed conversion ratio (FCR).

A total of 120 one-day-old Ross 308 and 120 Duc broiler chicks were obtained from a commercial hatchery. On the first day they were weighed. Chicks were allocated into four groups: control (without treatment); group, treated with probiotics 5-th day after hatching for 15 days via feed; probiotics and antibiotic treated group; antibiotic treated group. Ross 308 chickens were treated with enrofloxacin and Duc broilers received doxycycline. Both antibiotics were administered at a dose rate of 10 mg/kg via drinking water for 5 days, 15 days after hatching. The feed consumption was daily registered and the body weight of the chickens was followed at four time intervals. Growth and FCR were calculated.

Data were statistically evaluated (Statistica 6.0).

The FCR in Ross 308 broiler chickens was with the lowest value in the group enrofloxacin + probiotic treated broilers (1.36±0.27), followed by the group, received probiotic (1.42±0.25, \textit{P}<0.01 compared to the control group). While the FCR for enrofloxacin treated animals was 1.46±0.35. In the control group this value was 1.65±0.65.

Duc broiler chickens showed the lowest value of FCR in doxycycline plus probiotic treated group (1.67±0.33) followed by the group treated with the antibiotic, only (1.79±0.34). A non-significant statistically difference of the FCR values was observed between the control (1.84±0.28) and the probiotic treated group (1.91±0.22).

Probiotics improved feed conversion in chickens. The effect of their administration with antibiotic resulted in the best feed conversion which can be explained by the influence of the combination on the microbiota in the gastro-intestinal tract and health status of chickens. These changes were not dependent on the used antibiotic, bactericidal enrofloxacin or bacteriostatic doxycycline or chicken hybrid. Probiotic administration resulted in significantly improved growth performance of Ross 308 broilers which can be also attributed to the discussed reasons. Enrofloxacin treated group showed insignificantly better feed conversion if compared to the control chickens. The data were similar in Duc broiler chickens between doxycycline and control groups.
PHARMACOKINETICS OF A NOVEL CONTROLLED-RELEASE FORMULATION OF DOXYCYCLINE HICLATE PER ORAL VIA IN DOGS

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In dogs, doxycycline is the election treatment of Ehrlichia spp., Haemobartonella spp., Rickettsia spp., and Leptospira spp. carrier phase, treatments are very long, that leads to lack of compliance for treatments where doxycycline is recommended. Subcutaneous, intramuscular and intravenous routes are contraindicated in dogs. Thus, oral administration is the best alternative route in this specie. Hence, the aim of this study is develop a drug formulation that maintain longer therapeutic levels than conventional forms, thereby reducing the frequency of administration, the patients’ stress, the occurrence of adverse effects and treatment’s cost. A polymethacrylate and acrylic acid based matrix were used in different proportions: DOX1 (1:0.25:0.0035), DOX2(1:0.5:0.0075), DOX3(1:1:0.015), DOX4(1:2:0.0225) and DOX-C(without excipients), and all tested in vivo in healthy dogs, its serum concentrations vs. time profile were investigated after its oral administration in this specie, through blood samples at 1, 2, 4, 8, 12, 24, 36, 48, 60, 72, 96 and 120 hours by vein puncture and serum doxycycline concentration were determined by modified agar diffusion analysis. DOX1 and DOX4 show therapeutic concentrations for 60 hours, while DOX2 and DOX3 during 48 hours and DOX-C only 24 hours. The pharmacokinetics values tested in this study are K½el, Cmax, Tmax, AUC, AUC∞, AUCt, AUMC, RT, Kel, Vdss, Clb and Frel. DOX1 and DOX2 no differ significantly between them neither with DOX-C; DOX3 and DOX4 no differ significantly between them, but show significant differences in all variables in comparison with DOX-C, DOX1 and DOX2. Clearance (Clb), differ significantly between DOX-C and other groups. In conclusion, DOX1 presents ideal pharmacokinetics for time-dependent drug and longer release time of 60 hours, that indicates that the frequency of administration may be extended to every third day, reducing the stress of patient, the adverse reactions and the cost of treatment, however all formulations are effective, but the election to use one of other depends of microorganism to treat.
DISTRIBUTION OF CULICOIDES LATREILLE, 1809 (DIPTERA: CERATOPOGONIDAE) SPECIES IN SOUTH AND SOUTH-EASTERN TURKEY, WITH SPECIAL REFERENCE TO BOVINE EPHEMERAL FEVER

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This investigation was done to identify vectors of Bovine Ephemeral Fever Virus (BEFV) in the Southern and Southeastern regions of Turkey where the samples collected from Adana, Hatay, Gaziantep, Sanliurfa and Adiyaman provinces between July-September 2012. Onderstepoort type light trap was used to collect Culicoides samples. Captured Culicoides samples were dry stored in eppendorf tubes between 100 to 500 samples. Two different viral nucleic acid extraction methods compared; a commercial extraction kit and Trizol method were used for total genomic RNA extraction of Culicoides samples. The cDNA synthesis of viral RNA was performed by a commercial RT-PCR kit. Specific PCR protocols were used to amplify cDNA samples by using primer pair’s encoded G glicoprotein and VP7 protein genes of BEFV and EHDV respectively. Previously collected PCR positive cattle blood samples were used as positive control of BEFV. The nuclease free water was used as negative control in each reaction.

In this study, 20,845 Culicoides samples (20,569 ♀♀, 276 ♂♂) were completed. C. schultzei (18 032) was found as dominant species, C. imicola (1 857), C. nubeculosus complex (545) and C. circumscriptus (259) were followed it, respectively. Other species were less prevalent like C. punctatus (two specimen) and C. kibunensis (one specimen). Culicoides imicola is confirmed as one of the certain vector and C. schultzei is uncertain but suspected vector of BEFV and EHDV in the world. Both of them are found in large numbers, C. schultzei is at the top of rank so recorded as dominant group in current research area. Determination of the viral genomes was failed from all Culicoides species despite BEFV endemy is reported in July and August. Culicoides imicola is the second most prevalent group after C. schultzei in the BEFV endemic region so both of them or one of them has role on the spread of virus.
SOME BIOCHEMICAL PARAMETERS IN YEARLING SHEEP NATURALLY ENFECTED BY COENURUS CEREBRALIS

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The objective of this study was to determine some serum biochemical parameters in Akkaraman yearling sheeps naturally infected with \textit{Coenurus cerebralis}. Also the relation between cyst dimensions and the biochemical parameters were investigated. For this goal, blood samples were taken before the slaughter, and brain samples were taken after the slaughter from many sheep which showed clinical symptoms of \textit{Coenurosis} in the slaughterhouse. Serum samples of the sheep, positive for \textit{Coenurus cerebralis} cyst and negative for other parasites, were used for the biochemical analysis and the cyst dimensions were recorded (Infected group, n=32) in the laboratory. Infected group was divided into 2.0 – 3.0 cm cystic group (Experimental 1, n=16) and 4.0–6.0 cm cystic group (Experimental 2, n=16). Healthy and parasite free 10 yearling sheeps were employed as Control group. In all animals, serum total protein, albumin, urea, total cholesterol, triglycerid, creatin kinase (CK), alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alkaline phosphatase (ALP) levels were determined.

There was no difference between the Contol group and the Infected group for the biochemical parameters. However, it is found that serum total cholesterol levels were higher (P<0.05) in the Experimental 2 group from the experimental 1 and control groups. CK and ALT activities were lower in experimental 1 (P<0.05) and experimental 2 (P>0.05) groups compared to control group.

As a conclusion, it was found that, serum levels of total cholesterol, CK and ALT displayed difference between two experimental groups and it is suggested that, results from these yearling sheeps infected with \textit{Coenurus cerebralis} may be beneficial for the diagnostic and prognostic approaches in the Coenurosis.
COCIDIOSIS (APICOMPLEXA, COCCIDIA, EIMERIIDAE) OF THE POULTRY AND
THE EFFECT ON IT THE MEDICINAL PLANTS

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The coccidia of avian species are host-specific. Each bird has its own species of coccidia. Even closely related species of birds may have separate species of coccidia. Thus, identification of coccidia species responsible for disease in birds is of utmost importance. The results suggest that such infection might represent a limiting factor to this branch of the modern poultry industry in Azerbaijan.

In result of research the koktsidiofauna of Absheron, Karadag, Siazan, Shamakhi, Khizi, Binagadi and Salyan districts, as well as the island Pirallahi of from 550 domestic ducks in 360 birds was detected parasites of genus Eimeria (60.5%). For this purpose, fecal exams, oocyst counting and morphological study were performed. Samples were diluted into 2.5% aqueous potassium dichromate and kept in Petri dishes for sporulation at 27°C. After sporulation, oocysts were recovered by centrifugation with saturated sugar solution as described by Darling and used in identification of coccidia species. Three species of the genus Eimeria were found and identified as E. schachdagica, E. danailovi, E. battakhi. In addition to the coccidia in the studied birds were found worm Amidostomum anseris. We studied age-related and seasonal features of infection and the occurrence of avian species of coccidia in various regions of Azerbaijan.

We also studying the effect of Artemisia absinthium and Baycox on 350 chickens healthy and experimentally infected with E. tenella on clinical signs, on some morphological and biochemical indices in blood, it was found that combined use of wormwood 1500 mg / kg with Baycox 2 ml / l gives the best therapeutic and prophylactic effect.

Also collection of material on the fauna of blood parasites 250 of domestic ducks (Anas platyrhynchos domesticus) on private farms Absheron region of Azerbaijan. Birds were released after taking a small amount of blood via bronchial venipuncture. Blood smear were made on site, and airdried, fixed with 100% methanol, and stained using a modified Romanovsky staining technique. We analyzied 625 blood smears from domestic ducks. By the description given parasite is Plasmodium spp. In result of research of blood from 150 domestic ducks in 79 birds was detected infection of blood parasites genus Plasmodium (53%).
THE EFFECT OF DIFFERENT STORAGE TEMPERATURES AND TIMES ON THE VIABILITY OF

*HELCOBACTER PULLORUM*

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The aim of this study is to examine the viability of *Helicobacter pullorum* in different temperatures and time periods. In the experimental study, 19 day-old four chicks were inoculated orally with $1 \times 10^9$ cfu/ml of *H. pullorum*, ATCC 51801 strain. Stool samples from each animal were collected and a pool of fecal content has been achieved. Totally 77 swabs were taken from the sample pool and this phase regarded as hour “0”. The swab samples were divided into three groups consisting of 25 swabs. Sample groups were stored at -18 °C, +4 °C, + 25 °C, respectively and those samples were examined by culture every hour within first 24 hours and the last inoculation onto medium was performed at the 48th hour. In conclusion, the survival time of *H. pullorum* was determined as 11 hours at +25 °C, 14 hours at +4 °C and 16 hours at -18 °C.
EFFICIACY OF A WATER-BASED DISINFECTANT ON REDUCTION OF EGG SHELL BACTERIAL CONTAMINATION

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The aim of the study was to evaluate the contaminant bacteria levels of non-sprayed and sprayed eggs with a water-based disinfectant from a layer unit of the Faculty Farm. A total number of 80 eggs were used. Eggs with PotoClean® treated or not treated were examined by aerobic and Gram negative bacterial contamination using conventional culture techniques. A significant decreases in the counts of aerobic bacteria and Gram negative bacteria were found ($P<0.001$). Thus, this sanitizer showed a general ability to reduce bacteria on egg shells to a negligible number. The disinfectant tested is highly promising for such purpose.
DIAGNOSIS OF Q FEVER AND BRUCELLOSIS IN THE ABORTED OVINE FETUSES BY MICROBIOLOGICAL, PATHOLOGICAL, IMMUNOHISTOCHEMICAL METHODS

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Brucellosis and Q fever, two zoonosis, are important causes of ruminants' abortion and an economically important disease caused by the gram-negative bacterium. Determination of these disease is therefore of great importance.

In this study, organs of naturally infected 35 aborted ovine fetuses were examined the direction of presence and changes depend on infections of Brucella melitensis and Coxiella burnetii, according to the macroscopic, bacteriological, histopathological and immunohistochemical methods.

Brucella melitensis at 21, Coxiella burnetii in 8 of aborted ovine fetuses were determined with immunohistochemical methods and brucellosis in 18 of them were determined by microbiological methods. In all of the other fetus were found negative (-) results.

Brucella antigen was determined to be localized as intracytoplasmic in mainly alveolar macrophages, bronchi, bronchioles, glandular epithelial cells around bronchial glands, neutrophils, hepatocytes and Kuffer cells. Coxiella antigen were found to be localized in the alveolar macrophages in the lungs, bronchi, bronchioles, alveolus and in the cytoplasms of bronchial glands epithelial cells, and in the cytoplasms of hepatocytes and Kupffer cells in the liver.

As a result, pathological, immunohistochemical and microbiological diagnosis of the brucellosis and coxiellosis in the comparative; immunohistochemical methods were concluded safely applied such as microbiological methods.
SEROLOGICAL AND BACTERIOLOGICAL STUDY OF AVIAN MYCOPLASMOSIS BY MYCOPLASMA SYNVOIAE IN EASTERN ALGERIA

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The absence of data on avian mycoplasmosis in Algeria and the importance of poultry farming in the region of Batna encouraged us to undertake this study to establish the rate of infection by Mycoplasma synoviae.

A serological survey by Serum Plate Agglutination (SPA) and bacterial isolation of MS infection was performed in broilers and laying hens in the wilaya of Batna in eastern Algeria on 563 birds from July 2009 to June 2010. Blood samples were collected at the wing vein of birds of different age groups (252 of laying hens and 253 of broilers) and transported to the laboratory under cold. For Mycoplasma synoviae isolation, samples concerned living subjects and recent or quickly frozen carcasses.

The overall seroprevalence in different flocks was recorded as 69.90%. The mycoplasma infection was found significantly higher in laying hens. Unlike other species such as M. gallisepticum, MS infection seems to be more dominant in the summer. A slightly higher rate among young birds (85.41%) than adults ones (49.99%) was reported. It was also demonstrated that the infection is more prevalent (76.31%) in herds of large scale, and for laying hens, Lohman strain is more affected by mycoplasmal infection compared to the Isa Brown strain.

200 Mycoplasma strains were isolated from 563 samples either 35.52% with 8.17% for Ms infection. This is related to the sensitivity of the strain to the medium pH. Isolation rates are 6.45% for laying hens and 9.85% for broilers. Isolation rate were 6.45% for laying hens and 9.85% for broiler. The results demonstrate the isolation frequency of these microorganisms in air sacs followed by trachea and lungs.

According to our results, it appears that the rate of infection in the wilaya of Batna is very important in comparison to other countries such as Niger, Bangladesh, and Tunisia etc. This high incidence could be explained by the deficit in the rearing conditions and also the absence of vaccination, serological screening (SPA) and bacteriological control (culture or PCR) regularly to ensure the absence of contamination.
ANTIBACTERIAL AND ANTIFUNGAL ACTIVITY OF ETHANOLIC *ALLIUM TUNCELIANUM* EXTRACT

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*Allium tuncelianum* is an endemic garlic species which is locally rising in Tunceli, Turkey. Garlic contains several biologically active compounds known as organosulfur compounds. *Allium Tuncelianum* was extracted using ethanol, and tested for their inhibitor activity against ten pathogenic bacterial (*Bacillus sereus*, *Bacillus subtilis*, *Enterococcus faecalis*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Escherichia coli*, *Klebsiella pneumonia*, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Salmonella enteritidis*) and six fungal (*Candida albicans*, *C. parapsilosis*, *C. krusei*, *Malassezia pachydermatis*, *Trichophyton mentagrophytes*, *Microsporum canis*) strains were determined by the macrobroth dilution method according to CLSI standards.

The results showed that all the microorganisms used were sensitive to the extract. The ethanol *Allium Tuncelianum* extract demonstrated the highest antibacterial activity against *Bacillus cereus* (12.5mg/ml). However, the ethanol extract at 0.78mg/ml had high antifungal activity against *Malassezia pachydermatis*. According to the results of this study, *Allium tuncelianum* has significant potential as antibacterial and antifungal.
SITUATION WITH BRUCELLOSIS IN MACEDONIA SINCE INTRODUCTION OF REV1 VACCINATION (EPIDEMIOLOGICAL UPDATE)

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Brucellosis, with its adverse impact on public health and economy, has been a serious problem in Macedonia for more than thirty years. Continuous efforts for control and eradication of the disease in cattle and especially in sheep and goats, as major reservoirs, failed to give the expected results. This lack of success using the eradication strategy based exclusively on “test and slaughter” policy was clearly evident in the persistently high number of human cases. A comprehensive study of the reasons for such outcome led to change in the control strategy by introduction of Rev 1 vaccination in sheep and goats, for the first time in Macedonia in 2008. Rev 1 vaccination has proven to be an effective mean for control of brucellosis in sheep and goats, and when used properly, significantly decreases the incidence of the disease in humans and animals. However, changes in the control strategy and introduction of a live vaccine, inevitably required changes in the laboratory testing strategy. Due to serological interference of the vaccine and its potential to cause infections and abortions, additional test methods were introduced. Complement fixation test (CFT) has replaced i-ELISA as confirmatory test, and gel diffusion with native hapten (GD-NH) was implemented as complementary test in cases where vaccine induced serological response was suspected. For identification of Rev1 induced abortions, PCR based methods capable to differentiate Rev1 from field Brucella melitensis strains was implemented.

One year from the start of vaccination, a herd prevalence was still relatively high (10.93% in 2008 and 10.92% in 2009), but the percentage of positive animals decreased (2.56% in 2008 and 1.72% in 2009). During the next three years, a significant and continuous decrease in herd prevalence was recorded (3.22%, 1.76% and 0.41% in 2010, 2011 and 2012, respectively). At this stage thorough epidemiological investigations were organized in all infected herds and advanced molecular techniques based on VNTR were used to support trace-back analysis and help in identification of infection origin and routes of spreading. Results from these investigations confirmed the necessity of regional approach for better control of the disease.
DETERMINATION OF ANTIBACTERIAL ACTIVITIES OF DIFFERENT THYMUS PRAECOX SUBSP. GROSSHEIMII VAR. GROSSHEIMII EXTRACTS

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*Thymus praecox subsp. grossheimii var. grossheimii* (Ronniger) is an endemic species of Thymus family. Although there are a large number of studies about different thymus species, the antibacterial activity of *Thymus praecox subsp. grossheimii var. grossheimii* (Ronniger) was not found.

*Bacillus cereus* (ATCC 11778), *Bacillus subtilis* (ATCC 6633), *Escherichia coli* (ATCC 25922), *Klebsiella pneumonia* (ATCC 4352), *Proteus mirabilis* (CCM 1944), *Pseudomonas aeruginosa* (ATCC 27853), *Salmonella enteritidis* (KUEN 349), *Staphylococcus aureus* (ATCC 29213), *Staphylococcus epidermidis* (ATCC 12228) strains were used in the study. Bacteria strains were provided by the collection of Istanbul University, Faculty of Veterinary Medicine, Department of Microbiology, Istanbul, Turkey. Antibacterial activity (MIC) for 4 different extracts of thymus praecox was screened by macrodilution liquid (tube) method according to the standards of Clinical and Laboratory Standards Institute (CLSI).

All extracts obtained from the leaves of Thymus praecox at different concentrations showed antibacterial activity against all test bacteria. The highest activity in tested extracts was observed with the acetone extract (93.75 µg/ml) against *Bacillus cereus*, whereas the lowest activity was seen with methanol extract (3500 µg/ml) against *Klebsiella pneumonia*, *Proteus mirabilis*, *Pseudomonas aeruginosa* and *Salmonella enteritidis*.

As a result, the extracts of this plant have the potential to be used in the preservation of food in food industry and in the treatment of bacterial infections.
EVALUATION OF WILD BIRDS IN LAKE VAN BASIN IN TERMS OF SOME PATHOGENIC AGENTS

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Lake Van Basin in Turkey is one of the most important aquatic regions, located on the northeast-south migratory routes, and houses transit migrant, winter visitor, migratory, irregular vagrant, and resident birds, with a total of 213 bird species. Regular monitoring of wild birds in this region for the zoonotic microorganisms they carry is necessary for public health. Resident poultry species in basin significantly affected by avian influenza outbreaks have seen in our country in 2005. After the outbreaks, a project was carried out funded by TUBITAK and regularly bird species living in the basin were regularly followed up in terms of the avian influenza (AI) virus types between 2006-2009 years. As a part of the project, fecal samples were collected from 2013 animals consisting of 47 different avian species in hazardous areas to represent all Lake Van Basin and in 59 samples (2.9%) positivity was detected by real time PCR (RT-PCR). RT-PCR positive samples were examined with the same method with respect to H5N1 and 4 samples (6.8%) were found to be positive. RT-PCR positive 59 samples were inoculated in embryonated chicken egg (ECE) and AI type A virus was isolated from 12 samples (20.3%). Of the isolates, 3 were typed as H1N7, 2 as H7N9, 2 as H11N9 and 1 as H8N4 with hemagglutination inhibition (HI) and neuraminidase inhibition (NI) tests. In a study performed as parallel with this study, 540 feces samples taken from totally 22 bird species were examined by real-time PCR (RT-PCR) in respect of Newcastle disease virus (NDV). Of the examined 540 feces samples, 28 (5.2%) were found to be positive with RT-PCR. The same samples were cultured in ECE, and 9 (1.7%) of them were positive for NDV isolations. Only in one isolate, mesogenic/velogenic APMV-1 was typed and lentogenic was typed in other 8 isolates. Likewise 357 fecal samples collected from some duck and gull species were evaluated for enteric bacteria, and bacterial isolation was performed in 48 (13.5%) fecal samples. Finally, AI type A virus was not detected in samples taken from dead birds between years 2010 and 2011 in Van Lake Islands and some bird deaths were determined to be the result of coccidiosis. It was concluded that regular monitoring of Lake Van Basin was necessary for following control and prophylaxis of mainly zoonoses, and for public health in our studies.
SPECIES DISTRIBUTION OF METHICILLIN RESISTANT STAPHYLOCOCCI ISOLATED FROM ANIMALS, ENVIRONMENTAL SAMPLES AND STAFFS

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Staphylococci are part of the normal skin and mucosal microflora of animals and humans however, they can cause infection in a variety of animals. Methicillin resistance among Staphylococcus species has been reported soon after the starting of penicillin treatment in 1950’s. Nowadays it is one of the most important emerging infectious agents around the world.

The aim of this study is to investigate the presence of methicillin resistant staphylococci, particularly methicillin resistant Staphylococcus aureus (MRSA), from the dogs and cats that brought to the Veterinary Faculty clinics and the staff in those clinics, and risk of the environmental contaminations in the clinics.

For this purpose; swab samples were taken from nasal mucosa of 18 staffs, nasal and oral mucosa of 7 cats and 21 dogs. For determination of environmental contamination 33 swab samples from various surfaces of the clinics were collected. Gram positive cocci were identified following after the determination of methicillin resistance by disc diffusion method. All the isolates examined for the presence of the mecA gene by PCR, for molecular typing by RAPD-PCR. Antibiotic susceptibilities of the isolates were determined.

Three (42.9%), 5 (23.8%), 19 (57.6%) and 13 (72.2%) methicillin resistant coagulase negative staphylococci (MRCoNS) were isolated out of 7 cats, 21 dogs, 33 environmental and 18 staff samples, respectively. While S. hominis were isolated predominantly, no MRSA were isolated from the samples. Out of 41 isolates 87.7%, 63.4%, 58.5% of them were resistant to penicillin G, erythromycin and tetracycline, respectively.
EXAMINATION OF VANCOMYCIN RESISTANT ENTEROCOCCI (VRE) ISOLATED FROM CANINE AND FELINE FECAL SWABS

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Enterococci species, which are normal inhabitants of the gut flora of healthy animals and human, began to be recognized as an important pathogen in both human and veterinary medicine. The development of resistance against vancomycin - which was one of the most effective antimicrobial agent - among enterococci species, caused to researchers to work on the epidemiology of the infection more intensively. The aim of the study is to determine the occurrence of VRE in pet animals, examine the antimicrobial susceptibility profiles phenotypically, and the distribution of the vancomycin resistance associated genes by PCR.

For this purpose, rectal swabs from pet animals (86 canine and 71 feline) were collected and processed for VRE isolation. Following after the identification of the isolates, antimicrobial susceptibility of the isolates were determined according to the Clinical and Laboratory Standards Institute (CLSI) standards. Finally, distribution of the vancomycin resistance associated genes; vanA, vanB, vanC1 and vanC2/C3 among enterococci species were determined by PCR.

The VRE isolation rate among pet animals was 12.7%. VRE were isolated from 12 canine and 8 feline samples. Antimicrobial susceptibility results were varying among the isolates. The highest resistance rates were erythromycin and enrofloxacin resistances. Screening of distribution of VRE among pet animals would be useful to detect any emerging antimicrobial resistance problem related with public health.
ISOLATION AND IDENTIFICATION OF MYCOPLASMAS FROM PNEUMONIC LUNGS OF CATTLE BY 16S rDNA PCR AND DGGE

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Mycoplasma mycoides subsp. mycoides SC (MmmSC) causes contagious bovine pleuropneumonia (CBPP), which is the most important mycoplasma infection of cattle. M. bovis occurs in cattle worldwide and causes mainly mastitis, pneumonia, arthritis and otitis. Alongside M. bovis, several other mycoplasmas including M. canis, M. californicum, M. alkalescens, M. canadense, M. bovirhinis and M. leachii have been associated with cattle pneumonia.

This study aimed to (i) investigate the presence of MmmSC in Turkey, which has not been detected so far, (ii) determine the rates of BRD-associated Mycoplasma spp. in pneumonic lungs of cattle, (iii) examine the relative sensitivity and relative specificity of PCR/DGGE in M. bovis identification and (iv) evaluate the suitability of PCR/DGGE in the identification of mycoplasmas isolated from pneumonic lungs of cattle.

A total of 137 pneumonic lungs from cattle submitted to the Mycoplasma Reference Diagnostic Laboratory in Istanbul and 63 pneumonic lungs from cattle collected from a slaughterhouse in Istanbul were subjected to mycoplasma cultivation. Both 16S rDNA PCR/DGGE and M. bovis specific PCR were performed on the DNA extracts of the isolates.

Mycoplasmas were isolated from 100 of the 137 (72.99%) samples submitted to the laboratory and from 6 of the 63 (9.52%) samples collected from the slaughterhouse in Istanbul. In total, mycoplasmas were isolated from 106 of the 200 (53%) pneumonic lung samples studied. Of these, 100 were identified as M. bovis, one was M. arginini and one was Acholeplasma laidlawii. Besides, PCR/DGGE revealed that M. bovis and M. arginini co-existed in 4 lung samples. However, none of the isolates were identified as MmmSC. In M. bovis specific PCR, 104 of the all 106 (98.11%) isolates were positive. Overall, M. bovis was detected, either alone or in mixed culture, in 52.00% of the pneumonic lung samples (n=200) by both tests.

The results suggest that M. bovis is widespread in Turkish cattle population. The study provided further evidence for the absence of CBPP in Turkey. PCR/DGGE was capable of identifying all 106 field isolates, including mixed mycoplasma cultures, and showed high relative sensitivity and relative specificity. In conclusion, PCR/DGGE was found to be a valuable tool for reliable and rapid diagnosis of mycoplasmas isolated from cattle lungs.
A SEROLOGICAL INVESTIGATION OF EPIZOOTIC HEMORRHAGIC DISEASE VIRUS INFECTION IN SHEEP, GOATS AND CAMELS IN THE AYDIN PROVINCE

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Epizootic hemorrhagic disease virus (EHDV) is the cause of a systemic viral infection of ruminants. Although it is mainly a disease of the deer, it has also caused significant economic losses in cattle. The infection was first reported in the Mugla province in 2007 and caused deaths in Aydin province as well. The infection is characterized by systemic blood circulation disorders and death. Data on epizootiological, clinical and pathological characteristics, and virulence of the infection in sheep, goat and camels in Aydin province are very limited in the current literature. The role of these animals in serving as hosts for the virus is unknown. In this study, EHDV infection was investigated in serum samples collected from 40 goats, 55 sheep, and 68 camels. The samples were collected in 2012 from sheep and goats and in 2009-2011 from camels. The samples were tested for EHDV-specific antibodies using a commercially available blocking Enzyme-Linked Immunosorbent Assay (blocking ELISA) (LSIVet, Lissieu, France). Antibodies against EHDV were detected in five of the 68 camels (7.3%), seven of the 40 goats (17.5%) and four of the 55 sheep (7.3%) investigated. These findings suggest that natural EHDV infection is present and may be circulating in camels, goats and sheep in the region. Since the EHDV may cause subclinical or atypical symptoms, these animals could play a role in the epidemiology of the EHDV infections. In addition, the virus may be causing outbreaks time to time, resulting in economical losses in the Aegian region. To the authors’ knowledge, this is the first report of serological evidence of natural EHDV infection in camels and goats in Turkey. Results from this preliminary study may be useful in larger future studies aimed at the combat and control the infection.
EFFECTS OF GENERAL AND LOCAL ANAESTHESIA ON INNATE AND CELL-MEDIATED IMMUNITY IN DOGS

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The dynamics of several parameters of innate and specific immunity were investigated in five periods of time under halothane and epidural anaesthesia in dogs. Phagocytic number (PN), phagocytic index (PI) and NBT test were used to determine phagocytic properties of neutrophils during both anaesthesia regimens. Specific immunity was assessed by changes in lymphocyte number and distribution of their main subsets. The principal stress hormones were also measured in the blood and their relation with the factors of immune system was evaluated.

The results showed an elevation of PN, PI and NBT at 120 min of anaesthesia with gradual return to basic values, more pronounced in epidural group. Total lymphocyte number decreased on the price of B-lymphocytes at 120 min and 24 hours thereafter in both anaesthesia types. On the contrary, CD5+ and CD8+ cells increased in both anaesthesia types at 120 min. General and local anaesthesia produced similar stress responses estimated by increased levels of adrenaline and cortisol at 120.

In conclusion, innate immunity was stimulated during 2 hours lasting halothane and epidural anaesthesia. Whereas, both general and local anaesthesias disturbed normal course of humoral immune response but lead to increased number of cells with cytotoxic properties. Both anaesthesias provoke an acute stress response which could contribute to the before-mentioned immunological disturbances.
COMPARISON THE EFFECTS OF HALOTHANE ANAESTHESIA IN HORSES WITH AND WITHOUT DEXMEDETOMIDINE CONTINUOUS RATE INFUSION

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The efforts of anaesthetists to find safer protocols for general anaesthesia in horses continue. The idea of the partial intravenous anaesthesia (PIVA) is to reduce MAC and thus cardiorespiratory depressing effects of inhalation agents by combining inhalation anaesthesia with CRI of an analgesic agent.

The purpose of the study was to compare the effects of halothane anaesthesia and PIVA using halothane and dexmedetomidine on respiration and coagulation parameters, and recovery in healthy horses.

Six healthy ponies aged between 2 and 7 years, weighing 201±70 kg (mean±SD) were submitted to either halothane or halothane-dexmedetomidine anaesthesia two weeks apart to produce cross-over design. Acid-base, blood gases, and coagulation parameters were measured at the beginning and after three hours of anaesthesia. Recovery qualities were compared between groups.

According to the results obtained, the addition of dexmedetomidine by CRI at 1.75µg kg⁻¹ hour⁻¹ to halothane anaesthesia in healthy horses reduced slightly halothane requirements for maintenance of surgical anaesthesia but had no effects on the recovery times and quality. PIVA using dexmedetomidine and halothane produced respiratory acidosis similar to halothane anaesthesia alone but significantly more pronounced hypoxaemia. In contrast to halothane anaesthesia a combination of halothane with dexmedetomidine caused also an activation of coagulation system detected by elevation in plasma D-dimer levels and TT after 3 hours of duration.
EVALUATION OF THE PRE AND POST-OPERATIVE CLINICAL, HEMATOLOGICAL, BIOCHEMICAL AND BLOOD GASES FINDINGS IN THE CATTLE WITH ABOMASAL DISPLACEMENTS

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Displacement of the abomasum (DA) is an increasingly common disease in intensive production and causes great economical losses in high milk-producing in dairy cattle. In the last years, surgical procedures are used as the most common in the treatment of DA in dairy cattle. There are a lot of theories on etiology and pathogenesis of AD, and also the relationship between clinic pathologic data and survival range is unclear. DA is seen predominantly in spring and usually above—average milk yield in dairy cows and between 3 and 10 years old. Female cattle are also at higher risk of developing DA than male cattle. Age, breed, gender, feet intake and postpartum season are some important predisposition factors for DA. The DA may be seen in the left (LDA) or the right side (RDA) of abdomen, but more likely to be LDA than the right RDA. In this study; Holstein cows were treated with omento-abomasopexy technic. The clinical, hematological, biochemical and blood gas parameters were evaluated before and at tenth day after operation.

This study was performed in 14 Holstein cattle; they include that two calves in 120 days, four heifers 2–3 years old and others 4-10 years old. One of the calves is a male and with RDA disorder, another is female and LDA. Three cattle (21.42\%) were RDA, 11 cattle (78.58 \%) were LDA. Laparotomy was done from the left side in LDA or the right side in RDA. Abomasum was examined, and then discharged the contents of fluid and gases with punction and fixed by omento-abomasopexy technic in anatomical position. There are ulceration in seven cows, abomasal mucosal cancer (6x3x1cm) in one cases and stenosis of pyloric in two cattle. Haematological parameters were within the normal ranges. In the blood serum, AST, CK, CK-MB, and GGT concentrations decreased significantly (P<0.05) in the tenth day of post-operation compared with preoperation levels. The concentrations of ALP were significantly decreased (P<0.05) compared with the post-operation. In fourteen cows, omento-abomasopexy successfully was completed with open surgery procedure, but two cattle with abomasal cancer and one RDA were sent to slaughter in post-operation period. Finally, our cases successfully returned to health (85.71\%). In conclusion, omento-abomasopexy is a surgery method used most commonly because of economical reasons in rutin practice, and also we suggest that this method simply can be performed in the all types of DA in standing and with high survival rate.
EVALUATION OF TEAR SECRETION AND INTRAOCULAR PRESSURE IN HEALTHY AND DISORDERS WITH AMAUROSIS ON HOLSTEIN CALVES

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Amaurosis, which is one of the congenital eyes anomaly and defined as blindness, is specially shaped on new-born calves frequently. In domestic animals, ST and IOP values are important for the diagnose and treatment of eye illnesses such as keratitis, keratoconjunctivitis, anterior uveitis and glaucoma. IOP is measured by Schiötz, tonovet and tonopen tonometers in veterinary medicine.

It is aimed to determine Tear Secretion (TS) and intra-ocular pressure (IOP) of in condition Holstein calves and Holstein calves with amaurosis. Two groups are formed in condition Holstein calves and Holstein calves with amaurosis. There were 20 calves in each group 10 of them female and 10 of them male. 80 eyes of 40 Holstein calves were measured. After clinic treatment, TS, Schmier Tear Test (STT) and IOP values were measured by Schiotz Tonometre (ST). Statistic comparisons were determined in SPSS 17.0 program. In the study TS and IOP, values are determined between right-left eyes, female-male calves and healthy calves-calves with amaurosis. Statistic results were given as average-standard deviation and maximum-minimum values. While the result was as TS=20.50±2.95, IOP=17.53±1.54 in healthy calves, it was determined as TS=5.50±0.52 and IOP=10.96±1.75 in Holstein calves with amaurosis. In all the groups, an important statistical difference was not found between right-left eyes and female-male calves (P<0.05) but ST and IOP values of Holstein calves with amaurosis were low, which is statistically important if you compare with healthy calves. This study is considered important for bringing out STT and IOP degrees of calves with amaurosis for the first time in the World.
EVALUATION OF THE PARAMETERS OF CLINICAL, HEMATOLOGICAL BIOCHEMICAL AND BLOOD GAS ON THE CASE OF ABOMASAL DILATATION AND DISLOCATION THAT DEPENDING ON PYLORIS OBSTRUCTION ON A COUPLE OF FOUR-MONTH-OLD HOLSTEIN CALVES; MALE AND FEMALE

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Dislocation of the abomasum is generally occurred after the postpartum in the productive dairy cattle. Its reasons are commonly indicated that predominately nitrogen-protein-rich food intake. In this study; A Cases of the Abomasal Dilation and Dislocation That Depending On Pyloris Obstruction is evaluated through the Parameters the Operative, Clinical, Hematological, Biochemical and Blood Gas of four-month-old holstein calves male and female.

Anamnesis; Both of the cases were brought to the clinic with complaints of abdominal distention, anorexia, constipation. We learned that the complaints continued for 15-20 days, calves were given big-coarsely chopped of straw and the mixed feed from the age of 10-20-day, applied various medicines and serums in the symptoms of the disease began by free veterinarians. Clinical symptoms; history was observed. Routine clinical examinations and analysis of blood was checked.

Case I; It showed that; trocar was used to the left fossa paralumbalis to download the excessive swelling of animals, abdomen is swollen like a drum although fixed trocar in the region. Difficulty breathing was observed by the reason of the tympani. Laparotomy was performed in the left fossa paralumbalis due to asphyxia. At laparotomy displacement of abomasal from the left abdominal wall to stomach and three fistula orifice opened with trocar are detected. When fistule is c ombined with an incision, discharged the hemorrhagic contents of fluid and gas with a pH of 4.2. Obstruction of pyloris was detected with undigested pieces of straw on palpation. obstruction has been corrected by taking out these pieces of straw from operation wound, and fixed by omento-abomasopexy technic in anatomical position.

Case II; Right abomasal displacement was diagnosis with clinical examination and laparotomy was performed in the right fossa paralumbalis. Both dislocated abomasum where under the liver, between right abdominal wall and the stomach and dilated cecum was seen in the right abdominal cavity. First cecum then abomasum are poured by punctation. Abomasum is properly closed after being given liquid paraffin and the ventral abdominal wall is detected with omento-abomasopexy. The patients were followed for the necessary post-operative care. Before and after operations of 0, 10, 30 days of clinical, blood gas analysis, biochemical findings were evaluated. Tachycardia and breathing resolved, WBC and GRA increased, LYM, MONO, RBC and PLT decreased in the postoperative period. Blood gas and biochemical parameters such as PCO2, HCT, HCO3, TCO2, AST, P were high and PO2, Na, K, Ca, Cl were low in the preoperative period but 20-30th post-operative day returned to normally. Urea was observed normal that 30th day.

As a result; it is evaluated that case of the abomasal dilation and dislocation that depending on pyloris obstruction can shape on both male and female calves at the early age as 4-month-old, hardly digesting nutriments should not be given at the early ages to prevent such compliments, coarsely chopped straw causes abomasal displacement and these cases can be successfully treated by operation.
C-REACTIVE PROTEIN AND BLOOD GLUCOSE LEVELS AS MARKERS OF PANCREATIC NECROSES IN DOGS WITH VARIOUS FORM OF ACUTE PANCREATITIS

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The early diagnosis of pancreatic necroses is essential for adequate and efficient treatment. The purpose of this study was to establish the diagnostic and prognostic value of blood glucose concentrations and C-reactive protein as markers of pancreatic necroses in various forms of canine acute pancreatitis.

Seventeen dogs with spontaneous pancreatitis (group A), and 12 dogs with experimentally induced pancreatitis (groups B and C) were used. Group A was further divided into three subgroups depending on the pancreatitis severity: subgroup A\textsubscript{1}: 7 dogs with acute pancreatitis (AP); subgroup A\textsubscript{2}: 6 dogs with acute necrotising pancreatitis (ANP) and subgroup A\textsubscript{3}: 4 dogs with acute necrotising haemorrhagic pancreatitis (ANHP). Group B included 6 dogs with experimental pancreatitis induced by ligation of ductus pancreaticus. Group C comprised 6 dogs with experimental pancreatitis induced by introduction of oleic acid.

The values of both monitored indicators were significantly elevated compared to the usual values determined in dogs. Significantly higher levels were detected in the spontaneous event than in the experimental animals. Especially clear is the difference in the blood glucose values. It was observed that the blood glucose concentrations were dramatically elevated in dogs with acute necrotising pancreatitis: 5 (83.33\%) and 3 (75\%) dogs from the subgroups A\textsubscript{2} and A\textsubscript{3} respectively exhibited a glycaemia above 8.0 mmol/L. When acute pancreatitis was surgically induced (group B and C), the mean blood glucose concentrations were markedly depressed 24 and 48 hours post surgery compared to initial values (P<0.01) then slightly increased at 72 and 96 hours.

The C-reactive protein values were also significantly elevated compared to the normal, but significant differences between the various groups and sub-groups were not observed.

In conclusion, although the glycaemia presents a low diagnostic value and has to be determined simultaneously than other biochemical and haematological parameters such as amylase and lipase activities, concentrations of acute phase proteins and blood leukocyte counts for example, high circulating glucose concentrations in spontaneous acute pancreatitis may be considered as a bad prognostic sign and corollary the probability that a subject with glycaemia included into the usual ranges develops necrotizing pancreatitis appears as very weak. Compared to blood glucose, C-reactive protein is a much better indicator of inflammation, but is worse marker in case of suspected pancreatic necrosis.
HEMATOLOGICAL PARANEOPLASTIC SYNDROME AND PLASMA VEGF IN CANINE HAEMANGIOSARCOMA

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The hematological paraneoplastic syndrome (HPNS) is one of the commonest symptomatic complex in cancer patients. The extent of occurring changes could vary for the different kinds of tumours. The vascular endothelial growth factor is a key component of tumour-associated angiogenesis. VEGF plasma concentrations could be of diagnostic and prognostic value.

Eight canine patients of the Small Animal Clinic at the Faculty of Veterinary Medicine with histologically confirmed diagnosis of spleen haemangiosarcoma were examined. Six healthy dogs served as controls. Blood samples were collected by venipuncture of v. cephalica antebrachii, with EDTA and heparin as anticoagulants. Haematological parameters haemoglobin (g/L), haematocrit (%), red blood cell counts (T/L), red cell distribution width (RDW,%), MCV (fL), MCH (pg), MCHC (g/L), total leukocytes (G/L), thrombocytes (G/L) were assayed on an automated haematological analyzer Mindray BC-2800VET (China). Blood plasma VEGF concentrations were analysed with a commercial Quantikine Canine VEGF – ELISA test kit (R&D Systems, Inc, Catalog Number CAVE00).

The results demonstrated reduced red blood cell counts, haemoglobin and haematocrit in diseased animals, as well as slight changes in leukocyte counts and insignificant variations in red blood cell indices. Plasma vascular endothelial growth factor was elevated in cancer patients (128.41±51.78) compared to controls (44.43±8.27). The highest VEGF values were determined in dogs in most advanced stage of the disease.

Dogs with spleen haemangiosarcoma exhibited lower haemoglobin and red blood cell counts, with minor changes in red blood cell indices. A substantially elevated plasma VEGF concentrations were observed due to the effect of tumour-produced VEGF and proinflammatory cytokines. The high VEGF levels correlated to advanced stage of disease and low survival rates.
A PERINEPHRIC PSEUDORENAL CYST IN A CAT

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Accumulation of transudate between the capsule and parenchyma lead to formation of perirenal pseudocysts in cats. The accumulated fluid may be located between the renal parenchyma and the renal capsule or between the renal capsule and a thin-walled fibrous sac attached to the capsule. Pseudocyst formation can occur at variable stages of renal dysfunction. 16 year old female mix breed cat was brought to Veterinary Teaching hospital of Istanbul University with complaints of nausea lasting for 4-5 days and chronic polydipsia and weight-loss ongoing for 6 month. Ultrasonographic examination and blood analysis were performed after detailed examination. The enlargement of kidney on left side was easily palpated. High levels of blood urine nitrogen (BUN= 400 mg/dl) and creatinine (Crea=11,9 mg/dl) and serum phosphore (P=26.5 mg/dl) were detected. Abdominal ultrasonography demonstrated remarkable unilateral perirenal cystic image. Percutaneous drainage and labarotary analysis of the fluid were performed. Cytology was compatible with perirenal pseudocyst formation, and no remarkable sign of neoplasia was found. This cat with a perirenal pseudocystic improvement was presented, as it is a rare situation and no underlying disease such as neoplasie, viral infections or abnormal deformations had been detected.
SUPERFICIAL NECROLYTIC DERMATITIS IN A DOG

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Superficial necrolytic dermatitis (SND) is a skin reaction characterized by an erosive, crusting, and scaling dermatopathy distributed generally over the face, distal paws, and inguinal area. A 5 year old German Shepherd bitch was presented with a 3 week history of generalized dermatopathy in the dorsum part. The owner had not noticed any changes except itching problem. In our physical examination, hyperthermia (T: 40.4°C) and apparent splenomegaly were detected. The biopsy sample was taken from the alopecic erosive lesion and \textit{Trichophyton violeceum} was detected by culture. Histologically, complete lysis of epithelium and necrolytic areas with inflammatory cells located between subcutis layer were detected. A diagnosis of SND was based on clinical presentation, clinical chemistry supported by the histological findings. Also thyroid profile test results, serum eustradiol, progesterone, ACTH and cortisol level were found in normal range. Increased alkaline phosphatase (ALP=864 U7L) and alanine aminotransferase (ALT=488 U/L) were detected in the serum biochemical analysis. Positive c-ANCA and antinuclear antibody (ANA) result were detected. Surgically erosive skin resection was applied and enlarged spleen was removed. After the operation immunosuppression therapy (cyclosporine 2 mg/kg) was performed. The dog recovered by 6-month immunosuppression therapy. SND is a rare skin disease for dogs, also of which dorsum lesions were rarely seen. This case was found worthy to be presented as severe generalized lesions were observed in dorsum part and surgically removal of lesions combined with immunosuppression therapy was found to be an effective treatment choice.
PLEURAL EFFUSION IN A DOG

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Mesotheliomas are rare neoplasms that originate from mesothelium, a lining that protects the pericardial, peritoneal and pleural cavities. It was reported that dogs aged 8 years or more predisposed to this disorder. Mesothelioma was likely diagnosed in 7 year old male mix breed dog which was brought to Veterinary Research and Teaching hospital of Istanbul University with complaints of general weakness and severe dyspnea. The dog had been misdiagnosed with faryngitis and hernia diaphragmatica before it was brought to our faculty clinic. Apparent abdominal respiration was inspected and suppressed heart sounds, abnormal respiratory sounds and pleural rub were detected by auscultation of thorax. Radiographic examination and blood analysis were performed. Chest X-ray examination demonstrates both sided pleural effusion. Leukocytosis (WBC=36.2x10^3 µL) was detected on blood count. By thoracocentesis, 40 ml fluid was drained and cytologic examination was performed. Numerous erythrocytes, neutrophiles and pleomorphous, atypical, multinuclear or multinucleolar mesothelial cells with apparent nucleus were observed and cytology was compatible with mesothelioma. The dog died before medication and the owner of the dog didn’t give the permission for necropsy. In our clinical case we did not confirm any contact of the dog with asbestos or larger amount of pesticides, which are described as etiological factors of mesothelioma. As mesothelioma is a very rare health condition for dogs, it might be lead up to misdiagnosis.
DETECTION OF ETIOLOGICAL AGENTS WITH TRANSTRACHEAL ASPIRATES, PROGNOSTIC CRITERIA AND ALTERNATIVE TREATMENTS OF INFECTIONS TRACHEBRONCHITIS IN DOGS

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In this study, we aimed to investigate etiologic agents of infectious tracheabronchitis (ITB) in dogs and determination to the therapeutic principles for the diseases. The material of this study was consisted of 100 dogs in various ages, sex and race brought to Diyarbakır Metropolitan Municipality Animal Nursing and Rehabilitation Center. The 40 dogs which have clinically, cough, double-sided nasal flows (serous, sero-mucous, mucous, muco-prulent), double -sided (serous, sero-mucous, mucous, muco-prulent), loss of appetite, weakness, showing symptoms were selected.

In hematological examination increased in the parameters of lymphocytes, monocytes and decreased in the parameters hematocrit, MCV were found to be significant ($P<0.05$) as statistically. In biochemistry analyses decreased in the parameters of BUN, CREA (creatine), Iron (Fe) and increased in the parameters of Phosphorus (P) values were found to be important ($P<0.05$) as statistically.

Microbiological and virological analyzes which conducted in the etiology of ITB such as \textit{Bordetella bronchiseptica} (\textit{B. bronchiseptica}), \textit{Klebsiella pneumonia} (\textit{K. pneumonia}), \textit{Pseudomonas aeroginosa} (\textit{P. aeroginosa}), \textit{Pseudomonas luteola}, \textit{Pasteurella pneumotropica}, \textit{Raoulthella ornithinolytica}, \textit{Raoutella planticola}, \textit{Pantoa aglemerans}, \textit{Seriata plymutica}, \textit{Sphingomonas paucimobilis}, \textit{Streptococcus canis} (\textit{S. canis}), \textit{Streptococcus zooepidemicus}, \textit{Staphylococcus intermedius} and \textit{Staphylococcus aureus} were found to be bacterial agent in the diseases. Canine parainfluenza virus (CPIV) and Canine distemper virus (CDV) were determined.

The treatment were made on the basis of results of antibiotic susceptibility and clinical findings. 11 patients, 11 (100\%) which administered Trimethoprim/Sulfodoxine (Atavetrin, Atabay) answered to the this treatment. In Amoxicillin/Clavulanic acid (Synulox, Pfizer) group 17 patients were treated and 13 (77\%) patients healed. Enrofloxacin (Baytril-K 5\%, Bayer) administered 9 patients, 6 (67\%) of them were recovered and 3 patients were administered Gentamicin (Gentavet, Vetas), 2 (67\%) of them answered to treatment.

In conclusion; ITB is common in Diyarbakır and in etiology of diseases primarly such as \textit{B. bronchiseptica}, \textit{S.canis}, \textit{K. pneumonia} and \textit{P. aeroginosa} were isolated as bacterial agents. And also viral agents such as CPIV and CDV were detected especially in conjunction with the bacterial agent. In this study, Trimetoprium/Sulfadoxine (Atavetrin, Atabay) and Amoxicillin/Clavulanic acid (Synulox, Pfizer) was found to be the most effective antibacteria treatment. This study will be useful particular veterinary medicine who work in Diyarbakır and generally for all veterinary medicine.
NORMAL RENAL DOPPLER PARAMETER IN KANGAL DOGS: PRELIMINARY FINDINGS

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Early detection of renal disease has an important role in the prognosis and treatment. There were too many diagnostic tools used for this. Renal doppler ultrasonography is one of them and help the diagnosis of the early detection of the renal disease in human medicine and animals. Renal resistive index (RI) and pulsatility index (PI) values that estimate the vascular resistance within an artery were calculated by many researchers.

Kangal dog is a special breed of Turkish shephard dogs. No studies could be found in literature with regard to normal values of renal doppler measurements in Kangal dog breeds. The purpose of this study is to determine the normal values of intrarenal RI and PI in non-sedated clinically normal Kangal dogs. For this reason 11 Kangal dogs and 10 mixed-breed dogs were included to the study. All dogs were clinically healty and from different age and sex. The mean value of renal RI and PI were, 0.61±0.05 and 1.12±0.05 for Kangal dogs; 0.62±0.06 and 1.17±0.07 for mixed-breed dogs. No significant differences were determined between the two groups. Renal RI and PI values in Kangal dogs slightly lower than the periviously published data by the researchers. In conclusion more research must be done to find out the normal values in dog breeds.
THE CHANGING PATTERNS IN REFERRAL RATES OF GERIATRIC CATS AND DOGS TO AN UNIVERSITY CLINIC: A RETROSPECTIVE STUDY

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Aging is a process including progressive changes in body due to a disorder or co-morbidities which may result in clinical deterioration and eventually death. Dogs aged-8 old and cats over 10 years of age are called as enior, and special geriatric care is needed for these animals. In this retrospective study, we aimed to investigate the diseases seen in geriatric cats and dogs which were referred to the our clinic of internal medicine. The study group was comprised 19127 healthy or sick pet animals which were brought to Research and Application Hospital, Istanbul University between 2008 and 2013, and 2086 geriatric cats and dogs (10.9 %) were evaluated according to age, sex, breed and diseases by organ system affected. Cats and dogs accounted for 29.8% and dogs 70.2% of geriatric population. The highest age limits of cats and dogs were 23 and 20 years-old, respectively. According to the years, percent of the diseases in geriatric cats and dogs were 12.1%, and 12%, 13.4% and 13,6%, 12.35% and 15,8%, 5.9% and 9%, 9.35% and 10%, and 4.2% and 6.3%, respectively. The most common breed of dogs was Terrier (39.5%) while mix breed (55%) in cats. When the animals were evaluated according to years, urinary system diseases (34%) were leading cause of referral in geriatric cats through 6-year period. However, cardio-vascular system diseases (26%) were found to be most frequent problem in geriatric dogs between 2008 and 2012, whereas urinary system diseases became leading causes of referral after this period. However 2.4% of cats and 1.3% of dogs were found to be healthy.

We conclude that there is a progressive decrease in the referral rate of geriatric pet animals to our University Clinic in last three years, and disease profiles were different between geriatric cats and dogs. The increasing rate of private hospitals or clinics in Istanbul, relatively longer distance of the Veterinary Faculty to center of the city, and the owners choice for other opportunities may be associated with this trend.
TREATMENT OF A GIANT ULCERATION DUE TO SELF-DIRECTED AGGRESSION IN A CAT

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A 2-year-old, male, mixed breed, paraphlegic cat was referred to Internal Medicine Department Policlinics with stranguria, dysuria and pyuria. The physical examination revealed abdominal distension and mild hyperthermia (T: 39.3°C). Enterococcus spp. was isolated from urine culture. Marbofloxacin had been used for 10 days due to antibiotic sensitivity testing results. Urinary bladder area which was shaved before ultrasonography, was scratched and licked by the cat after 4 days. Wound healing and care were done. At this period, the cat became very anxious. For the anxiety, amitriptyline was prescribed. Then the collar was taken off by the owner, only medical dressing and bandage were applied. After 3 days, most of the abdomen was comminuted and rended by the cat. A giant ulceration; 19 cm in length and 16 cm in width was noticed on abdomen. Wet medical dressing was applied to the wound area as well as supporting health status. After 5 days, no healing was observed. Then topical antibiotic (mupirocine) and topical ointment (collegenase) were applied daily to the wound area. After 7 days, little improvement in the ulceration area and deterioration of health status were also observed. Therefore, different therapy was started. Giant ulceration was treated with a polyurethane non-adhesive foam dressing, which were especially used in human medicine. The dressings were changed twicely in a week. During this time, the wound area was kept closed. After 3 months of this application and supportive therapy, the ulceration area was healed completely and general health status of the cat was improved.
GENERALIZED TETANUS: FROM BITE WOUND TO SERIOUS NEUROMUSCULAR DISORDERS – CASE REPORT

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Tetanus is a very rare disease in cats considering increased resistance to tetanospasmin. Generally mortality in animals is very high (80%), and specifically for dogs it is 50%. By our knowledge there is no literature data for mortality rate in cats. Clinical diagnosis is efficient and based on specific clinical signs and history of the old wound. This case report shows rapid development of severe generalized tetanus in six months old female stray cat, founded by a new owners, with bite wound on the left side of the neck. Clinical sings, treatment and recovery are also presented.
PETS DOG (CANIS LUPUS FAMILIARIS) WITH THE IDENTIFICATION OF STR ANALYSIS IN FORENSIC SCIENCES

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In a criminal investigation, the biological collected evidence is mostly human, although animal biological evidence is commonly found at crime scenes. The materials of an animal which are found at crime scene, are useful for illuminating the cases like identification of a lost pet’s remains, identification of assailant animal which is involved in attack on an animal or a person, identification of an animal which causes an accident, identification of the responsible animal in a property damage, animal persecution and animal theft (1). Pets live with people and place biological samples everywhere, which may be useful in a forensic context linking suspects and victims, to an occurrence (2). Morphological methods can usually distinguish between species but never show a positive identification of an indivual or race. A canine-specific STR multiplex reagent kit for co-amplification of 18 STR loci and sex-typing markers has been developed for use in forensic casework. The canine multiplex STR reagent kit will provide for the analysis of canine biomaterial based on the same standards applied to human DNA profiling (3). A multiplex genotyping system, comprising 18 short tandem repeats (STRs) and a sex-linked zinc finger locus for gender determination, was developed for generating population genetic data assessing the weight of canine forensic DNA profiles. In this study, we used blood samples of 150 domestic dogs for brought health check and vaccination in Faculty of Veterinary Medicine Research and Application Hospital in Istanbul University. They were extracted by the “Invitrogen PureLink™ Genomic DNA” commercial kit and quantification performed by Qubit® Florometer. Genetic typing was performed with 19 canine microsatellites markers, co-amplified in a single multiplex PCR reaction with Canine Genotypes™ Panel 1.1 by the ABI PRISM™ 310 capillary electrophoresis instrument. Then all results are evaluated.
DOPPLER EVALUATION OF FETAL AND FETO-MATERNAL VESSELS DURING DYSTOCIA IN FOUR CATS

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Doppler ultrasonography is becoming an essential tool in veterinary medicine, especially in theriogenology. It is being widely used for the evaluation of fetal well-being in pathologic pregnancies in human medicine. The study highlights the usage of Doppler ultrasonography in veterinary obstetrical pathologies with a review of literature of human and veterinary medicine. Four cats with dystocia and their fetuses were evaluated for fetal and maternal haemodynamics. After a detailed anamnesis and physical examination, existence of the fetal heartbeat of each fetus was checked with B-mode real-time ultrasonography (MyLab 5-Vet ESAOTE®, Genova, Italy) using a microconvex probe of 5 MHz. Immediately after the recording of the fetal heart rate, pulsed-wave Doppler (PWD) sonography was performed to the most caudal fetus. First, the vessel was visualized using Color-Doppler mode and subsequently the PWD sonography mode of the device was turned on. The insonation angle was approximately 60° in all examinations. Pulsatility (PI) and resistance index (RI) of umbilical artery, uteroplacental artery, fetal thoracic aorta and fetal inferior vena cava were recorded and the waveform of each vessel was assessed qualitatively.

As a conclusion, flow velocity of the fetal and feto-maternal vessels can inform us of the existence of the pathology related to gestation and also can help choosing the method of treatment in veterinary medicine.
COMPLEX GYNECOLOGIC PATHOLOGIES IN A BITCH

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Canine mammary tumors are half of all tumors in bitches and approximately 40-50% of them are considered malignant. Leiomyomas of the reproductive tract in the bitch are frequently associated with estrogen secreting tumors or ovarian follicular cysts. Cystic endometrial hyperplasia, mammary hyperplasia and/or neoplasia may also be concurrently found. Follicular cysts are fluid-filled structures develop within the ovary and result in prolonged secretion of estrogen, continued signs of proestrus or estrus, and attractiveness to males. Pyometra, is usually occurred by bacterial interaction with an endometrium that has undergone pathologic changes by hormonal stimulation. Advanced age, consicuitive cycles without pregnancy, unregular estrus cycles, prolonged proestrus and estrus, exogenous estrogen or progestagen applications are the factors that leads to pyometra.

10 years old, sexually intact, nulliparous, 7 kg in body weight, mixed bred bitch was presented to our clinic with prolabeled vaginal mass, various sized tumoral masses on mammary tissue and anorexia. Pyometra and cystic structures on both ovaries were observed by ultrasonographic examination. As a surgical approach, ovariohysterectomy, total bilateral mastectomy and extirpation of prolabeled vaginal mass were applied in the same anesthesia. According to histopathology; it was identified that vaginal mass was leiomyoma and masses on mammary tissues were adenocarcinoma grade II.

An interesting aspect of this case was the presence of four gynecologic pathologies in one dog. Although the only reason for presenting such a patient to the clinic is usually the vaginal mass, potential pathologies on mammary tissue, ovarium and uterus should be determined by detailed gynecological examination. If it is necessary and possible to make combined operations, it will not only decrease the vaginal leiomyoma recurrence but also will increase the life quality.
PRECLINICAL DEVELOPMENTS OF THERAPEUTIC AGENTS FOR THE TREATMENT OF CANINE AND FELINE MAMMARY CANCER: A REVIEW

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The frequency of cancer and other diseases related to aging in pet animals has increased in recent years due to increased life expectancy. Mammary tumours are among the most frequent neoplasms and it is one of the most important diseases in dogs and cats, since the disease is often malignant and frequently metastases to other organs. Surgical excision unfortunately still remains the treatment of choice for mammary tumours in most of the countries although alone it does not provide a cure in cases of mammary cancer.

As an adjuvant therapy, previously the use of antiestrogens, such as tamoxifen, and another choices doxorubicin, a combination of 5-fluorouracil-cyclophosphamide were found inappropriate for the treatment of mammary tumours. The anticancer efficacy of tumor necrosis factor-α as its regional delivery at high concentrations has considerable antitumor activity and its administration starts modulation of tumor inflammation, necrosis, and vascular permeability. The oncolytic vaccinia virus strain GLV-1h68 also can be used a possible therapeutic agent for canine mammary cancer. A selective COX-2 inhibitor such as piroxicam should be considered as a single agent for the treatment of dogs with inflammatory mammary carcinoma and improves quality of life, significantly increases survival rates compared with dogs treated with traditional chemotherapy protocols, but may not be in cats. It was shown that desmopressin, a haemostatic compound, prolongs survival in surgically treated dogs by inhibiting lymph node and lung metastasis when used during the surgical excision.

Treatment outcome after surgery alone is unsatisfactory in dogs and cats with invasive malignant mammary gland tumors and reoccurrence or metastases are seen after the surgery. Additional investigations of therapeutic agents in dogs and cats with high-risk mammary cancer are still warranted.
INFLAMMATORY MAMMARY CARCINOMA-CLINICAL OUTCOME AND MEDICAL APPROACH
IN CANINE AND FELINE PATIENTS

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Mammary tumours are seen very common in dogs and cats. Inflammatory mammary carcinoma (IMC) is a special type of locally advanced mammary cancer and it is associated with aggressive behavior and poor prognosis in women and dogs. In cats, there were only very few cases of IMC reported until now.

Clinical features of this type of cancer include sudden presentation and affected animals usually have generalized edema, erythema, pain and warmth in the neoplastic area. Clinical signs generally present in both mammary chains with or without mammary nodules. Associated clinical signs of inflammation may be misdiagnosed as mastitis and severe dermatitis in these patients. Two clinical forms of IMC are described in women and dogs: primary IMC, without a previous history of mammary tumour and with or without a palpable mammary mass, and secondary IMC. Secondary IMC is also classified into two forms: non-postsurgical IMC (previous mammary tumour not surgically treated and leads to IMC, and postsurgical IMC that occurs after the surgical excision of a previous mammary tumour. Frequency of secondary IMC is two folds higher than primary IMC in dogs. Only one primary and three cases of secondary feline mammary IC have been described until now. Feline IMCs were generally reported as a secondary tumour and previously it has been found frequent association of inflammatory reaction with surgical suture rejection and steroid receptor positivity.

Surgery is not a very good treatment of choice in this type of cancer. In all dogs and some cats with IMC after the removal of the mammary tumours Cox-2 was expressed in all IMC samples by histopathologically. Despite variations in the percentage of cells expressing Cox-2, Cox-2 inhibitors were found useful in the treatment of mammary tumours especially in dogs. Treatment with piroxicam (a Cox-2 inhibitor) as a sole agent improves quality of life and significantly increases survival rates compared with dogs treated with traditional chemotherapy protocols.

In conclusion, 1) alternative treatment choices are still warranted in dogs and cats with IMC, and 2) canine and feline IMC could be useful as an animal model of human inflammatory breast cancer.
PREVALENCE OF SALMONELLA SPP., LISTERIA MONOCYTOGENES AND ESCHERICHIA COLI O157 IN MEAT AND MEAT PRODUCTS CONSUMED IN ISTANBUL

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The present study was conducted to investigate the incidence of Salmonella spp., Listeria monocytogenes and Escherichia coli O157 in 340 samples of meat and meat products (205 ground beef, 50 raw beef and 85 sausages) collected from producers and retailers in Istanbul. Salmonella spp., Listeria monocytogenes and Escherichia coli O157 analyses were performed according to ISO standards (ISO 6549:2002, ISO 11290-1:2005 and ISO 16654:2001). Salmonella spp. was detected in 1.18% samples. All samples were negative for L. monocytogenes and E. coli O157. The results indicate that meat and meat products may be contaminated by pathogens which can cause serious public health problems. Furthermore, the essential precautions should be undertaken to ensure improving the quality of production technology.
EFFECT OF RAPID CHILLING AND PELVIC SUSPENSION ON MEAT QUALITY OF LONGISSIMUS DORSI MUSCLE OF LAMB

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The objective of this study was to examine the effect of rapid (RC) and conventional (CC) chilling with achilles (AS) and pelvic (PS) suspension on the meat quality of \textit{M. Longissimus dorsi}. Twenty lamb carcasses were randomly allocated immediately prior to slaughter to the two experimental groups which were subjected to four different treatments. In the first group, carcasses were suspended from the Achilles tendon. Right sides (RC/AS; n=10) were rapidly chilled, while the left sides (CC/AS; n=10) were conventionally chilled. In the second group, the carcasses were re-hanged from the pelvic bone. Right sides (RC/PS; n=10) were rapidly chilled whilst the left sides (CC/PS; n=10) were conventionally chilled. Meat quality was evaluated by measuring the water holding capacity (WHC), cooking loss (CL), surface colour and shear force (SF). As a result, CC accelerated the rate of pH decline while RC increased the temperature decline. RC reduced CL and WHC values. PS had no impact on WHC, CL and colour of steaks, but decreased the SF values on the 7\textsuperscript{th} days of post-mortem. In conclusion; it was determined that PS is a useful method for improving tenderness during storage period and the disadvantageous effect of RC on SF could be equalized by using PS.
VALIDATION PROCEDURE FOR DETERMINATION OF ZEARALENONE IN CEREALS IMPLEMENTING COMMISSION REGULATION 2006/401 AND COMMISSION DECISION 2002/657/EC

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The Fusarium fungi are probably the most prevalent toxin-producing fungi in the world. They produce a number of different mycotoxins. One of them, zearalenone (ZEA) is nonsteroidal, estrogenic mycotoxin witch is found worldwide in a number of cereals: corn, maize, barley, oats, wheat, even bread and pastries. It is implicated in reproductive disorders and hyperoestrogenic syndromes. ZEA is stable and not degraded during storage, grinding and high-temperature processing. IARC made classification of ZEA together with other Fusarium toxins in Group 3 (not carcinogen to humans). Content of ZEA in foodstuffs is regulated by legislation worldwide. MRL varies in the range of 50-200 µg/kg. The HPLC-FD method with immunoaffinity column clean-up is the method of choice for determination of zearalenone in order to achieve accurate and reliable results.

For the experiment purposes, ZEA-free corn samples (previously determined with HPLC-FD) were spiked with known amount of ZEA at three concentration levels (37.5; 50.0 and 100 µg/kg). All reagents used were HPLC grade. For clean-up procedure EasiExtract Zearalenone immunoaffinity columns (R-Biopharm) were applied. The extraction and purification of samples was done according to modified method of Visconti and Pascale (1998). HPLC analysis was performed with Perkin Elmer chromatographic system with fluorescence detector.

The validation procedure was performed according to Regulation 401/2006/EC and Decision 2002/657/EC. Six working standard solutions in range of 10-250 ng/ml were used for the linearity testing and a good coefficient of correlation (R²) was found (0.9999) with following equation y=200.9x-12037. Limit of detection (LOD) and limit of quantification (LOQ) were obtained through the standard deviation of the signal values for 20 blank samples and slope value estimated from the calibration curve. The established values for LOD and LOQ were 1.34 µg/kg and 4.06 µg/kg, respectively, and they were acceptable. Recovery was assessed according to the method of standard addition at three spiking levels (37.5; 50.0 and 100 µg/kg) and the results are in the range of 97.19-111.39%. Repeatability was estimated on SD and RSD values using the data from the recovery and RSD, was in the range of 2.46-11.35%. RSDr results (within-laboratory reproducibility) show good correlation between two days (1.99% and 1.17%).

The performed validation procedure (according to Regulation 401/2006/EC and Decision 2002/657/EC) provides satisfactory values for the performance criteria. They show that the method is simple, precise and accurate and can be implemented for determination for routine analysis of zearalenone in cereals.
DEPARTMENT OF MILK HYGIENE AND TECHNOLOGY

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The Department of Milk Hygiene and Technology is important part for Food Hygiene at the Faculty of Veterinary Hygiene and Ecology aimed mostly for chemical and microbiology analysis of milk, colostrum and milk products, partly for other animal products, especially meat microbiology and chemical analysis of honey and eggs.

At the Department is on the high level research and development chromatography centre for analysis endogenous and exogenous components in food products, well equipped microbiology laboratory with PCR and ELISA. In the research part are participated the employees, the postgradual students and pregradual student who are providing their bachelor´s and diploma´s thesis with their supervisors.

The Department is equipped with pilot workshop with small processing unit for milk and cream pasteurisation. During practicals students are preparing own homemade fresh cheese and yogurts, in which they are providing the sensory analysis. Yearly is processed 280 l milk and produced 25 kg of fresh cheese and 469 pieces (180 ml) white yougurts. Except teaching this unit is used for scientific and research purposes thanks to the small needed amounts. Milk for processing is obtained at the University dairy farm Nové Dvory.

Except for milk processing this department takes a part in teaching food chemistry and food microbiology. During the practicals student are providing chemical analysis of food products, i.e. measuring pH of meat, ammonium determination in meat slices, cholesterol analysis in egg yolk, HMF measuring in honey, microbiology analysis of target food pathogens such as Salmonella spp., E coli spp. Bacillus cereus. Results are evaluated according the European legislative. Very interesting and important is the subject HACCP. Each student is compiling one HACCP system. These practicals are preparing students for their future profession in the area of Food Hygiene and Technology.
AN EVALUATION OF DOSE INTENSITY DUE TO NATURAL RADIOACTIVITY IN THE SOIL IN THE SURROUNDING OF SKOPJE

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The measurement of radioactivity in soil provides information about natural resources, hence the measurement of the radiation dose is important for the general population and for observation of radiation. It turned out that the understanding of the behavior of natural radionuclides in the environment is very important, because natural radiation has most contribution for the external dose in world population.

The objective of this study was to provide preliminary evaluation of absorbed dose of terrestrial exposure of the population in the surrounding of Skopje, and to estimate the potential hazard of radiation for the population that lives in the research areas.

The soil samples were collected from 14 locations in the surrounding of Skopje in June 2012, divided in groups of 3-4 samples of treated soil according to the recommendations of IAEA (IAEA 295, 198).

The measurements of the activity concentrations of $^{226}$Ra, $^{232}$Th and $^{40}$K in the collected soil samples have been determined by using HPGe gamma spectrometer and the fission track registration technique.

The estimation of absorbed dose rate for each location was done using the Beck et al. formula in equation 1 as follows:

$$D (\text{nGy/h}) = 0.462A_{Ra} + 0.604A_{Th} + 0.042A_{K} \ (1)$$

In the current study it has been noticed that the specific activity of these radionuclides in the soil is not uniform, but it differs in different soils depending on the geological or the typographical features of the area. In addition, it also depends on the type of past agricultural activities and different minerals which are present in soil. The total absorbed gamma dose rate due to these radionuclides varied from 55.47 to 79.14 nGy h$^{-1}$, with a mean of 69.39 nGy h$^{-1}$.

The contribution of the separate radionuclides in the total gamma radiation dose varies between locations and represents a consequence of the difference of the geological origin of the analyzed soil samples.

According to UNSCEAR, 2008, the intensity of the air dose after primordial gamma radiation in normal conditions is about 58 nGy/h, and the values in countries vary from 2 to 1300 nGy/h. The mean value of the total dose intensity obtained in this research is 69.39 nGy/h and approximately it corresponds to the world average value.

From the histogram and after the performed statistic test Shapiro-Wilk (which tests the hypothesis of normal distribution) that gave the following result $P=0.524>0.05$, a conclusion is made that the frequencies of the total dose intensity in all analyzed samples follow normal distribution. The results of this study are useful as a data baseline for preparing a radiological map of the studied area as well as for enrichment of the world’s data bank.
Slaughter facilities: The University uses two slaughter facilities for educational purposes. One, with capacity of 12 pigs a day and two pieces of cattle a month, is situated in pavilion of morphology and physiology. It is equipped with a wide range of devices for the arrival of animals, fixation, stunning, slaughter and treatment of carcasses of animals. There is also a device for carrying out inspection of bodies and organs of slaughtered animals. In addition to this part there are also cooling chambers and freezers for storage of carcasses, meat and organs of animals. The slaughter of slaughter animals with regard to the limited specifications and performance requirements of the operation is used as a mere demonstration of slaughter facility processes and therefore this facility is mainly focused on the inspection of slaughter animals and meat.

To gain practical knowledge and experience in the operation focused on animal slaughter and meat processing and practical skills in treatment and processing of carcass University has entered into a contract with the company performing animal slaughter and meat processing in Tišnov u Brna (21 km from Brno), where educational takes place and students are learning and acquiring specific practical skills of veterinary inspection of animals before slaughter, at slaughter, and animal carcasses and meat and organs after slaughter. In the frame of teaching which is focused on the inspection of animal carcasses and meat and organs after slaughter students inspect in the University’s slaughterhouse and slaughterhouse in Tišnově in the course of direct teaching an annual average of 951 pigs, 253 cattle, 17 pieces of small ruminants and 17 horses. The pilot workshop: The university has meat and fish pilot workshop and dairy pilot workshop for educational purposes in the field of hygiene and technology of food.

Paraclinical diagnosis: Meat and fish pilot workshop is a training facility to teach students in the field of hygiene and technology meat. It is located in the building of the Institute of Hygiene and Technology meat and is equipped for meat processing and production of a durable heat-treated meat products, especially cutter, knock, smokehouse and other technological equipment for the production of meat products. Students are participating in the practical teaching of a particular meat processing and production of specific product, stheir subsequent assessment and evaluation from the viewpoint of veterinary hygiene, technology and quality. Every year there is an average for the teaching processes of 139 kg of meat, 38 kg of meat products and 46 kg of fish. Meat and fish pilot workshop is also used to solve scientific and research projects.

Teaching hygiene of food / veterinary public health protection uses the university slaughter facilities especially for the purpose of demonstration of slaughter processes and for teaching veterinary slaughter inspection of carcasses and meat. Slaughterhouse near Brno in Tišnov, where students and teachers commute, is used for practical inspection of real-life service. Inspection is carried out by students. Teaching focuses on the assessment of the slaughter animals before slaughter and also on the operation of unloading animals from vehicles, propelling to the place of slaughter, stunning, slaughter and processing of carcasses and health inspection of meat and organs after slaughter including teaching HACCP in slaughterhouses.

Together is to ensure the teaching of students in the other facilities, in the form of visits under the supervision of teachers in meat processing facilities. Numbers of animals inspected by students in slaughterhouses (cattle, small ruminants, pigs, horses) are recorded and are listed in the following table. Veterinary inspection of poultry (or rabbits) within the teaching takes place in poultry slaughterhouse Modřice, where students under the supervision of the teacher and competent official veterinarian perform inspection of poultry.
MONITORING OF ANTIBIOTIC RESIDUES IN POULTRY PRODUCTS (KAZAKHSTAN)

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In Kazakhstan, the MRLs of antibiotics in food rationed Sanitary, which are penicillin, tetracycline, chloramphenicol, streptomycin, grisinum, bacitracin, while in the modern animal husbandry and veterinary uses about 50 antibiotics and their mixes.

There were carried out monitoring studies in Akmola oblast and Almaty to study the prevalence of raw poultry products containing residues of antibiotics in the feed and animal products of domestic and foreign production in 2012–2013. The products of poultry slaughtering (Brazil, China, Denmark, Canada, Germany, France, the Russian Federation) are usually found tetracycline in 18.5% of cases in chicken breasts, 26.3% in the liver, 63.1% in the stomachs of 33.3% in the meat. A higher incidence of tetracycline in the gizzard compared to muscle tissue due to the fact that muscle tissue accumulates less antibiotics.
DETERMINATION OF METHICillin-RESISTANT STAPHYLOCOCCUS AUREUS IN MILk
BY PCR METHOD AND SCCmEC TYPING

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\textit{Staphylococcus aureus} is one of the causal agents of mastitis and can cause nosocomial and community-acquired infections. Especially, methicillin-resistant \textit{S. aureus} (MRSA) have become recognized that eating and handling of contaminated food is a potential vehicle for transmission. The MRSA strains carry staphylococcal cassette chromosome \textit{mec} (SCCmec), a mobile genetic element harboring \textit{mec}A gene that encodes methicillin resistance in staphylococci.

In this study, it was aimed to obtain MRSA species from milk by using both conventional and molecular techniques. Also, it was aimed to determine \textit{mec}A gene and typing of the mentioned gene. According to this purpose, 406 raw milk samples were collected from Istanbul and divided into 2 groups. In the first group, conventional microbiological analysis and molecular analysis were applied while in the second group were applied the molecular analysis directly from milk. For determining \textit{mec}A gene from milk both conventional and molecular methods by PCR were used and finally SCCmec typing was performed.

\textit{S. aureus} were isolated from 119 (29.31\%) of 406 samples analyzed. Only one (0.84\%) of 119 strains was detected as MRSA. This strain was belong to Type IV. On the other hand, PCR results directly from milk showed that \textit{mec}A gen was found in 11 (2.7\%) of 406 samples. Typing of the genes were Type II (%18.18 / 2 samples of 11), Type IV (%63.63 / 7 samples of 11), and Type V (%18.18 / 2 samples of 11). In addition, only one \textit{mec}A gene (Type IV) positive MRSA was determined as community-acquired. However, 2 (18.18\%) type were determined as healthcare-associated and 9 (81.82\%) type were determined as community-acquired MRSA directly from milk.

According to the results, genotyping methods by using PCR provide more precise detection of MRSA than the fenotyping methods. Also, more reliable results were obtained to detect \textit{mec}A from food. In conclusion, studies on this topic should be expanded for food safety and public health.
ANTIBIOTIC RESISTANCE OF \textit{STAPHYLOCOCCUS AUREUS} STRAINS ISOLATED FROM DIFFERENT FOOD

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Food-borne diseases are of major concern worldwide. Up to date, around 250 different food-borne diseases have been described, and it is known that causative agents of two thirds of food-borne disease outbreaks were bacteria. Among the predominant bacteria involved in these diseases, \textit{S.aureus} is a leading cause of gastroenteritis resulting from the consumption of contaminated animal-originated food. One of the most important problems about \textit{S.aureus} infections is the antibiotic resistance of the bacteria. While the new generation antibiotics has been found effective on \textit{S.aureus} at the beginning, bacteria develops antibiotic resistance in short time as a result of using unbalanced usage of antibiotics.

In this study, it has been aimed to evaluate the antibiotic resistance of \textit{S.aureus} strains, which have been isolated from food samples to various antibiotics. 92 \textit{S.aureus} strains were isolated from 870 food in Istanbul between 2008-2009. Susceptibility of these strains against penicillin, tetracycline, gentamycin, trimethoprim/sulfamethoxazole, chloramphenicol, ciprofloxacin, vancomycin, oxacillin(methicillin) were searched by Kirby-Bauer Disk Diffusion method. It has been determined that 96.7 \% of \textit{S.aureus} strains were sensitive against methicillin. All of the strains were sensitive to penicillin, gentamisin, trimethoprim/sulfamethoxazole, chloramphenicol, tetracycline, ciprofloxacin, vancomycin in the rate of 54.3\%, 100\%, 96.7\%, 97.8\%, 71.1\%, 91.3\%, 100\%, respectively.

It has been discussed that sensitivity the selection of antibiotics for Staphylococcal infections should be decided according to the tests of antibiotic resistance and necessary measures should be employed in order to prevent \textit{S.aureus} contaminations in the selection of raw material for food production, food manufacturing, handling, transport and marketing stages regarding public health.
BIOACTIVE COMPONENTS IN GOAT MILK

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Compared to cow or human milk, goat milk possesses unique biologically active properties. These properties are high digestibility, distinct alkalinity, high buffering capacity and certain therapeutic values. The purpose of this paper is to review the specific characteristics of bioactive properties of goat milk with emphasis on lipid, protein and carbohydrate fractions.

Bioactive Lipids in Goat Milk: Therapeutic and nutritional advantage of goat milk for bioactive activity. This is particularly due to the lipids and some fatty acids forming lipids. Goat milk has higher rate of short and medium chain length (C4:0 – C12:0) compared with cow milk.

These fatty acids have a large number of bioactive feature, as well as used in many patients suffer from lipid malabsorption syndromes. At the same time, goat milk lipid globules can be more easily digested because of their smaller diameter with respect to human and cow milk.

Phospholipid content (phosphatidyl ethanolamine (PE) sphingomyelin (SP), phosphatidyl serine (PS)) of goat milk is higher compared to cow milk. Furthermore, Conjugated Linoleic Acid (CLA), considered as one of the major bioactive components of goat milk.

Bioactive Peptides in Goat Milk: Goat milk protein differs from cow or human milk in having better digestibility as well as more effective in the amino acid absorption. Many of the proteins in goat milk have bioactive effect. These are antihypertensive, antimicrobial, opioid, antioxidant, antithrombotic, hypocholesterolemic and immunumodulant effects.

Bioactive Oligosaccharides (OS) in Goat Milk: Human milk has the highest oligosaccharide content compared with other mammals (0.7-1.2 g/100 ml). Goat milk has quite high oligosaccharide content (25-30 mg/100 ml), compared with cow milk (2-3 mg/100 ml). OS profile of goat milk is most similar to that of human milk. In fact, a larger amount and variety of acidic OS structures were identified in goat milk than in cow and sheep milk.

Due to the high proportion of bioactive compound, goat milk is expected to become more important in the future as a biofunctional food. Bioactive compounds in goat milk may be used in formulation of functional foods, dietary supplement, and natural drugs because of their health benefit effects.
COMPARISON OF THE AGING APPLICATIONS IN TERMS OF SENSORY QUALITY ATTRIBUTES IN MEAT INDUSTRY

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Aging process is a long-established method for improving the tenderness and natural flavour of beef. Aging of meat is a process whereby beef carcasses or parts are stored at refrigeration temperatures to allow the natural processes that result in improved tenderness and the development of the unique flavor. The meat industry generally utilizes two types of aging: vacuum (wet) and dry aging. Vacuum-aging is a widely used practice in which meat is aged in a sealed barrier package at refrigerated temperatures. Dry aging, on the other hand, refers to aging meat “naked” or without packaging, and requires greater environmental control practices to achieve a consistent product quality. Dry and wet aging applications have a positive impact on the organoleptic characteristics of meat are put forward. It’s a debate yet, which method is more effective on the sensory properties, but dry aging applications are reported to provide a more desirable properties. In this compilation the effect of wet and dry aging processes, which have found an application field in the food industry have been examined and discussed in the light of recent researches.
BIOFILM FORMATION AND OCCURRENCE OF LISTERIA MONOCYTOGENES ON MEAT AND FOOD CONTACT AND EQUIPMENT SURFACES IN SLAUGHTERHOUSE

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Listeria monocytogenes is recognized as an important human pathogen causing food-borne outbreaks and sporadic infections. It may cause invasive disease such as bacteremia, meningitis and severe prenatal infections ubiquitous throughout nature and is frequently isolated from the food-processing industry. The capacity of L. monocytogenes to adsorb to the inert surfaces found in the food-processing environment is well known. L. monocytogenes in biofilms are much more resistant to disinfection than their free-living counterparts and thick complex biofilms are more difficult to remove than adhered single cells of the bacteria.

The aim of this study was to investigate the presence of L. monocytogenes strains on meat and food contact surfaces in slaughterhouse and to determine biofilm formation abilities of L. monocytogenes at different temperatures (4, 10, 25, and 37°C) and in different pH (5.5 and 7.0) values for 48 h.

All samples were analysed using the mini-VIDAS LMX. Afterward, the biofilm forming abilities of L. monocytogenes strains were investigated quantitatively by modified microtiter-plate technique.

As the result of the study, L. monocytogenes was isolated in 70.5% (43/61) of meat samples, in 8.21% (6/73) of food contact and equipment surfaces in slaughterhouse.

Biofilm formation was observed in 7% (2/31) of the strains at pH 7.0 for 48 h incubation at 37 ºC led to OD 590 nm >0.5, whereas, biofilm formation was not determined after 48 h of incubation at pH 5.5.

In conclusion, Listeriae contamination levels of the tested meat samples were found to be high and the temperature is highly effective for the biofilm formation of L. monocytogenes strains. Therefore, it is recommended that slaughterhouses should take hygienic measures in order to produce beef meat of good quality with HACCP process and protect public health.
DETERMINATION OF FATTY ACID IN ASPARAGUS WITH GAS CHROMATOGRAPHY

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Asparagus contain a lot of macronutrients and micronutrients including folate, dietary fibre (soluble and insoluble) and phenolic compounds. Also asparagus is a good source of unsaturated linoleic and linolenic fatty acids which are precursors for EPA (Eicosapentanoic acid) and DHA (Docosahexanoic acid). Unsaturated fatty acids have important biological effects and they have important role in human health. The objective of this study was to analyze fatty acid composition of asparagus as a potential source of linoleic and linolenic acid a precursor for EPA and DHA.

For this reason we analyzed twenty four samples of asparagus collected from the local market. We used AOAC 996.06 method and analyses were performed with GC-FID (gas chromatograph with flame-ionized detector).

The highest concentration of fatty acid in the asparagus was linoleic acid (C18:2n6) which content in asparagus is 25.620±1.0%. Also, asparagus is good source of $\alpha$-linolenic fatty acid (C18:3n3) and content of this fatty acid in asparagus is 8.840±0.3%. The omega-6 to omega-3 (n6/n3) ratio in asparagus was 3.19. Polyunsaturated fatty acids (PUFAs) were higher than monounsaturated fatty acids (MUFAs), and from saturated fatty acids, palmitic acid was most frequent with 24.324±1.0%.

From our study we can conclude that asparagus is very good source of unsaturated fatty acids, especially linoleic and linolenic fatty acids.
ESTIMATION AND ANALYSIS OF VALUE AND STRUCTURE OF EXPORT AND IMPORT OF FOOD IN MACEDONIA

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Specific natural conditions, in particular the impact of Mediterranean climate of Macedonian agriculture, provides specific agricultural production with relatively high representation of fruits, vegetables, tobacco and other crops. On the other hand, there are limited opportunities for the production of grains, meat, milk, sugar, etc. In the context of such a production, Macedonian agriculture provides coverage by almost 75\% of the import of agricultural products. But if we analyze only the import of food and export of food, then it comes to the conclusion that Macedonian export is covering import of food just over 50\%, and export has relatively limited range in which the fruits and the vegetables with products participate with 53\% in export. All other groups, according to Standard International Trade Classification (SITC) participate with 47\%. Macedonian agriculture has important tasks in the future: such as: increasing food production, especially production of so-called continental plants and increasing the competitiveness. Before transition Agriculture in Macedonia has relatively high participation in GDP. In 1990 it was 8, 3\%; industry and mining were 29, 0\%, but decreasing of participation of industry and mining in 2000 contributed to increase participation of agriculture up to 9, 3\%.
USING ENZYME-LINKED IMMUNOSORBENT ASSAY FOR DETECTION OF SPECIES ADULTERATION IN MEAT PRODUCTS

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Preventing adulteration of meat foods with less desirable or objectionable meat species is important for economic, religious and health reasons. In addition, determination of the species of origin of the meat components in meat products is an important task in food hygiene, food control, food codex and veterinary forensic medicine.

Enzyme-linked immunosorbent assay (ELISA), which is highly sensitive, specific and practical, is the most effective and widely used method for detecting meat species in meat and meat products.

In this study sandwich ELISA test kits (ELISA-TEK, Gainesville, FL, USA) were used to determine meat species in retail meat and meat products in Macedonia that do not comply with the standards of the Macedonian food legislative (Official Gazette of Republic of Macedonia, No.52/2011). A total of 200 samples were analysed (45 chicken ham, 45 chicken and pork ham, 30 chicken pariser, 15 chicken frankfurters, 15 pork frankfurters, 10 sujuk, 30 chicken salami, 5 pork sasusages, 5 beef sausages).

The results showed that 46.7% of the chicken ham samples, 43.3% of the chicken pariser samples, 66.7% of the chicken frankfurter samples, 53.3% of the pork frankfurter samples, 20.0% of the sujuk samples, 6.7% of the chicken salami samples, 40.0% of the pork sasusages and 60.0% of the beef sausages were found to contain undeclared species.

Based on the results of this study, the adulteration of high-quality meat and meat products with their cheaper counterparts is a problem of the meat industry in Macedonia. To protect consumers and to avoid unfair competition, governmental food-control institutions must continuously regulate meat and meat products using effective methods.
SURVIVAL OF LISTERIA MONOCYTOGENES IN TRADITIONAL SEMI-SOFT WHITE CHEESE

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Semi-soft brined cheese made from a combination of cow's and ewe's milk is a major dairy product produced and consumed at Macedonian Market. Emerging global problems with listeriosis outbreaks prompted us to determine the survival of L. monocytogenes during the production and ripening of this traditional cheese type.

The cheese was prepared from pasteurized (72±1°C for 2 min) mixture of cow's and ewe's milk by adding rennet, commercial lactic acid culture (R704, Chr. Hansen, Denmark) and L. monocytogenes to contain ca. 3.4 x 10^4 CFU/ml. After salting, the cheese was transferred to ripen at 4°C and 15°C for 60 days. Duplicate samples were tested for numbers of L. monocytogenes, lactic acid bacteria and pH, according to ISO methods.

During the first 2 h, a decrease in the population of L. monocytogenes was observed. Pressing the curd increased the numbers by 1.6 log_10 CFU/g. Ripening in 12% brine at 4°C for 60 days was not inhibitory to the growth of L. monocytogenes. Final population in cheese at those conditions reached 1.9x10^6 CFU/g. In contrast, the numbers of L. monocytogenes decreased substantially during the ripening at 15°C from an initial count of 5.2x10^5 to 9.3x10^4 CFU/g. The numbers of lactic acid bacteria decreased from 1.4x10^6 to 1.02x10^6 (4°C) and 1.21x10^6 (15°C) CFU/g.

Our results show that L. monocytogenes survives during the production and ripening of semisoft mixed brined cheese for at least 60 days. L. monocytogenes can grow freely during ripening in 12% brine at 4°C. Control measures in the dairy industry are necessary to avoid recontamination of milk and cheese with this pathogen.
A STUDY ON THE METHOD VALIDATION OF PCR METHOD TO DETERMINE THE RATIO OF BEEF % IN FERMENTED MEAT PRODUCTS

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The adulteration/substitution of meat has always been a concern for various reasons such as public health, religious factors, wholesomeness and unhealthy competition and economic factors in meat market. Various techniques have been reported for detection of mislabeling. Among these techniques, particularly, polymerase chain reaction (PCR) is the most well developed molecular technique up to now and provides a simple, rapid, highly sensitive and specific tool for detecting constituents of animal origin in foods. The aim of this study was performed to method validation of a quantitative PCR method, modified from a qualitative method, to determine the ratio of beef % in preheated and unheated sausages.

In the study, the concentrations of sausage samples, used as standarts were prepared at the range of 100%, 80%, 60%, 40%, 20% and 10%. The fat ratio of standart sausages was 30%.

DNA Extraction: Samples of ten g were taken from the ideal sausage used as standart and its samples for the extraction of DNA. These samples were homogenized and extraction procedure was carried out in the 250 mg of homogenized samples as described by Dr. Zeydanli Live Science DZRT-S.

Determining the Concentration of Extracted DNA and correction factor: Concentrations of standarts and samples DNAs were determined by triple analysis per sample by NanoDrop 2000c equipment. According to the mean results, dilution rate was assigned as a final concentration of 60 ng/µl. Obtained final results were used for determining correction factor (K) to calculation.

PCR procedure: Procedures of Dr. Zeydanli Live Science DZRT-S were applied. CT values of standarts and samples were determined in duplicate samples. Calibration curve was lined from the mean CT values of duplicate standarts.

Parameters of Method Validation: Linearity, recovery (%), limit of detection (LOD) and limit of quantification (LOQ), repeatability and reproducibility were validation parameters. Every trial was performed by using at least four standarts and a duplicate samples of each standart. Method performance was evaluated by using standarts and 70% of and 20% of spike samples in every mounth.

In study, results of method validation were determined as follows; Linearity: r>0.9954, recovery, % (70%): 100.8, recovery, % (20%): 101, LOD (70%): 0.72, LOQ (70%): 2.40, LOD (20%): 1.49, LOQ (20%): 4.97, repeatability, RSD% (70%): 3.03, reproducibility, RSD% (70%): 2.55.

Misrepresentation of a costlier meat with a cheaper one, is one of the most common examples of economic fraudulence prevalent in meat the industry. Consumer should be protected from the malicious practices of meat adulterations by quick, precise and specific identification of species present in meat and meat products. This quantitative PCR method can be useful for the accurate determination of the ratio of beef % in sausages.
BIOFILM FORMATION AND RELATED GENE CONTENTS OF FOODBORNE STAPHYLOCOCCUS AUREUS STRAINS

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Biofilm formation of *Staphylococcus aureus* strains is one of the important virulence factors. The presence of biofilm forming *S. aureus* strains on food or food contact surfaces leads to contamination of other food and transfer to human. Biofilm forming abilities of 85 foodborne *S. aureus* strains were determined quantitatively using microplate test. The presence of biofilm related genes (icaA, icaD, Aaa, atl and sasG) were searched by PCR. The microplate test results showed that 20/85 (24%) of the strains were found to form biofilm in TSB+1% sucrose with OD590 nm>0.5 values. PCR experiments indicated that icaA and icaD genes were found in 81 (95%) and 83 (97.6%) strains, whereas atlE gene, sasG and Aaa genes were present in 16 (18.8%) (slightly positive), 73 (85.8%) and 76 (89.4%) of strains, respectively. These results showed that foodborne *S. aureus* strains can form biofilm both on food and food contact surfaces and can cause spoilage.
ANTIBIOTIC SUSCEPTIBILITY OF STAPHYLOCOCCUS AUREUS ISOLATES FROM FOOD CONTACT SURFACES IN TURKEY

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Antimicrobials are widely used in human medicine, agricultural production, and food processing and have been essential for ensuring human and animal health as well as the safety of our food supply. In this study, 80 Staphylococcus aureus strains were isolated from food contact surfaces (staff, equipment etc.). Antimicrobial susceptibility tests against 21 antibiotics (teicoplanin, amoxicillin/clavulanic acid, rifampicin, penicillin G, cephazolin, kanamycin, sulfamethoxazole/trimethoprim, cefoxitin, linezolid, imipenem, oxacillin, ofloxacin, fusidic acid, tetracycline, levofloxacine, clindamycin, erythromycin, vancomycin, gentamicin, chloramphenicol and tobramycin) were performed by agar disc diffusion method. According to disc diffusion test results, a total of 22 (27.5%) strains were multi–drug resistant (MDR) and other 20 (25%) strains were susceptible to all antibiotics. The resistance of penicillin G, tetracycline and erythromycin were determined of 55 (68.7%), 14 (17.5%) and (13.8%) of the tested strains, respectively. These results showed that S. aureus strains from food contact surfaces can be resistant to several antibiotics and this possible contamination of various foods with these strains is very important for public health.
INVESTIGATION OF BIOFILM RELATED GENE CONTENTS IN STAPHYLOCOCCUS AUREUS STRAINS FROM FOOD CONTACT SURFACES

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Staphylococcus aureus has been frequently found in surfaces of food processing plants being responsible for outbreaks related to the consumption of fresh and processed foods. \textit{S. aureus} from food contact surfaces of adhering and forming biofilm when exposed to different environmental conditions, and about the efficacy of sanitizers in removing the cells forming the biofilm. The objective of this study was to detect the presence of biofilm related genes (icaA, icaD, atl, sasG, and Aaa) of 80 \textit{S. aureus} strains from food contact surfaces by PCR. On the basis of PCR results, icaA, icaD, sasG and Aaa genes were found in 38 (47.5%), 66 (82.5%), 46 (57.5%) and 5 (6.25%) strains, respectively. Additionally, atl gene was not found in \textit{S. aureus} strains. The results indicated that the prevalence of biofilm related genes relatively high in \textit{S. aureus} from food contact surfaces. Therefore, especially uneven microbiological conditions caused a potential risk for biofilm formation in food production facilities.
PRESENCE OF THE DISINFECTANT RESISTANCE GENES IN STAPHYLOCOCCUS AUREUS STRAINS FROM FOOD CONTACT SURFACES

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The resistance mechanism in \textit{S. aureus} strains was developed by \textit{qac} genes especially \textit{qacA}/\textit{B}, \textit{qacC}, \textit{qacG}, \textit{qacH} and \textit{qacJ} encoded on plasmids. \textit{qacC} and \textit{smr} genes are responsible for resistance to one of the most important disinfectants quaternary ammonium compounds. In this study, the presence of disinfectant resistance genes in 80 \textit{S. aureus} strains from food contact surfaces was investigated. \textit{S. aureus} strains were detected by PCR. The presence of disinfectant resistance genes were determined by PCR using specific primers to two different gene parts of \textit{qacA}/\textit{B} and \textit{smr} genes, additionally, the specific primers were used for the detection of \textit{qacC}, \textit{qacG}, \textit{qacH}, and \textit{qacJ} genes. According to PCR results, \textit{smr} gene was detected in 9 (11.3\%) strains. Furthermore, \textit{qacC} and \textit{qacG}, genes were detected in 22 (27.5\%) and 1 (1.3\%) strains, respectively. The presence of \textit{qacA}/\textit{B}, \textit{qacH} and \textit{qacJ} genes was not found any \textit{S. aureus} strains. Determination of disinfectant resistance genes in \textit{S. aureus} strains from production facilities is critically important for public health.
PCR-BASED METHODS FOR DETERMINATION OF TRAVNICKI SHEEP CHEESE ADULTERATION – PRELIMINARY RESULTS

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B&H well-known brand of milk industry is Travnicki sheep cheese derived from high quality milk produced by sheep from extensive breeding in the wider region of mountain Vlasic (Travnik). Some producers leave traditional way of Travnicki cheese production, including adding of cow milk to sheep's one, mainly because of economic reasons. Therefore, the aim of this investigation was to determine frequency of possible Travnicki sheep cheese adulteration with cow milk.

In total, 32 row milk samples were collected; sheep (100%), cow (100%) and mix sheep/cow milk (milk standards) with the following rations of sheep and cow milk respectively: 50:50, 60:40, 70:30, 80:20, 85:15, 90:10, 95:5, 99.5:0.5. Polled samples of milk standards were used to prepare cheese standards. In addition, 64 native samples of Travnicki cheeses were sampled from individual and industrial producers as well as from the market (75 in total). Two PCR-based methods, PCR-species specific DNA and PCR-RFLP, were used to determine the Travnicki sheep cheese adulteration with cow milk.

Preliminary results indicate significant number of adulterated Travnicki sheep cheese samples, as well as different results between two used methods for the same samples.
LACTOFLORA AND SENSORIAL CHARACTERISTICS OF EXPERIMENTALLY PRODUCED BOSNIAN SOUDJOUK

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Results of research on lactoflora and sensorial characteristics of experimentally produced Bosnian Soudjouk, the most preferred Bosnian fermented sausage, were presented. In addition, microbiological profile of raw materials used for production of the Soudjouk was investigated. The Soudjouk was produced in three batches (n=30) based on a production specification and a traditional recipe. Fermentation process lasted for 28 days, including a 7-day smoking phase. Sausage samples for microbiological analyses were taken in triplicate on day 0, 2, 4, 7, 14, and 28 of the fermentation process. Identification of bacterial isolates was performed by classical microbiological methods (morphologic and biochemical identification), while the lactic acid bacteria isolates were identified using API50CHL63 kits. Sensorial characteristics of final products were assessed by assigning a score from the range from 0 to 10 by an independent expert panel (n=10). In all stages of the production process predominant microbial population in microflora of the Bosnian Soudjouk were lactic acid bacteria (LAB), primarily Lactobacillus spp. The major importance of our research is a detailed investigation of microflora and LAB of the sausage during the fermentation process, as well as to describe dynamics and dominance of LAB species, which surely represents an impottant contribution to detailed description and presentation of the Bosnian Soudjouk as the main symbol of Bosnian gastronomic tradition and culture. Desirable sensorial characteristics of the produced sausages, as well as absence of certain bacterial foodborne pathogens in the final products, argue in favor of accepting the applied technological procedure of production of the sausage as an acceptable basis for further technological investigation and establishment of standard operating procedures for production of the Soudjouk. Finally, autochthonous LAB isolates from this research may serve as solid basis for further molecular and technological research.
HOW TO MAKE ORGANIC LAYING HENS PRODUCTION IN TURKEY

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To start with organic layer farming, it is necessary to build coops suitable in areas. Before transferring layers to these coops, an application to an establishment which is authorized by TMA must be made for revealing intention of organic layer farming. The authorized establishment is classified the company “under progression”. This period ends when the company gets the full aproval on organic production. Within this period, chicks that are 16 week of age which are called “pullets” are transferred to the coops. The pullets should be fed and managed in optimal conditions when they were younger. Before taking “organic eggs” from the pullets, they have to feed organic food for 6 weeks at least. By the end of 22 week, organic eggs are expected to be taken. In the mean time, layers are also fed by forages and allowing on grazing pasture. The layers are sold out by 78th week of age.

In a company, organic egg production has been made by 4500 ISA Brown-laying hens (placing 3000 and 1500 layers in two separate coops). During the production period of the layers, egg production, daily feed consumption and egg weights were determined 59.92-77.21%, 120-135 g/day, and 55.34-66.19 %, respectively. At the end of 78 week of age, mortality was 16.96%. A leadership on both organic layer farming and other types of organic production in near future is of importance for becoming them more common throughout the Country.
BIOCHEMICAL AND MINERAL PROFILE OF SOUTH EASTERN ALGERIAN DESERT GOATS
(CAPRA HIRCUS)

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An experiment was conducted in Algerian Desert goats to study the effect of age and season on blood biochemical and mineral profile during different physiological stages of the goats. Serum Ca, Mg and Na levels were significantly high at birth and decrease as the age advanced. The season had a significant effect on the levels of Ca, Mg, K decreased and inversely Na increased during dry season. The Ca (80.02±4.84 mg/l), Mg (22.14±1.61 mg/l), Na (142±1.73 mEq/l) and K (6.43±0.40 mEq/l) in pregnant goats were significantly higher than in non pregnant and lactating goats.
CHEMICAL COMPOSITION OF MEAT FROM ALGERIAN INDIGENOUS GOAT AS AFFECTED BY AGE

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The aim of this study was to evaluate the chemical parameters, including fat profile, of meat from Indigenous breed goat, and establish a link between animal age and the values of these parameters. Age groups considered in the study have been young and adult goats. Samples of Longissimus dorsi (LD) muscle from Algerian Arbia breed collected in slaughterhouse were taken to determine the chemical composition: moisture, ash, protein, total fat, cholesterol and phospholipids.

The mean values for the results obtained from the measurements made were: 78.1% moisture for young to 74.3% for adults goats, 13.9% protein for young to 19.2% for adults, 1.87% fat for young and 2.63% for adults, 1.16% ash for young to 1.58% for adults goats samples.

As it can be seen, as age increases, the major components with important nutritional role occupy a higher share of the goat carcass, resulting in superior technological and organoleptic characteristics compared to the slaughtered youth.
STUDY OF FATTY ACID COMPOSITION OF MARE'S MILK LIPIDS

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Mare’s milk fat is less than in cow’s milk, but its advantage is that it is rich in linoleic acid, linolenic acid and arachidonic acids which inhibit the development of tubercle bacilli, while in the fat of cow's milk they energetic develop. Due to the small size of the fat globules, a lower melting temperature (20-26 °) fat mare's milk has a delicate texture, whereby it is easily absorbed by intestines.

Research materials were mare’s milk from the farm "Bekarys" and "Dastur" 15 samples from each farm, total 30 samples of mare’s milk.

To determine the fatty - acid composition of mare's milk lipids used gas chromatography, which was carried out on the instrument: Carlo Erba, model GC 8000 Top (Erba Science). Used capillary column SUPELCOWAX, with a length of 30 mm and a width of 0.32 mm (manufacturer: SUPELCO, Bellafonte, USA). Running Column: 1900S adjusted to left for 4 minutes. Then increased the temperature to 40C 2100S with speed per minute. 2100S kept at 15 minutes. Detector temperature was 2500S. As the carrier gas, helium was used.

Studies lipid composition of mare's milk show that the amount of saturated fatty acids - 38.71%, of which have low molecular weight fatty acid -13.43%, the highest number differs palmitic acid (C 16:0) - 18.00% myristic acid (C 14:0) - 5.51%, lauric acid (C 12:0) - 5.50%. Monounsaturated fatty acids of 36% by number of the predominantly, oleic acid (C18:1 ω-9) - 23.8%. Representative di-unsaturated fatty acid is linoleic acid (C18:2 ω-6), which is - 23.8%. The amounts of polyunsaturated fatty acids - 0.36% of them - Arachidonic acid (C18: 4 ω-6) - 0 21%, linoleic acid (C18: 3 ω-3) – 0.09%, docosahexaenoic acid (C18:6-ω) – 0.06%.

Research showed that the mare’s milk lipids are rich in polyunsaturated fatty acids, which is part of the cell membrane to form the brain.

The composition of mare's milk lipids enters useful biologically active substances that are necessary for normal functioning of the human organism. It is a source of di - and polyunsaturated fatty acids.
EVALUATION OF MERCURY CONTAMINATION IN CATS USING HAIR ANALYSIS

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The aim of the present work is to assess the mercury contamination of cats through the analysis of hair. Mercury is one of the most important pollutants contaminating the environment. For this reason, it is necessary to monitor mercury since it tends to accumulate in the food chain.

To determine total mercury in cats, we chose skin derivatives (hair). Content of total mercury was measured in granulated feed. Cats were divided into two groups. The first group was fed with granulated feed containing fish and the second group with granulated feed without fish. Total mercury in hair samples and granulated feed was measured on 254 AMA using atomic absorption spectrophotometry.

The values of total mercury content in the hair of cats fed with granulated feed containing fish and in the hair of cats fed with granulated feed without fish had an average value of 0.1855 mg/kg or 0.1401 mg/kg, respectively. The average values of total mercury in granulated feed containing fish and in granulated feed without fish were 0.0022 mg/kg or 0.0034 mg/kg, respectively. The data were statistically analyzed using the Mann-Whitney U test. Differences among the results are not statistically significant. No correlation between mercury content in the hair and granulated feed has been found using Spearman's rank correlation coefficient.

The maximum limits for the occurrence of mercury in feed have been established and these are stated in DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 2002/32/EC on undesirable substances in animal feed as amended by COMMISSION DIRECTIVE 2010/6/EU. A limit of mercury content in feed for dogs, cats and fur animals is 0.3 mg/kg.

No correlation between total mercury content in granulated feed and total mercury content in hair of cats has been demonstrated. The limit of 0.3 mg/kg was not exceeded in any analyzed sample of granulated feed.
EFFECTS OF HEAT CONDITIONING AND DIETARY ASCORBIC ACID SUPPLEMENTATION ON HEAT SHOCK PROTEIN 70 EXPRESSION, BLOOD PARAMETERS AND FEAR-RELATED BEHAVIOR IN BROILERS SUBJECTED TO HEAT STRESS

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Heat stress is one of the most important environmental factors in poultry production. Exposure of broilers to high temperature causes significant changes in physiological responses. Early heat conditioning induces the heat tolerance of broiler chickens at later growth stage prior to marketing. Ascorbic acid supplementation has been reported to alleviate the negative effects of heat stress on the performance of broilers. This study was carried out to investigate the effects of heat conditioning and dietary ascorbic acid supplementation on heat shock protein 70 (Hsp 70) expression, blood parameters and fear-related behavior in broilers subjected to heat stress. A total of 320 male broilers were used as the material of this study. Broilers were randomly assigned to four treatments with four replicates. Broilers in control group were kept under thermo-neutral conditions (24°C) and fed with the basal diet throughout experimental period. Other three groups were exposed to heat stress from 22 to 42 days of age. Heat stress was applied by exposing the broilers to a temperature of 35°C for 6 hours/day between 10:00 h and 16:00 h. Ascorbic acid supplemented group was fed a diet supplemented with 500 mg of L-ascorbic acid/kg ration. Heat conditioned group was exposed to a temperature of 36°C for 24 h at the age of 5 days. Heat stress group was fed with the basal diet and exposed to heat stress from 22 to 42 days of age. The results obtained in this study showed that heat stress caused to increase in Heterophil / lymphocyte (H/L) ratio, tonic immobility (TI) duration, body temperature, serum corticosterone, glucose, cholesterol, triglyceride concentrations and Hsp 70 expression in brain, liver and kidney, whereas it decreased antibody titer against to Newcastle Disease Virus (NDV). Heat conditioning and dietary ascorbic acid supplementation decreased H/L ratio, TI duration, serum corticosterone concentration and Hsp 70 expression and also increased antibody titer against to NDV. According to these results, it can be said that heat conditioning and dietary ascorbic acid supplementation alleviated the negative effects of heat stress in broilers. Heat conditioning was more effective than ascorbic acid supplementation in alleviating the adverse effects of heat stress on brain, liver and kidney tissues. In conclusion, heat conditioning of broilers by exposure to 36°C for 24 h at the age of 5 days and dietary ascorbic acid supplementation (500 mg/kg of diet) may offer a potential protective management practice in preventing heat stress in broilers.
DAIRY SECTOR IN BOSNIA AND HERZEGOVINA DURING THE PAST DECADE

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The development of agricultural production is among the economic priorities for Bosnia and Herzegovina in all strategic documents prepared during the last decade. The dairy sector, both primary products from livestock and subsequent processing, is a core sector in the strategy for the development of agricultural production. In 2006 the agriculture sector contributed about 10.3\% of GDP, in 2008 8.4\% and 2012 8.2\%. Dairy farming dominates agricultural production and livestock production in general contributes nearly 60\% of agricultural GDP. Current work is a brief review of dairy sector at the past decade by statistical data from different sources. Milk production should be primarily directed towards cheaper and better quality of products. This is possible with active credit lines at the local and state levels, raise the investment in the modernization and expansion of existing production capacity, as well as with construction of new large specialized farms, and new technologies, especially in the way of housing and handling of animals, nutrition, hygiene, etc.
WHY SHOULD QUALITY ASSURANCE SCHEMES BE APPLIED ON FARMS?

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In the last decade safe food demand of the consumers due to food scandal news on the media, zoonosis infections due to increased people and animal movements and high export standards of the developed countries increased the importance of quality assurance schemes.

In the present day, applying quality assurance schemes are mandatory for steps after the farm (i.e. slaughterhouse or product processing stages etc.) in Turkey and the European Union. However, applying quality assurance schemes during the production on farm are voluntary. Hereby, food safety which is the most important component of the concept of 'quality' is left out in the farms.

The objectives of this study are to remind of the underemphasized 'farm' part of the phrase 'from farm to the plate', to introduce quality assurance schemes for farms and by giving examples of popular certification systems around the world, to underline the importance of certification systems which create a logo perception on consumers and increase the safe and quality food demand.

As it is known, if a product contains chemical or biological contamination whilst leaving the farm, it cannot be tolerated by any process and the product needs to be destructed. Thereby losses due to production flaws decrease the profitability and increase the extravagance of the limited natural sources. To avoid mentioned losses, applying quality assurance schemes on farm level such as GXP, HACCP and ISO would be essential and efficient. GXP which is called Good X Practices, is a preliminary application for an efficient HACCP system. By changing the X letter this practices can be modified to various sectors (i.e; GAP: Good Agricultural Practices, GMP: Good Management Practices, GTP: Good Trade Practices etc.). HACCP system can be applied to different sectors and used for different purposes. Apart from food safety; for sustaining animal welfare and organic breeding HACCP system is a 'must' on farm level. ISO which is an abbreviation of 'International Organization of Standards' can be described as a combination of both GXP and HACCP systems. It is almost impossible for producers to assure different standards for each country. ISO brings one standard for all countries and helps producers to break down this barrier.

In Canada for chicken farmers food safety on farm program is mandatory. However, this is not due to federal or provincial regulation. This is a decision that the industry has made by itself that the program is mandatory for all producers. The program has been made mandatory by each of the 10 provincial boards that regulate chicken production in Canada. In effect, it has become a requirement of license in order to be able to grow chicken. Also in the European Union an extended GAP application can be seen for the purpose of on farm food safety. In the future consumers will be more aware of safe and quality food. Therefore, to assure traceability, total food safety and quality, 'quality assurance schemes' should be applied beginning from the farm level.
PREDICTION OF MILK YIELD AND ANALYZING ENVIRONMENTAL FACTORS EFFECTING
ON MILK YIELD BY THREE DIFFERENT ESTIMATION METHODS IN BROWN SWISS CATTLE

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The purpose of this study was to estimate both lactation milk yield and 305 days milk yield by Dutch, Swedish and Trapez methods in Brown Swiss cattle raised in Altınova Farm. Analyzing the effects of measurable environmental factors; lactation turn, year and season on lactation milk yield and 305 day milk yield were also aimed.

Lactation milk yield and 305 day milk yield were estimated in Brown Swiss cattle by three different estimation methods; Dutch (Holland), Swedish and Trapez methods. The differences between lactation milk yields predicted by Dutch, Swedish and Trapez methods were found non-significant. But the difference between Dutch and Trapez methods were found statistically significant at the level of P<0.05. Coincidence or milk yield divergences in before and after 305 day controls could be the reason for this difference.

The effects of measurable environmental factors; lactation turn, year and season on both lactation milk yield and 305 day milk yield were analyzed by means of the least-square method and by contrast-test (GLM procedure). The effects of lactation turn, year and season on both lactation milk yield and 305 day milk yield were found statistically significant (P<0.001). In conclusion one of these three methods can be used to predict the lactation milk yield and lactation turn, year and season effects that are measurable environmental factors causing significant variations on milk yield characteristics.
CERTAIN FINISHING PERFORMANCE PARAMETERS AND MEAT FATTY ACID COMPOSITION OF
HAIR GOAT AND SAANEN × HAIR GOAT CROSSBRED (F₁ AND B₁) KIDS

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In this study; the finishing performance of Hair Goat and Saanen × Hair Goat crossbred (F₁ and B₁) kids and fatty acid composition of kid meats were investigated comparatively. Nine purebred Hair Goat, seven Saanen × Hair Goat crossbred (F₁) and eight Saanen × Hair Goat crossbred (B₁) male kids formed the material of this study. The kids were started to fattenning approximately at 75 days of age following a week for adoption to feed. The finishing period lasted for 8 weeks. At the end of the 56 days in the finishing period the Hair Goat kids, Saanen × Hair Goat crossbred kids (F₁ and B₁) gained 2.77, 2.82 and 1.39 kg live weight, respectively (P>0.05) and the consumed feed for 1 kg of live weight gain were observed 10.76, 10.31 and 19.94 kg respectively. Between the genotype groups individual saturated fatty acids (SFA) and total SFA rate differences for M. longissimus dorsi were not significant (P>0.05). While monounsaturated fatty acid C17:1 and C18:1 differences were not found significant between the genotype groups (P>0.05); proportion of C14:1 and C16:1 were higher in Hair Goat kids than crossbred kids (P<0.05). The individual polysaturated fatty acid (PUFA), total PUFA, total n-3 PUFA and n-6 PUFA rate differences were not significant (P<0.05) between Hair Goat kids and Saanen × Hair Goat crossbred kids (F₁ and B₁). The PUFA/SFA ratio in Hair Goat and crossbred kids (F₁ and B₁) were determined as 0.19, 0.29 and 0.29, respectively (P>0.05); also the n-6:n-3 PUFA ratios were found 4.52, 4.37 and 5.26, respectively (P>0.05). These results indicate that crossbreeding of does from Saanen × Hair cross (F₁) and purebred Hair Goat genotypes with purebred Saanen bucks did not result in significant alterations in meat fatty acid composition. As a result; for the purpose of increasing the goat kid meat production in Marmara Region, the intensive finishing of Hair Goat kids and Saanen × Hair Goat crossbred kids (F₁ and B₁) immediately after the weaning at 2.5 months of age is not recommended due to low finishing performance for all genotype groups.
<table>
<thead>
<tr>
<th>No</th>
<th>Speaker Author</th>
<th>Title of Presentation</th>
<th>Country / University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral-01</td>
<td>Ilia Tsachev</td>
<td>Canine and Equine Vector-borne Diseases of Zoonotic Concern: news &amp; experience</td>
<td>Bulgaria / Trakia Univ. (Stara Zagora)</td>
</tr>
<tr>
<td>Oral-02</td>
<td>Katerina Blagoevska</td>
<td>The effect of the probiotic strain enterococcus faecium DSM 7134 on performances and protein status in experimental T-2 mycotoxics in broiler chicks</td>
<td>R. Makedonia / Ss. Cyril and Methodius Univ.</td>
</tr>
<tr>
<td>Oral-03</td>
<td>Seda Mavili</td>
<td>Q fever in cattle in Trakia District of Turkey</td>
<td>Turkey / Istanbul Univ.</td>
</tr>
<tr>
<td>Oral-04</td>
<td>Grammato Evangelopoulou</td>
<td>Biochemical identification and antimicrobial profile of Gram negative bacterial species isolated from the gallbladder of finishing pigs in Central Greece</td>
<td>Greece / University of Thessaly</td>
</tr>
<tr>
<td>Oral-05</td>
<td>Afrim Hamidi</td>
<td>Dermaonyssus gallinae in layer farms in Kosovo: a potential risk for high Salmonella occurrence and transmission</td>
<td>Kosovo / University of Prishtina</td>
</tr>
<tr>
<td>Oral-06</td>
<td>Sabina Šerić-Haračić</td>
<td>Science based solutions for brucellosis surveillance in Mediterranean countries</td>
<td>Bosnia &amp; Herzegovina / University of Sarajevo</td>
</tr>
</tbody>
</table>

**Session 2 - 28 April, 2014 12:00 - 13:30 (Chairpersons - Prof.Dr. Kemal AK & Prof.Dr. Larisa Karpenko)**

| Oral-07 | Nedžad Hadzliomerović | Preservation techniques in veterinary anatomy | Bosnia & Herzegovina / University of Sarajevo |
| Oral-08 | Ruslan Salykov | Effect of glauconite on the metabolism of sheep | Kyrgyz Republic / Kyrgyz-Turkish Manas Univ. |
| Oral-09 | Irena Celeska | Seasonal variations in metabolic profile of Chios sheep | R. Makedonia / Ss. Cyril and Methodius Univ. |
| Oral-10 | Ivelina Pavlova | Effect of probiotics on enrofloxacin disposition in gastro-intestinal tract of poultry | Bulgaria / Trakia Univ. (Stara Zagora) |
| Oral-11 | Neno Stoyanov Bratoev | Pharmacokinetics of enrofloxacin in ducks with steatosis after force-feeding | Bulgaria / Trakia Univ. (Stara Zagora) |
| Oral-12 | Mentor Alishani | Echinococcus granulosus and intestinal helminthes of dogs in Republic of Kosovo | Kosovo / University of Prishtina |
| Oral-13 | Nurzhan Sarsembaeva | Impact of Echinococcosis on Quality of Cattle Meat in the South Eastern Kazakhstan | Kazakhstan / Kazakh National Agrarian University |

**Session 3a - 29 April, 2014 09:00 - 10:30 (Chairpersons - Prof.Dr. Alek Akdoğan KAYMAZ & Assoc.Prof.Dr. Hajrundin Beseirović)**

<p>| Oral-14 | Trojachanec Plamen | Dairy cow lameness – perception and challenges | R. Makedonya / Ss. Cyril and Methodius Univ. |
| Oral-15 | Bogdan Yanev Aminkov | Effect of xylasine-ketamine anesthesia on blood ACTH, cortisol, adrenaline, insulin and glucose in ovariohysterectomized cats | Bulgaria / University of Forestry (Sofia) |
| Oral-16 | Behlul Behluli | Research on contributing factors to the displacement of abomasum in dairy cattle farms in Kosovo | Kosova / University of Prishtina |
| Oral-17 | Sinem Ülgen | Polycythemia Vera in a Cat | Turkey / Istanbul Univ. |
| Oral-18 | Sasho Petkov Sabev | Color flow and Continuous-wave (CW) Doppler echocardiography in healthy warmblood horses | Bulgaria / Trakia Univ. (Stara Zagora) |
| Oral-19 | Funda Yıldırım | Evaluation of Bcl-2, Bcl-XL and Bax Expression and Apoptotic Index in Canine Mammary Tumours | Turkey / Istanbul Univ. |</p>
<table>
<thead>
<tr>
<th>No</th>
<th>Speaker Author</th>
<th>Title of Presentation</th>
<th>Country / University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral-20</td>
<td>Yusuf Bicer</td>
<td>An investigation on general hygiene status of air in domestic refrigerators</td>
<td>Turkey / University of Selcuk</td>
</tr>
<tr>
<td>Oral-21</td>
<td>Faruk Čaklovica</td>
<td>Importance of organic food production for Bosnia and Herzegovina</td>
<td>Bosnia &amp; Herzegovina / University of Sarajevo</td>
</tr>
<tr>
<td>Oral-22</td>
<td>Nikolaos Solomakos</td>
<td>Antimicrobial effect of oregano essential oil against vibrio parahaemolyticus on mussels (mytilus galloprovincialis) during refrigerated storage</td>
<td>Greece / University of Thessaly</td>
</tr>
<tr>
<td>Oral-23</td>
<td>Cagatay Celik</td>
<td>Salmonella levels in broiler spleens and ground chicken</td>
<td>Turkey / Turkish Armed Forces</td>
</tr>
<tr>
<td>Oral-24</td>
<td>Sandra Mojosva</td>
<td>Isolation and antimicrobial activity of some strains of enterococci from artisanal white brined cheese in Republic of Macedonia</td>
<td>R. Makedonya / Ss. Cyril and Methodius Univ.</td>
</tr>
<tr>
<td>Oral-25</td>
<td>Nikolaos Solomakos</td>
<td>Effect of oregano essential oil on mussels (mytilus galloprovincialis) during refrigerated storage</td>
<td>Greece / University of Thessaly</td>
</tr>
<tr>
<td>Session 4 - 29 April, 2014 11:00 - 12:30 (Chairpersons - Prof. Dr. Ragip KIÇARSLAN &amp; Prof. Dr. Ali Aydin)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral-26</td>
<td>Anna Potapova</td>
<td>Histological Analysis of Equine Placenta</td>
<td>Russia / St Petersburg State Academy</td>
</tr>
<tr>
<td>Oral-28</td>
<td>Taisiia Dmitrieva</td>
<td>Preventive measures of obstetric pathology in high-productive cows by using beta-carotene in during dry stable period.</td>
<td>Russia / St Petersburg State Academy</td>
</tr>
<tr>
<td>Oral-29</td>
<td>Gamze Evkuran Dal</td>
<td>Evaluation of Follicular Development by Growth Factors and Hormone Concentrations During Breeding Season in Mares.</td>
<td>Turkey / Istanbul Univ.</td>
</tr>
<tr>
<td>Oral-31</td>
<td>Özen Banu Özdaş</td>
<td>Effects of cysteamine on sheep embryos oocyte cleavage rates</td>
<td>Turkey / Istanbul Univ.</td>
</tr>
<tr>
<td>Session 5 - 29 April, 14:45 - 16:15 (Chairpersons - Prof. Dr. Vedat Sakic &amp; Prof. Dr. Galip Dünyamalyev)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral-32</td>
<td>Nihad Fejzic</td>
<td>&quot;One health&quot; approach as optimal system for sound health and economic growth</td>
<td>Bosnia &amp; Herzegovina / University of Sarajevo</td>
</tr>
<tr>
<td>Oral-33</td>
<td>Askarbek Z. Tulobaev</td>
<td>Traditional knowledge of the Kyrgyz people in veterinary and livestock breeding</td>
<td>Kyrgyz Republic / Kyrgyz-Turkish Manas Univ.</td>
</tr>
<tr>
<td>Oral-34</td>
<td>P. Dilara Akin</td>
<td>Assessment of animal welfare using ANI system in different types of beef cattle housing systems</td>
<td>Turkey / Istanbul Univ.</td>
</tr>
<tr>
<td>Oral-35</td>
<td>Nurzhan Sarsembaeva</td>
<td>Development of the industrial technology and experimental studies of functional feed additives for poultry from Chankanay zeolites (Kazakhstan)</td>
<td>Kazakhstan / Kazakh National Agrarian University</td>
</tr>
<tr>
<td>Oral-36</td>
<td>Nursen Dogan</td>
<td>Effects of slaughter weight and gender on finishing performance and carcass quality of light lambs</td>
<td>Turkey / Istanbul Univ.</td>
</tr>
<tr>
<td>Oral-37</td>
<td>Martin Nikolovski</td>
<td>Effect of glutathione on kinematic parameters of frozen-thawed spermatozoa from ovchepolian pramenka rams</td>
<td>R. Makedonya / Ss. Cyril and Methodius Univ.</td>
</tr>
<tr>
<td>Oral-38</td>
<td>Mickov Ljupco</td>
<td>Kinetic parameters of cryopreserved holstein-friesian and simmental bull spermatozoa</td>
<td>R. Makedonya / Ss. Cyril and Methodius Univ.</td>
</tr>
</tbody>
</table>