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Grażyna Ziółkowska

Secretary
Grażyna Wrzosek-Łobocka

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Project of cover
Barbara Jarosik

WYDAWNICTWO UNIwersytetu PRZYRODNICZEGO W LUBLINIE

CONTENTS

Preface	4
FACULTY OF VETERINARY MEDICINE, Lublin 2012	5
Institute of Biological Rudiments of Animal Diseases	11
Sub-Department of Fish Diseases and Biology	11
Sub-Department of Parasitology and Invasive Diseases	12
Sub-Department of Poultry Diseases	16
Sub-Department of Veterinary Microbiology	17
Sub-Department of Veterinary Prophylaxis	22
Department of Anatomy and Animal Histology	25
Sub-Department of Animal Anatomy	25
Sub-Department of Histology and Embryology	29
Department of Biochemistry and Animal Physiology	31
Sub-Department of Animal Physiology	31
Sub-Department of Biochemistry	49
Department and Clinic of Animal Internal Diseases	52
Department and Clinic of Animal Reproduction	53
Department and Clinic of Animal Surgery	55
Laboratory of Radiology and Ultrasonography	62
Department of Epizootiology and Clinic of Infectious Diseases	64
Department of Food Hygiene of Animal Origin	71
Department of Pathological Anatomy	76
Department of Preclinical Veterinary Science	79
Sub-Department of Pathophysiology	79
Sub-Department of Pharmacology	86
Sub-Department of Toxicology and Environment Protection	88
Index of authors	89

Preface

The present periodical „Excerpta Veterinaria Lublin” is published in order to acquaint the reader with the life of the Veterinary Medicine Faculty in Lublin, and with the scientific works done there. The periodical is yearly publication which includes summaries of doctoral and habilitation dissertations and experimental and casuistic papers, as well as titles of other publications issued during the proceeding year.

It is addressed to foreign colleges and institutes and is issued in virtue of interchange law.

Proposals of an exchange programme should be sent to the address :

EXCERPTA VETERINARIA LUBLIN
Akademicka 12
20-033 Lublin
Poland
tel. (48-81) 445-66-96
fax (48-81) 533-37-52, 445-60-06
e-mail: grazyna.ziolkowska@up.lublin.pl

FACULTY OF VETERINARY MEDICINE LUBLIN 2012

Structure

Veterinary Medicine Faculty belongs to one of seven Faculties of the University of Life Sciences in Lublin. At present, this Faculty consists of 1 Institute, 9 Departments. The Faculty is entitled to confer scientific degrees: i.e. the degree of Doctor of Veterinary Science and the second, a higher one Doctor habilitated.

Staff of Faculty

Dean is the head of the Faculty directing all the scientific and didactic activities. Of two vice-Deans one is especially responsible for the course of teaching and student affairs and the second one for clinical affairs.

Dean: Prof. ordin. Dr. habil. Stanisław Winiarczyk

Vice-dean: Prof. ordin. Dr. habil. Cezary Kowalski

Prof. extraordin. Dr. habil. Piotr Silmanowicz

Professors

Prof. Dr. habil. Marcin Arciszewski

Prof. Dr. habil. Ireneusz Balicki

Prof. ordin. Dr. habil. Ryszard Bobowiec

Prof. Dr. habil. Zbigniew Boratyński

Prof. ordin. Dr. habil. Zbigniew Grądzki

Prof. Dr. habil. Jadwiga Jaworska-Adamu

Prof. extraordin. Dr. habil. Marta Kankofer

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Prof. extraordin. Dr. habil. Leszek Krakowski

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Prof. ordin. Dr. habil. Zbigniew Pomorski

Prof. extraordin. Dr. habil. Piotr Silmanowicz

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Prof. extraordin. Dr. habil. Krzysztof Szkucik
Prof. extraordin. Dr. habil. Grażyna Wałkuska
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Prof. ordin. Dr. habil. Andrzej Wernicki
Prof. ordin. Dr. habil. Stanisław Winiarczyk
Prof. extraordin. Dr. habil. Zygmunt Wrona
Prof. extraordin. Dr. habil. Grażyna Ziółkowska
Dr. habil. Leszek Guz
Dr. habil. Urszula Kosior-Korzecka
Dr. habil. Izabela Krakowska
Dr. habil. Krzysztof Lutnicki
Dr. habil. Wojciech Łopuszynski
Dr. habil. Jacek Madany
Dr. habil. Barbara Majer-Dziedzic
Dr. habil. Zygmunt Nowakowski
Dr. habil. Izabela Polkowska
Dr. habil. Iwona Puzio
Dr. habil. Radosław Radzki
Dr. habil. Marek Szczubiał
Dr. habil. Marcin Tatara
Dr. habil. Renata Urban-Chmiel
Dr. habil. Jose Luis Valverde Piedra

Assistants, adjuncts and lecturers: 92

Technicians: 52

Received the degree of Doctor of Veterinary Science: 6

Received the degree of Doctor habil.: 3

Students: 1050

Received the diploma of veterinary surgeon: 197

Attention

Dr. – Doctor of Veterinary Science – corresponds to Ph.D.

Dr. habil. – the highest scientific degree

Prof. Dr. habil. – employed on the post of professor of the University of Life Sciences

Prof. extraordin. – corresponds to the title of associate professor

Prof. ordin. – corresponds to the title of full professor

Veterinary study continues for five and half years now and has an unitary character. A graduate after completing studies and passing exams receives the diploma of veterinary surgeon.

The schedule of studies

Subject	Number of hours		Semestr	Course completion
	Lecture	Classes		
1	2	3	4	5
Latin	-	45	I, II	C**
Biophysics	15	30	I	E*
Chemistry	15	30	I	E
Biology	30	30	I	E
Histology and embriology	60	60	I, II	E
Animal anatomy	90	135	I, II, III	E
Foreign language	-	150	I, II, III, IV, V	E
Genetical basis of animal breeding	15	30	II	E
Philosophy	15	30	II	C
Informatics and statistical elements	30	30	II	C
Physical education	-	60	I, II	C
Biochemistry	60	90	II, III	E
Sociology	30	-	III	C
Bioethics	30	-	III	C
Molecular biology***	15	15	III	C
Environmental physiology***	15	15	III	C
Agronomy	15	-	III	C
Animal husbandry	15	30	III	E
Animal physiology	60	60	III, IV	E
Topographic anatomy	15	30	IV	E
Environmental protection	15	15	IV	E
Animal nutrition	30	30	IV	E
Economacs of agriculture	15	-	IV	C
History of vet. medicine and deontology	15	-	IV	C
Laboratory animals diseases	15	15	IV	C
Veterinary microbiology	60	90	IV, V	E
Pathophysiology	45	60	V, VI	E
Veterinary toxicology	30	30	V	E
Feed hygiene***	15	15	V	C
Exotic animals diseases	15	15	V	C
Clinical diagnostics	30	60	V, VI	E
Pharmacology	45	60	V, VI	E
Beneficial insect diseases	15	15	VI	E
Clinical immunology	15	15	VI	E
Pathological anatomy	75	90	VI, VII, VIII	E
Parasitology and invasiology	30	60	VI, VII	E
Game animal diseases	15	15	VI	C
Clinical physiology***	15	-	VI	C
Fish husbandry and diseases	15	30	VII	E
Anaesthesiology	15	15	VII	E
Veterinary radiology	30	30	VII	E

1	2	3	4	5
Internal diseases of companion animals	30	60	VII, VIII	E
Epidemiology and zoonoses***	30	15	VIII	C
Veterinary pharmacy	15	15	VII	C
Clinical analyses	-	30	VIII	C
Veterinary ophthalmology***	15	15	VIII	C
Veterinary stomatology	15	15	VIII	C
Hygiene of milk	15	30	VIII	E
Veterinary dermatology	15	30	VIII	E
Fur animal diseases	15	15	VIII	C
Veterinary dietetics	15	15	VIII	E
Hygiene of slaughter animals and meat	45	60	VIII, IX	E
Veterinary prevention	30	45	VIII, IX	E
Veterinary surgery	60	90	VIII, IX, X	E
Animal welfare	15	15	IX	E
Poultry diseases	30	60	IX, X	E
Internal diseases of farm animals	60	60	IX, X	E
Obstetrics and gynaecology	90	90	IX, X, XI	E
Infectious diseases of animals	60	90	IX, X, XI	E
Hygiene of food of animals origin	60	75	X, XI	E
Veterinary oncology***	15	15	IX	C
Pediatrics***	15	15	IX	C
Geriatrics of accompanying animals***	15	-	X	C
Veterinary neurology***	15	-	X	C
Veterinary administration	30	-	XI	C
Forensic medicine	15	15	XI	E
Orthopedics	15	30	XI	E
Andrology and insemination	15	30	XI	E
Reproduction in horses***	15	15	XI	C
Marketing and management***	15	-	XI	C
Metabolic diseases of farm animals***	15	-	XI	C
Total	1680	2355	41E	
Optional subjects 150/330	210	120	17C	

* Examination.

** Credit for a course.

*** Optional subjects.

Clinical practices

Epizootiology	60 hours
Veterinary surgery	45 hours
Internal diseases of farm animals	30 hours
Internal diseases of man-accompanying animals	30 hours
Poultry diseases	30 hours
Obstetrics and animals reproduction	60 hours
Parasitology and veterinary invasiology	15 hours
Veterinary radiology	15 hours
Dermatology	30 hours
<hr/>	
Total	315 hours

Altogether didactic hours

General specific and professional subject	4075 hours
Optional subject	180 hours
Clinical practices	315 hours
Professional trainings	560 hours
<hr/>	
Total	5130 hours

Professional trainings

After the 4th year	– clinical practice	– 4 weeks
	– practice slaughter-house	– 2 weeks
After the 5th year	– clinical practice	– 4 weeks
	– sanitary practice	– 2 weeks

**RESEARCH ACTIVITY
OF VETERINARY MEDICINE FACULTY**

(Published in 2012)

INSTITUTE OF BIOLOGICAL RUDIMENTS OF ANIMAL DISEASES

30 Głęboka, Lublin

Head: Prof. ordin. Dr. habil. Andrzej Wernicki

SUB-DEPARTMENT OF FISH DISEASES AND BIOLOGY

Akademicka 12, Lublin

Head: Prof. extraordin. Dr. habil. Antonina Sopińska
Dr. habil. Leszek Guz

REPORTS TO RESEARCH MEETINGS

GUZ L., GRĄDZKI Z., KRAJEWSKA M., LIPIEC M., ZABOST A., AUGUSTYNOWICZ-KOPEĆ E.: Occurrence and antimicrobial susceptibility of *Mycobacterium peregrinum* in ornamental fish. (Występowanie i wrażliwość na chemioterapeutyki *Mycobacterium peregrinum* izolowanych od ryb akwariowych).

Ref.: XIV Polish Society of Veterinary Sciences Congress. Science for practice. Wrocław, 13–15 IX 2012.

Publication: Proceeding of XIVth Polish Society of Veterinary Sciences Congress. Science for practice. 698, 2012. In Polish.

PUK K., GUZ L.: Effects of medical plant extracts on growth of *Spironucleus* sp. isolated from discus (*Symphysodon discus*).

Ref.: II International Conference and Workshop. Plant – the source of research material. Lublin, 18–20 X 2012.

Publication: II International Conference and Workshop. Plant – the source of research material. 292, 2012. In English.

SUB-DEPARTMENT OF PARASITOLOGY AND INVASIVE DISEASES

Akademicka 12, Lublin

Head: Dr. Krzysztof Tomczuk

RESEARCH STUDIES (SUMMARIES)

Maria Bernadeta Studzińska, Krzysztof Tomczuk, Marta Demkowska-Kutrzepa,
Klaudiusz Szczepaniak

THE STRONGYLIDAE BELONGING TO STRONGYLUS GENUS IN HORSES FROM SOUTH-EASTERN POLAND

Postmortem parasitic examinations of the large intestines of 725 slaughtered horses from individual farmers in south-eastern Poland were carried out. The examinations were carried out monthly since February 2006 until January 2007 (except for August 2007 because of a technological stoppage in the slaughter house). The examinations included intensiveness and extensiveness of the infestation of the strongylidae belonging to the *Strongylus* genus. The strongylidae were found in 26.5% of the examined horses. *Strongylus vulgaris* was the most dominant nematode and had a 22.8% prevalence, *Strongylus edentatus* was carried by 18.3% of horses. *Strongylus equinus* was identified only in 1.7% of examined horses. Our findings revealed that combined infestation of *S. vulgaris* and *S. edentatus* occurred in 100 (52.1%) of the 725 horses infected by the strongylidae. The present results indicate that the lowest prevalence of strongyles species except for *Strongylus equinus* was found in January, February, and March. However, it is difficult to draw a conclusion because of an extremely low extensiveness of infestation. The results indicate that the prevalence of the strongylidae in horses from south-eastern Poland is limited.

Publication: Parasit. Res. 4, 111, 1417–1421, 2012. In English, summary in English.

Klaudiusz Szczepaniak, Piotr Listos, Wojciech Łopuszyński, Tomasz Skrzypek,
Waldemar Kazimierzczak

**GRANULOMATOUS PERITONITIS IN A EUROPEAN BROWN BEAR
CAUSED BY *Baylisascaris transfuga***

We report a case of granulomatous peritonitis due to *Baylisascaris transfuga* in a young male European brown bear (*Ursus arctus*). At necropsy, there were extensive abdominal adhesions and extensive granulomatous tissue on the peritoneum and liver capsule. In the gastrointestinal tract, there were 58 nematodes that were identified as *Baylisascaris transfuga* using light and scanning electron microscopy.

Publication: J. Wildlife Dis. 48, 2, 517–519, 2012. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

DEMKOWSKA-KUTRZEPA M., STUDZIŃSKA M.B.: Parasite fauna of rodents in region of Lublin as a potential factor of pathogenicity for human and animals health. (Parazytofau-na gryzoni z okolic Lublina stanowiących źródło zagrożenia zdrowia ludzi i zwierząt). Ref. Scientific conference “Parasitology – the never ending story”. Scientific conference of Institute of Parasitology PAN, Warsaw, 12. XII 2012.
Publication: Proceedings of Scientific conference “Parasitology – the never ending story”, 47, 2012. In Polish.

STUDZIŃSKA M.B., DEMKOWSKA-KUTRZEPA M.: Parasites of dogs in Lublin region. (Zarobaczenie psów pochodzących z terenu Lubelszczyzny). Ref. Scientific conference “Parasitology – the never ending story”. Scientific conference of Institute of Parasitology PAN, Warsaw, 12. XII 2012.
Publication: Proceedings of Scientific conference “Parasitology – the never ending story”, 47, 2012, In Polish.

TOMCZUK K.: Worms from the genus *Toxocara* in terms of environmental contamination and human health risks. (Glisty z rodzaju *Toxocara* w aspekcie skażenia środowiska i zagrożenia zdrowia człowieka). Ref. Scientific conference “Sewage precipitates used in husbandry as a risk factor causing parasite zoonosis in human and animals”, Puławy, 16 IV 2012.
Publication: Proceedings of Scientific conference “Sewage precipitates used in husbandry as a risk factor causing parasite zoonosis in human and animals”, 24, 2012. In Polish.

TOMCZUK K., KOSTRO K., STUDZIŃSKA M., SZCZEPANIAK K., DEMKOWSKA-KUTRZEPA M., WITKOWSKA A.: Occurrence and dynamics invasion of *Anoplocephala perfoliata* in horses in different farming systems in Polish climatic conditions. (Vorkommen und Invasionsdynamik von *Anoplocephala perfoliata* bei Pferden in unterschiedlichen Haltungssystemen unter polnischen Klimabedingungen).
Ref. Tagung der Deutschen Veterinärmedizinischen Gesellschaft Fachgruppe Parasitologie und parasitäre Krankheiten in Hannover, 2–4 VII 2012.
Publication: Neue Herausforderungen bei der Bekämpfung von Parasitosen bei Nutz-, Haus- und Heimtieren, 87–88, 2012. In German.

TOMCZUK K., KOSTRO K., STUDZIŃSKA M., SZCZEPANIAK K., DEMKOWSKA-KUTRZEPA M., WITKOWSKA A.: Pathomechanism of invasion *Anoplocephala perfoliata* based on necropsy and histopathological research. (Der Invasionspathomechanismus von *Anoplocephala perfoliata* auf Grund von Sezier- und histopathologischen Untersuchungen).
Ref. Tagung der Deutschen Veterinärmedizinischen Gesellschaft Fachgruppe Parasitologie und parasitäre Krankheiten in Hannover, 2–4 VII 2012.
Publication: Neue Herausforderungen bei der Bekämpfung von Parasitosen bei Nutz-, Haus- und Heimtieren, 89–90, 2012. In German.

TOMCZUK K., STUDZIŃSKA M.B., SZCZEPANIAK K.O., DEMKOWSKA-KUTRZEPA M., WITKOWSKA A.: Invasions of tapeworms *Anoplocephala perfoliata* in horses in south-eastern Poland in 2007–2012. (Inwazje tasiemców *Anoplocephala perfoliata* u koni w Polsce południowo-wschodniej w latach 2007–2012).
Ref. Scientific conference “Parasitology – the never ending story”. Scientific conference of Institute of Parasitology PAN, Warsaw, 12 XII 2012.
Publication: Proceedings of Scientific conference: “Parasitology – the never ending story”, 47, 201. In Polish.

OTHER PUBLICATIONS

GRUSZECKI T.M., LIPIEC A., BOJAR W., JUNKUSZEW A., SZCZEPANIAK K.: Welfare of free range świniarka sheep. (Dobrostan owiec rasy świniarka w systemie wolnego utrzymania).
Publication: Czynna ochrona wybranych siedlisk Natura 2000 z wykorzystaniem rodzimych ras owiec. Comernet sp. z o.o., Lublin, 64–73, 2012. In Polish.

SZCZEPANIAK K., ADASZEK Ł.: Infections with adenoviruses in bearded dragons. (Zakażenia adenowirusowe u agam brodatych).
Publication: Życie Wet., 3, 224–226, 2012, In Polish, summary in English.

SZCZEPANIAK K., ŁOJSZCZYK-SZCZEPANIAK A.: Ultrasonography of reptile reproductive system. (Ocena ultrasonograficzna układu rozrodczego gadów).
Publication: Życie Wet., 10, 833–837, 2012. In Polish.

SZCZEPANIAK K., ŚWIECH M.: *Isospora lacazei* invasion in the European Goldfinch. A case report. (Inwazja *Isospora lacazei* u szczygła (*Carduelis carduelis*)).
Publication: Magazyn Wet. (Lublin), suppl. 76, 2012, In Polish, summary in English.

TOMCZUK K.: Zoonoses. Bot-Flies and the significance of zoonotic. (Choroby odzwierzęce. Gzy i ich znaczenie zoonotyczne.)

Publication: Gazeta Jastkowska, 44, 1, 39–40, 2012. In Polish.

TOMCZUK K.: Our health. Zoonoses. The desirability of washing vegetables and fruit in the aspect of parasitic infections. (Nasze zdrowie. Choroby odzwierzęce. Celowość mycia warzyw i owoców w aspekcie zarażeń pasożytniczych).

Publication: Gazeta Jastkowska, 45, 2, 39–40, 2012. In Polish.

TOMCZUK K.: Our health. Zoonoses. Risk of prevalence the exotic parasites of humans and animals in Poland – dirofilariosis. (Nasze zdrowie. Choroby odzwierzęce. Zagrożenia egzotycznymi pasożytami ludzi i zwierząt w Polsce – dirofilarioza).

Publication: Gazeta Jastkowska.,46, 3, 39–40, 2012. In Polish.

TOMCZUK K.: Our health. Protozoal diseases. Risk of malaria in Poland. (Nasze zdrowie. Choroby pierwotniacze. Zagrożenie malarią w Polsce).

Publication: Gazeta Jastkowska, 47, 4, 2012. In Polish.

TOMCZUK K., MICHALSKI. M.M: Nematodes slowly destroy a herd. (Nicienie powoli niszczą stado).

Publication: Top Agrar Pol. 8, 26–27, 201. In Polish.

TOMCZUK K., MICHALSKI M.M.: The defense against insect. (Obrona przed owadami).

Publication: Top Agrar Pol. 5, 36–37, 2012. In Polish.

SUB-DEPARTMENT OF POULTRY DISEASES

Akademicka 12, Lublin

Head: vacat

RESEARCH STUDIES (SUMMARIES)

Not published in 2012.

SUB-DEPARTMENT OF VETERINARY MICROBIOLOGY

Akademicka 12, Lublin

Head: Prof. extraordin. Dr. habil. Grażyna Ziółkowska
Dr. habil. Barbara Majer-Dziedzic

RESEARCH STUDIES (SUMMARIES)

Irena M. Choma, Edyta M. Grzelak, Barbara Majer-Dziedzic

COMPARISON OF DEPROTEINIZATION METHODS USED BEFORE TLC-DB AND HPLC ANALYSIS OF FLUMEQUINE RESIDUES IN MILK

Seventeen various extraction procedures based on precipitation of proteins in milk samples spiked with flumequine were tested. Several criteria were taken into account, when choosing the most effective. The supernatants were analyzed by thin-layer chromatography – direct bioautography (TLC-DB) and high performance liquid chromatography (HPLC-UV). The results obtained from both methods indicate as the best the same deproteinization procedure. The addition of acetonitrile to milk in 1 : 1 volume proportions gave the highest concentration of flumequine in supernatant and prompt coagulation of proteins in milk samples.

Publication: Med. Chem. 8.1, 95–101, 2012, fig. 5, tab. 2. In English, summary in English.

Liliana Mazur, Bożena Modzelewska-Banachiewicz, Renata Paprocka,
Michał Zimecki, Urszula E. Wawrzyniak, Jolanta Kutkowska,
Grażyna Ziółkowska

**SYNTHESIS, CRYSTAL STRUCTURE AND BIOLOGICAL ACTIVITIES OF A NOVEL
AMIDRAZONE DERIVATIVE AND ITS COPPER (II) COMPLEX
– A POTENTIAL ANTITUMOR DRUG**

A new linear amidrazone derivative, 6-acetyl-cyclohex-3-enecarboxylic acid [1-pyridin-2-yl-1-(pyridin-2-ylamino)meth-(*Z*)-ylidene] hydrazide, H₂L (2) and its Cu(II) complex, [Cu₂L₂] \cdot 4H₂O (3) were synthesized and characterized by elemental analysis, IR and ¹H NMR spectroscopy and cyclic voltammetry. Compound 2 was synthesized in the equimolar reaction of N³-substituted amidrazone with *cis*-1,2,3,6-tetrahydrophthalic anhydride. The Cu complex of 2 was obtained in the reaction with copper(II) acetate. The molecular structures of 2 and 3 were determined by X-ray crystallography. The parent ligand exists in its amide-hydrazone form in the solid state. The central amidrazone moiety has a *Z* configuration with respect to the double C=N bond. Coordination to the metal center promotes *Z/E* isomerization of the hydrazone group of the ligand. Compound 3 is a dinuclear four-coordinated Cu(II) complex with the amidrazone ligand behaving as a tetradentate double deprotonated chelating one. Several biological activities of 2 and 3 were examined *in vitro*; they were: antimicrobial properties against selected bacterial and fungal strains, suppression of phytohemagglutinin A (PHA)-induced proliferation of human peripheral blood mononuclear cells (PBMC) and their effects on tumor necrosis factor alpha (TNF- α) and interleukin 6 (IL-6) production. The cytotoxic activity of Cu(II) complex was determined with respect to the four carcinoma cell lines (SW 984, CX-1, L-1210, A-431). The studied complex exhibited significant cytotoxic effects (particularly against CX-1 colon carcinoma), comparable to those reported for cisplatin. Both compounds have shown a relatively low antibacterial activity and were devoid of antifungal properties.

Publication: J. Inorg. Biochem. 114, 55–64, 2012, fig. 7, tab. 2. In English, summary in English.

Aneta Nowakiewicz, Grażyna Ziółkowska, Przemysław Zięba,
Katarzyna Stepniewska. Stanisław Tokarzewski

**RUSSIAN TORTOISES (*Agrionemys horsfieldi*) AS POTENTIAL RESERVOIR
FOR *Salmonella* spp.**

A total of 80 Russian tortoises brought in Poland were examined for presence of *Salmonella*. *Salmonella* was detected in 15 out of all the animals tested (18.75%). Of the total of 56 strains, 30 (53.57%) belonged to *Salmonella enterica* subsp. *enterica* (I) and 26 to *Salmonella enterica* subsp. *salamae* (II). The predominant serotype within subspecies I was *S. Newport*, which is one of the most serotypes causing salmonellosis in humans and warm-blooded animals. In vitro determination of the susceptibility of *Salmonella* to the 10 medicinal preparations showed that all tested strains were sensitive to norfloxacin, sulfamethoxazole with trimethoprim, florfenicol, gentamicin, tetracycline and ampicillin, resistance was noted only to amoxicillin with clavulanic acid (12 strains), and intermediate sensitivity to colistin (7 strains), enrofloxacin (2 strains) and cephalixin (5 strains). These studies confirmed that Russian tortoises are a significant reservoir for *Salmonella* and may represent a potential source of infection for humans.

Publication: Res. Vet. Sci. 92, 187–190, 2012, tab. 2. In English, summary in English.

Stanisław Tokarzewski, Grażyna Ziółkowska, Aneta Nowakiewicz

**SUSCEPTIBILITY TESTING *Aspergillus niger* STRAINS ISOLATED FROM POULTRY
TO ANTIFUNGAL DRUGS – A COMPARATIVE STUDY OF THE DISK DIFFUSION,
BROTH MICRODILUTION (M38-A) AND E-TEST METHODS**

The aim of this study was to determine the sensitivity of *Aspergillus niger* strains isolated from birds to available antifungal drugs using different in vitro assays – classical disk diffusion. Etest and broth microdilution NCCLS/CLSI M 38-A. The study material consisted of about 2.000 swabs and samples from different species of birds. *A. niger* (n = 10) was accounted for 6.81% of the total pool of strains isolated. Determinations were made for 13 antifungal drugs using the disk diffusion method. The *A. niger* exhibited high susceptibility to enilconazole, terbinafine, voriconazole, tioconazole and ketoconazole, low susceptibility to clotrimazole, miconazole and nystatin, and resistance to amphotericin B, itraconazole, pimarinic, fluconazole and 5-fluorocytosine. Minimum inhibitory

concentration (MIC) was determined for 9 antifungal drugs using the micro-method of duplicate serial dilutions in a liquid medium. *A. niger* strains were most susceptible to enilconazole and voriconazole. MIC ranged from 0.0625 to 0.5 microg/ml for enilconazole, with MIC₉₀-0.5 microg/ml and MIC₅₀-0.125 microg/ml. The corresponding values for voriconazole were 0.25–1 microg/ml, 1 microg/ml and 0.5 microg/ml. MIC for amphotericin B and terbinafine ranged from 0.5 to 4 microg/ml, while the values for the remaining drugs were highly varied. MIC was measured by the gradient diffusion method using Etest for 5 antifungal drugs: amphotericin B, fluconazole, itraconazole, ketoconazole and voriconazole. By far the highest susceptibility was obtained in the case of voriconazole, with MIC ranging from 0.0625 to 1 microg/ml. MIC for amphotericin B ranged from 0.25 to 4 microg/ml, for itraconazole and ketoconazole ranging from 0.5 to 16 microg/ml. Methods available for this purpose are not always applicable in field conditions. The present results indicate that the Etest technique, due to its high percentage of agreement with the M 38-A microdilution method, should find application in medical and veterinary practice.

Publication: Polish J. Vet. Sci. 15, 125–133, 2012, fig. 2, tab. 6. In English, summary in English.

Adam Tylicki, Magdalena Siemieniuk, Paweł Dobrzym, Grażyna Ziółkowska,
Magdalena Nowik, Urszula Czyżewska, Aleksandra Pyrkowska

**FATTY ACID PROFILE AND INFLUENCE OF OXYTHIAMINE ON FATTY ACID
CONTENT IN *Malassezia pachydermatis*, *Candida albicans* AND *Saccharomyces cerevisiae***

Malassezia pachydermatis and *Candida albicans* are fungi involved in the skin diseases and systemic infections. The therapy of such infections is difficult due to relapses and problems with pathogen identification. In our study, we compare the fatty acids profile of *M. pachydermatis*, *C. albicans* and *S. cerevisiae* to identify diagnostic markers and to investigate the effect of oxythiamine (OT) on the lipid composition of these species.

Total fatty acid content is threefold higher in *C. albicans* and *M. pachydermatis* compared with *S. cerevisiae*. These two species have also increased level of polyunsaturated fatty acids (PUFA) and decreased content of monounsaturated fatty acids (MUFA). We noted differences in the content of longer chain (> 18) fatty acids between studied species (for example a lack of 20:1 in *S. cerevisiae* and 22:0 in *M. pachydermatis* and *C. albicans*). OT reduces total fatty acids content in *M. pachydermatis* by 50%. In *S. cerevisiae*, OT increased PUFA whereas it decreased MUFA content. In *C. albicans*, OT decreased PUFA and in-

creased MUFA and SFA content. The results show that the MUFA to PUFA ratio and the fatty acid profile could be useful diagnostic tests to distinguish *C. albicans*, *M. pachydermatis* and *S. cerevisiae*, and OT affected the lipid metabolism of the investigated species, especially *M. pachydermatis*.

Publication: Mycoses 55, 106–113, 2012, fig. 3, tab. 2. In English, summary in English.

REPORTS TO RESEARCH MEETING

CZYŻEWSKA U., TYLICKI A., SIEMIENIUK M., DOBRZYŃ P., DWORECKA-KASZAK B., NOWAKIEWICZ A., ZIÓLKOWSKA G.: Is the content of fatty acids may be a potential marker of pathogenic strains of *Malassezia pachydermatis*? (Czy zawartość kwasów tłuszczowych może stanowić potencjalny marker patogenności szczepów *Malassezia pachydermatis*?)

Ref. XXVII Congress of the Polish Society of Microbiology "Microorganisms without borders". Lublin, 5–8 IX 2012.

Publication: Proceedings of the XXVII Congress of the Polish Society of Microbiology "Microorganisms without borders", 169, 2012. In Polish.

NOWAKIEWICZ A., ZIĘBA P., GNAT S., DZIEDZIC R., BEEGER S., MAJER-DZIEDZIC B., ZIÓLKOWSKA G.: Ruminant microflora of coniferous forest habitats of deer in the autumn.

Ref. XIV Congress of the Polish Society of Veterinary Science "Science for practice". Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Science "Science for practice", 668, 2012. In Polish.

NOWAKIEWICZ A., ZIÓLKOWSKA G.: *Trichophyton verrucosum* – molecular epidemiology. (*Trichophyton verrucosum* – epidemiologia molekularna).

Ref. XIV Congress of the Polish Society of Veterinary Science "Science for practice". Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Science "Science for practice", 626, 2012. In Polish.

ZIÓLKOWSKA G., NOWAKIEWICZ A.: Identification and genotyping strains of *Trichophyton mentagrophytes*. Comparison of methods. (Identyfikacja i genotypowanie szczepów *Trichophyton mentagrophytes*. Porównanie metod).

Ref. XIV Congress of the Polish Society of Veterinary Science "Science for practice". Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Science "Science for practice", 643, 2012. In Polish.

SUB-DEPARTMENT OF VETERINARY PROPHYLAXIS

Akademicka 12, Lublin

Head: Prof. ordin. Dr. habil. Andrzej Wernicki
Dr. habil. Renata Urban-Chmiel

RESEARCH STUDIES (SUMMARIES)

Marta Dec, Andrzej Wernicki, Andrzej Puchalski, Renata Urban-Chmiel,
Marcin Graż

PURIFICATION AND ELECTROPHORETIC CHARACTERIZATION OF BOVINE CONGLUTININ

In this study a two-stage procedure for purification of conglutinin using affinity and ion-exchange chromatography was developed. To isolate conglutinin from bovine serum, its unique ability to bind to complement component iC3b was exploited. Incubation of bovine serum with chromatographic beads (TSK, Toyopearl HW-75 F) at 37°C allows for iC3b deposition and subsequent binding of conglutinin. A single protein fraction eluted with ethylenediaminetetraacetic acid (EDTA) was then separated on an ion-exchange column in a NaCl gradient. The purification was evaluated by SDS-PAGE and western blotting. Conglutinin analyzed by SDS-PAGE under reducing conditions showed two main bands at 41 and 47 kDa and eight weaker bands. Nonreduced conglutinin appeared as a ladder pattern composed of many fractions ranging from 34 to 630 kDa. The bands at 34, 153, 174, 247, 338 and 387 kDa displayed the highest optical density. In the native conglutinin profile four fractions were observed, and the pI of this protein was below 8.5. The presence of sugar residues in the conglutinin molecule was detected using Schiff's reagent.

Publication: Biomed. Chromatogr. 26, 684–690, 2012, fig. 8. In English, summary in English.

Marta Dec, Andrzej Wernicki, Andrzej Puchalski, Renata Urban-Chmiel,
Sebastian Radej

**EFFECT OF CONGLUTININ ON PHAGOCYtic ACTIVITY
OF BOVINE GRANULOCYTES**

In the present study we investigated the effect of bovine conglutinin on the phagocytic activity of leukocytes. We measured both the chemotactic activity of conglutinin and its effect on the internalization of zymosan particles and *E. coli* by granulocytes. We also assessed the binding of conglutinin to various microorganisms isolated from clinical cases in cattle. We showed that conglutinin binds strongly to the surface of yeast cells and to mannan-rich zymosan particles, while weak binding was observed in the case of the bacterial strains tested, including those whose O antigen is composed of mannan. Conglutinin (1–10 µg/ml) neither acts as a chemotactic factor for peripheral blood leukocytes nor affects ingestion of *E. coli* by granulocytes. However, as flow cytometry based assay showed, conglutinin (0.1–1 µg/ml) increased ingestion of zymosan expressed as mean fluorescence intensity (MFI) of positive cells.

Publication: Pol. J. Vet. Sci. 15, 455–462, 2012, fig. 4, tab. 2. In English, summary in English.

Marta Dec, Andrzej Wernicki, Andrzej Puchalski, Renata Urban-Chmiel,
Adam Waśko

**THE EFFECT OF CONGLUTININ ON PRODUCTION OF REACTIVE OXYGEN SPECIES
IN BOVINE GRANULOCYTES**

Conglutinin is a high molecular-weight lectin originally detected in bovine serum. It belongs to the family of collectins that bind sugar residues in a Ca²⁺ dependent manner and are effector molecules in innate immunity. Conglutinin appears to play an important role in immune defense mechanisms, showing antiviral and antibacterial activities when tested in vivo and in vitro. The present study evaluated the effect of conglutinin on the respiratory bursts in bovine peripheral phagocytes. Using nitroblue tetrazolium and hydrogen peroxide assays, we showed that sugar ligand-bound conglutinin stimulated the production of superoxide and H₂O₂ in granulocytes whereas the non-sugar-bound form of conglutinin inhibited these processes. These results indicate that both forms of conglutinin are able to interact with surface leukocyte receptors but have opposite effects on phagocytic activity. Our findings suggest that conglutinin bound to sugar residues on microbial surfaces can induce oxygen burst in phagocytes, and thereby mediates the elimination of pathogens and prevents the spread of infection.

Publication: J. Vet. Sci. 13, 33–38, 2012, fig. 5, tab. 1. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

DEC M., PUCHALSKI A., TOKARZEWSKI S., URBAN-CHMIEL R., WERNICKI A.: Identification and evaluation of antimicrobial activity of *Lactobacillus* rods isolated from geese. (Identyfikacja i ocena przeciwbakteryjnej aktywności pałeczek z rodzaju *Lactobacillus* izolowanych od gęsi).

Ref. XIV Congress of Polish Society of Veterinary Science, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Science, 613, 2012. In Polish.

DEC M., PUCHALSKI A., URBAN-CHMIEL R., TOKARZEWSKI S., WERNICKI A.: Susceptibility to antibiotics *Lactobacillus* rods isolated from geese. (Antybiotykooporność pałeczek *Lactobacillus* izolowanych od gęsi).

Ref. XXVII Congress of Polish Society of Microbiology, Lublin, 5–8 IX 2012.

Publication: Proceedings of the XXVII Congress of Polish Society of Microbiology, 169, 2012. In Polish.

PUCHALSKI A., DEC M., URBAN-CHMIEL R., WERNICKI A.: Antimicrobial activity of lactic acid bacteria isolated from cow colostrum. (Przeciwdrobnoustrojowa aktywność bakterii fermentacji mlekowej izolowanych z siary krów).

Ref. XIV Congress of Polish Society of Veterinary Science, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Science, 233, 2012. In Polish.

STACHURA R., URBAN-CHMIEL R., HOLA P., PUCHALSKI A., DEC M., WERNICKI A.: Influence of florfenicol and flunixin in combination with selected antioxidants on oxidative stress parameters in feedlot calves. (Oddziaływanie florfenikolu i fluniksiny w połączeniu z wybranymi antyoksydantami na parametry stresu oksydacyjnego u cieląt wstawionych na opas).

Ref. XIV Congress of Polish Society of Veterinary Science, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Science, 241, 2012. In Polish.

URBAN-CHMIEL R.: Criteria for farm animal welfare during slaughter in Council Regulation (WE) 1099/2009. (Kryteria dobrostanu zwierząt gospodarskich podczas uboju w Rozporządzeniu Rady (WE) 1099/2009).

Ref.: Conference „The new law in European Union about the protection of animals during slaughtering”, Warszawa, 13 VI 2012.

Publication: Proceedings of the Conference „The new law in European Union about the protection of animals during slaughtering” 13, 2012. In Polish.

OTHER PUBLICATIONS

URBAN-CHMIEL R., GROOMS D.L.: Prevention and Control of Bovine Respiratory Disease.

Publication: J. Livestock Sci. 2, 27–36, 2012. In English, summary in English.

DEPARTMENT OF ANATOMY AND ANIMAL HISTOLOGY

Akademicka 12, Lublin

Head: Prof. Dr. habil. Zbigniew Boratyński

SUB-DEPARTMENT OF ANIMAL ANATOMY

Akademicka 12, Lublin

Head: Prof. Dr. habil. Zbigniew Boratyński
Prof. Dr. habil. Marcin Arciszewski
Dr. habil. Izabela Krakowska

RESEARCH STUDIES (SUMMARIES)

Iwona Łuszczewska-Sierakowska

CLINICAL AND ANATOMICAL CONDITIONING OF DEGENERATIVE DISEASES OF THE CENTRAL NERVOUS SYSTEM IN ANIMALS

Kliniczne i anatomiczne uwarunkowania chorób degeneracyjnych
centralnego układu nerwowego u zwierząt

Diseases of central nervous system due to its special function in the body can be very dramatic especially in diseases causing disorders in the functioning of the centres that control the most vital functions of the body. These diseases can develop as primary or secondary diseases-complications after another disease, the focus of which was located outside nervous system. Diseases of nervous system may affect peripheral part (inflammation of nerves, polyneuropathies, radicular syndrome) or central part (neuroinfections, developmental anomalies, dementia, trauma, tumors, epilepsy, stroke). There are also neurological diseases in which there are simultaneous changes in peripheral and central part. They are

demyelination diseases such as multiple sclerosis and transverse myelitis. There are also diseases affecting the spinal cord selectively. To neurological diseases we can also include muscle diseases such as myasthenia and muscular dystrophy, in which disorders concerning neuromuscular transmission can be observed. There is also a group of neurological diseases in which mental disorders can occur. Such diseases, first of all, include dementia (Alzheimer's disease, dementia with Levy bodies, fronto-temporal dementia) and also encephalopathies (metabolic, traumatic, ischemic). During later periods of neurological disease mental symptoms resulting directly from numerous injuries of central nervous system may occur.

Neurodegenerative diseases in domestic animals are quite rare. However, they represent very important and at the same time very large group of diseases. Many of these degenerations are similar to the diseases occurring in humans, owing to this fact, we can understand them better, carrying out examinations on animals. Unfortunately, in many cases what we know about these diseases is only their clinical symptoms, the pathological changes that occur and we have the conclusions drawn from the examinations of genealogy. The introduction of more recent examination methods and new instruments allows more detailed cognition of these diseases on the molecular level and first of all better understanding of the factors causing them.

Neurodegenerative diseases belong to the most life handicapping diseases and are this socially the most expensive.

Publication: Medycyna Wet. (Lublin) 68, 199–204, 2012. In Polish, summary in English.

Iwona Łuszczewska- Sierakowska

MORPHOMETRICAL ANALYSIS OF NEURONS OF CORPUS AMYGDALOIDEUM'S NUCLEUS AMYGDALOIDEUM LATERALIS IN DOMESTIC PIG

Analiza morfometryczna neuronów jądra bocznego ciała migdałowatego świni domowej

Morphometrical analysis were the aim of the research during the process of maturation of nucleus amygdaloideum lateralis. The brain of domestic pig of both sex (taken during the following period of its life: from 7th to 15th week of intrauterine life, newborn animals, one-month and one-year animals) were used as the material for the examination. The brains were removed and process conventionally by the microscope. The preparations were coloured according to Klüvera-Barrer's method and according to Nissel. Histological preparations obtained in this way were used for morphometrical analysis of neurons of corpus amygdaloideum's nucleus amygdaloideum lateralis. Morphometrical examina-

tion were carried out by microscope Nikon Eclipse E-600 compressed with a camera JVC TK-1380-E and a computer using morphometrical programme MULTI-SCAN-BASE 08,98.

The examination comprised the following parameters: the section area of nervous cell and the area of cell nucleus in μm^2 , the nucleo-cellular rate in %, the average diameter of nervous cell in μm , the volume of nervous cell in μm^3 , the number of neurons per 1 mm^2 , the number of neurons per 1 mm^3 . Morphometrical observation showed that in 9th week of fetal life the cells forming primary corpus amygdaloideum are identical shape and size. The size of cell area of this period of fetal life fluctuates around $45\ \mu\text{m}^2$. In the 11th week of fetal life cells of nucleus amygdaloideum lateralis are densely arranged, they have oval or polyhedral shape and contain a small amount of cytoplasm pretty evenly stained, in which Nissel's granules are visible. In the 12th week of domestic pig's life cells of nucleus amygdaloideum lateralis have polyhedral, oval or pyramidal shape. In the subsequent periods of fetal life and newborn animals, the appearance of cells making nucleus amygdaloideum lateralis does not significantly change. In case of nucleus amygdaloideum lateralis nucleo-cellular rate fluctuates between 51 and 60%. The value of this rate decreases during development and maturation of neurons.

On the basis of the examined morphometrical parameters one can claim the neurons get morphological maturity at the end of fetal life.

Publication: Medycyna Wet. (Lublin) 68, 102–105, 2012. In Polish, summary in English.

REPORTS TO RESEARCH MEETINGS

ŁUSZCZEWSKA-SIERAKOWSKA I., ŚLIWA E., TATARA M., WAWRZYŃIAK-GACEK A., MATYSEK M.: Morphological changes in the hippocampal gyrus (parahippocampal) after the administration of dexametasonone to pigs. (Zmiany morfologiczne w zakręcie hipokampa (przyhipokampowym) po podawaniu deksmetazonu świniom).

Ref. XIV Congress of the Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Science, 461, 2012. In Polish.

SZALAK R., JAWORSKA-ADAMU J., BOGUSZEWSKA-CZUBARA A.: Immunocytochemical analyzes of parvalbumin, calbindin and calretinin in the chinchilla's hippocampus. (Immunocytochemiczne analizy parwalbuminy, kalbindyny i kalretyniny w hipokampie szynszyli).

Ref. XLVI Symposium of the Polish Society for Histochemistry and Cytochemistry. Poznań, 24–26 V 2012.

Publication: Progress of Cell Biology 39, suppl. 27, 31, 2012. In Polish.

TYMCZYNA B., BACHANEK T., TATARA M., KRUPSKI W., TYMCZYNA-SOBOTKA M., ŁUSZCZEWSKA-SIERAKOWSKA I.: Interrelationships between morphometric, densitometric and mechanical properties of mandible in pigs.

Ref. XXXIV Annual Congress of European Calcified Tissue Society, 19–23 V 2012, Sztokholm

Publication: Bone 50, suppl. 1, 111–112, 2012.

ŁUSZCZEWSKA-SIERAKOWSKA I., TATARA M., ŚLIWA E., TYMCZYNA B., PAWŁOWSKA M., BORATYŃSKI Z.: Morphological changes in the hippocampus after dexamethasone administration in domestic pig

Ref. XLVI Symposium of the Polish Society for Histochemistry and Cytochemistry. Poznań, 24–26 V 2012.

Publication: Progress of Cell Biology, 39, suppl. 27, 25, 2012. In Polish.

OTHER PUBLICATIONS

RADZIKOWSKA E., ŁUSZCZEWSKA-SIERAKOWSKA I., ABRAMOWICZ K., SOKOLIK M., BURDAN F., MADEJ B., DĄBROWSKI A., MACIEJEWSKI R.: Bening hepatic tumors in association with estrogenic therapy.

Publication: Medycyna Wet. (Lublin) 68, 168–171, 2012. In English, summary in English.

RADZIKOWSKA E., ŁUSZCZEWSKA-SIERAKOWSKA I., MADEJ B., BURDAN F., MANDZIUK S., SOKOLIK M., DĄBROWSKI A., MACIEJEWSKI R.: Estrogen-induced hepatotoxicity in rats.

Publication: J. Pre-Clin.Clin. Res. 6, 10–13, 2012. In English, summary in English.

SUB-DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY

Akademicka 12, Lublin

Head: Prof. Dr. habil. Jadwiga Jaworska-Adamu

RESEARCH STUDIES (SUMMARIES)

Aleksandra Krawczyk, Radosław Szalak, Jadwiga Jaworska-Adamu

IMMUNOCYTOCHEMICAL ANALYSIS OF CALRETININ IN FRONTAL CORTEX OF CHINCHILLA

The aim of the study was to define morphology and distribution of calretinin (CR) positive neurons in the frontal cortex of adult chinchilla males and intracellular localisation of the protein in this area. The brains of 5 adult chinchilla males were used in the study. CR immunoreactive neurons were shown with peroxidase-antiperoxidase immunohistochemical reaction using a specific monoclonal antibody. Intensive CR immunoreactivity was demonstrated mainly in few polymorphic neurons of II, III, and V layers. Cytoplasmic and nuclear reaction product in most CR positive neurons was diffuse and in some neurons of layer V in the form of granules localised peripherally. In a few cells more intensive staining was observed in the nuclei than in the cytoplasm.

The results indicate the presence of heteromorphic CR positive neurons in specific layers of the frontal cortex. Nuclear localisation of CR in neurons suggests passive transport of this protein, which may affect the nuclear genes. This protein is a neuroprotector maintaining appropriate level of calcium, modulating neuronal activity, and synaptic conduction in the frontal cortex of chinchilla.

Publication: Bull. Vet. Inst. Pulawy 56, 103–107, 2012, fig. 4. In English, summary in English.

Agata Wawrzyniak-Gacek, Jadwiga Jaworska-Adamu

**ULTRASTRUCTURAL CHANGES IN THE OLIGODENDROCYTES
IN THE CENTRAL GRAY MATTER OF THE OLD RATS**

Ultrastrukturalne zmiany w oligodendrocytach istoty szarej środkowej u starych szczurów

The structure and functions of the oligodendrocytes in different areas of the brain in the normal process of aging in mammals is poorly known. The purpose of this study was to investigate three types of oligodendrocytes, their ultrastructure as well as morphology of myelin sheaths of nerve fibers in the central gray matter (substantia grisea centralis, SGC). The study was conducted on adult rats, 25-week-old and 140-week-old rats. The animals were perfused with fixative through the left ventricle and the midbrain containing SGC were collected. Ultrathin sections were observed and photographed in an electron microscope. In both tested age groups oligodendrocytes were usually arranged in pairs. In adult rats, the SGC survey revealed a clear advantage and medium oligodendrocytes and, rarely, dark cells with normal ultrastructure. In old rats, oligodendrocytes were dominated by medium and dark cytoplasm and less commonly with clear cells. The cytoplasm of the few bright and medium oligodendrocytes expressed the morphological changes manifested by the presence of varying electron densities and size of inclusions and the insulation of nerve fibers were also changed. The presence of the few bright oligodendrocytes in the SGC in old rats suggests that a few of their young forms of progenitor cells may arise, as in other areas of the brain normally aging in mammals. These new cells may participate in remyelination nerve fibers affecting the proper connections SGC with other brain areas.

Publication: Medycyna Wet. (Lublin) 68, 371–375, 2012, fig. 7. In Polish, summary in English.

REPORTS TO RESEARCH MEETINGS

JAWORSKA-ADAMU J., SZALAK R., BOGUSZEWSKA-CZUBARA A.: Effect of ortosilic acid's administration on selected enzymes and liver's morphology in rats. (Wpływ podawania kwasu ortokrzemowego na wybrane enzymy i morfologię wątroby u szczurów).

Ref. XLVI Symposium of the Polish Society for Histochemistry and Cytochemistry. Poznań, 24–26 V 2012.

Publication: Progress of Cell Biology, 39, suppl. 27, 30, 2012. In Polish.

DEPARTMENT OF BIOCHEMISTRY AND ANIMAL PHYSIOLOGY

Akademicka 12, Lublin

Head: Prof. extraordin. Dr. habil. Marta Kankofer

SUB-DEPARTMENT OF ANIMAL PHYSIOLOGY

Akademicka 12, Lublin

Head: Dr. habil. Iwona Puzio
Dr. habil. Radosław Radzki
Dr. habil. Marcin Tatara
Dr. habil. Jose Luis Valverde Piedra

RESEARCH STUDIES (SUMMARIES)

Leszek Borkowski, Marta Pawłowska, Izabela Polkowska, Mirosław Karpiński,
Tymoteusz Słowik, Tomasz Piersiak, Łukasz Matuszewski, Anna Ślósarczyk,
Grażyna Ginalska

HISTOLOGICAL AND RADIOLOGICAL ANALYSIS OF RABBIT BONES AFTER IMPLANTATION OF CHAP-GLUCAN COMPOSITE

Ocena histologiczna i radiologiczna kości królików po implantacji kompozytu chap-glukan

Basic characteristics of a hydroxyapatite-glucan biomaterial such as biocompatibility, osteoconductivity and osteoinductive properties were tested in in vivo experiment. The two-phase composite, intended for filling bone defects, was made of carbonated hydroxyapatite granules and polysaccharide polymer. The biomaterial was implanted to the tibial metaphysis in rabbits for the 1- or 3-

month period. Bone regeneration after that time was evaluated by radiology and histology. Our analysis showed advanced osseointegration and extensive bone remodelling in the direct vicinity of implants indicating osteoinductive and osteoconductive properties of the material studied.

Publication: Engineering of Biomaterials (Kraków) 114, 28–33, 2012, fig 2. In English and Polish., summary in English and Polish.

Piotr Dobrowolski, Pauline Huet, Patric Karlsson, Sune Ericsson,
Ewa Tomaszewska, Antoni Gawron, Stefan Grzegorz Pierzynowski

**POTATO FIBRE PROTECTS THE SMALL INTESTINE WALL
AGAINST THE TOXIC INFLUENCE OF ACRYLAMIDE**

Acrylamide is a neurotoxic, genotoxic substance present in many commonly consumed food products and has been shown to have carcinogenic effects in rodents. The protective effects (if any) of potato fiber preparations, composed of cell wall material from potatoes, against the toxic influence of dietary acrylamide on the small intestinal wall were investigated. Male mice of the BALB/c strain were used in the study. Acrylamide was administered to the mice in their drinking water (0.5 mg/kg of body weight per day) and one of two types of potato fiber preparations (heated or raw potato fiber preparation) was added to their feed (2% addition to their feed). Histochemistry of the small intestinal wall, hemoglobin adducts of acrylamide, animal weight, and feed and water consumption analyses were performed. Acrylamide altered the morphology and histology of the small intestinal wall, decreasing proliferation, myenteron and submucosal thicknesses, villus length, fractal dimension, crypt depth, crypt number, and the small intestinal absorptive surface.

Conversely, apoptosis, hemoglobin adduct levels, intensity of epithelium staining, enterocyte number, villus epithelial thickness, and crypt width and parameters associated with nerve ganglia were increased. The two potato fiber preparations that were used abolished the negative influences of acrylamide on the small intestinal wall and had no influence on the hemoglobin adduct levels of acrylamide. The negative impact of acrylamide on the histologic structure, regeneration, and innervation of the small intestinal wall and the absorptive function of the small intestinal mucosa can be abolished by dietary potato fiber preparations.

Publication: Nutrition 28, 428-435, 2012, fig. 1, tab. 4. In English, summary in English.

Małgorzata Kapica, Alicja Jankowska, Hanna Antushevich, Piotr Pietrzak,
Joanna Beata Bierła, Artur Dembiński, Romuald Zabielski

**THE EFFECT OF EXOGENOUS APELIN ON THE SECRETION OF PANCREATIC JUICE
IN ANAESTHETIZED RATS**

Apelin is known to stimulate CCK and inhibit insulin release, however the mechanisms on pancreatic secretion remain unclear. The present study aimed to determine the expression of apelin and apelin receptor in the pancreas by immunofluorescence studies and the effect of exogenous apelin on the secretion of pancreatic juice in anesthetized rats. Pancreatic-biliary juice (PBJ) was collected from Wistar rats treated with apelin (10, 20 and 50 nmol/kg BW, boluses given every 30 min intravenously or intraduodenally).

The same apelin doses were administered to rats subjected to intraduodenal tarazapide, capsaicin or vagotomy. Pancreatic blood flow was measured by a laser doppler flowmeter. Direct effect of apelin were tested on dispersed acinar cells. Apelin receptor was expressed on acinar cells, pancreatic duct and islets cells, whereas apelin in pancreatic acini, but not in the islets. Intravenous apelin decreased PBJ volume, protein and trypsin outputs in a dose-dependent manner. In contrast, intraduodenal apelin stimulated PBJ secretion.

Pharmacological block of mucosal CCK₁ receptor by tarazepide, vagotomy and capsaicin pretreatment abolished the effects of intravenous and intraduodenal apelin on PBJ volume, protein and trypsin outputs. Apelin decreased the pancreatic blood flow. Apelin at 10⁻⁶ M increased the release of amylase from non-stimulated and CCK-8-stimulated acinar cells.

In conclusion, apelin can affect the exocrine pancreas through a complex mechanism involving direct effect on pancreatic acini as well as indirect mechanisms related to local blood flow regulation and driven by vagal nerves.

Publication: J. Physiol. Pharmacol. 63, suppl. 1, 53–60, 2012. In English, summary in English.

Stefan Pierzynowski, Paulina Swieboda, Rafał Filip, Katarzyna Szwiec,
Jose Luis Valverde Piedra, Danica Grujic, Olena Prykhodko, Olexandr Fedkiv,
Danuta Kruszewska, Jos Botermans, Jorgen Svendsen, Galina Skibo,
Tatiana Kovalenko, Irina Osadchenko, Katerina Goncharova, Galina Ushakova,
Bjorn Weström

**BEHAVIORAL CHANGES IN RESPONSE TO FEEDING PANCREATIC-LIKE ENZYMES
TO EXOCRINE PANCREATIC INSUFFICIENCY PIGS**

Behavioral changes during pancreatic enzyme therapy have never been studied. The present study investigated behavioral changes in exocrine pancreatic insufficiency (EPI) pigs when their feed was supplemented with pancreatic-like enzymes of microbial origin. A crossover design study was used to test the effect of enzyme supplementation in 2 × 4 EPI pigs that underwent pancreatic duct ligation (PDL). After 40 d of adaptation, the study commenced, comprising 2 control and 2 enzyme feeding periods of 10 d each in sequence. On days 7 and 10 of each experimental period, behavior was monitored for 24 h and feed consumption and BW were recorded.

Behavioral observations focused on the pigs' activity – lying down or passive, or sitting, or standing or active and were expressed as percentage activity for 24 h. During the adaptation period, BW gain was completely inhibited after PDL whereas for the entire study period, the body weight increased from 10.5 ±1.1 to 14.0 ±1.4 kg ($P < 0.01$). Exocrine pancreatic insufficiency pigs were more active when fed the enzymes (21 vs. 18% per 24 h; $P < 0.01$).

Microbial enzyme supplementation not only improved the growth of the EPI pigs but it also increased their activity. This behavior change contradicts the generally accepted norm that satiety evokes by digestion and subsequent nutrients absorption reduces human or animal motility.

Publication: J. Anim. Sci. 90, 439–441, 2012. In English, summary in English.

Stefan Pierzynowski, Katarzyna Szwiec, Jose Luis Valverde Piedra, Danica Grujic, Sylwia Szymanczyk, Paulina Świeboda, Olena Prykhodko, Olexandr Fedkiv, Danuta Kruszewska, Rafał Filip, Jos Botermans, Jorgen Svendsen, Galina Ushakova, Tatiana Kovalenko, Irina Osadchenko, Katerina Goncharova, Galina Skibo, Bjorn Weström

EXOGENOUS PANCREATIC-LIKE ENZYMES ARE RECOVERED IN THE GUT AND IMPROVE GROWTH OF EXOCRINE PANCREATIC INSUFFICIENT PIGS

The exocrine pancreatic insufficient (EPI) pigs grow less due to different disturbances in feed digestion, absorption, and retention. Use of pancreatic-like enzymes of microbial origin in pigs may improve feed use and performance in slowgrowing pigs. The aim was to study gut recovery and effectiveness of pancreatic-like enzymes of microbial origin supplementation on pig performance. Six male pigs 10 to 12 kg BW underwent pancreatic duct ligation surgery to induce total exocrine pancreatic insufficiency (EPI).

Three cannulas to access the gastrointestinal tract content were installed in stomach, duodenum, and ileum in EPI pigs and in 3 control (healthy) pigs. One month after surgery, enzymes were given before feeding and digesta samples were collected for analyses. The BW of EPI pigs did not increase during 1 mo following surgery (11.7 vs. 11.6 kg BW); however, BW increased after 1 wk of enzyme supplementation (12.1 kg BW). Coefficient of fat and N absorption increased ($P < 0.05$) in EPI pigs after enzyme supplementation. Activity of amylase, lipase, and protease in chyme samples of EPI pigs was very low compared to controls. In EPI pigs after enzyme supplementation, amylase activity increased from 5.32 to 72.9 units/mL but remained lower than that of healthy pigs (162.7 units/mL). Lipase activity increased from 79.1 to 421.6 units/mL, which was similar to that of controls (507.3 units/mL). Proteolytic activity increased from 7.8 to 69.7 units/mL but still did not reach control pigs (164.3 units/mL).

In conclusion, exogenous microbial enzymes mimic endogenous pancreatic enzymes being recovered along the lumen of the gastrointestinal tract. These enzymes might be a useful tool to stimulate growth of slowergrowing pigs after the weaning period.

Publication: J. Anim. Sci. 90, 324–326, 2012. In English, summary in English.

Iwona Puzio, Teresa Jaśkiewicz, Agnieszka Sagan, Marek Bieńko,
Dorota Graboś

**EFFECTS OF CLA AND *Camelina sativa* SEEDS OIL ON BONE PROPERTIES
IN BROILER CHICKENS**

The objective of this study was to evaluate the effect of dietary conjugated linoleic acid (CLA) and false flax (*Camelina sativa*) seed oil (CS) on bone quality in broiler chickens. Experiment was carried out on 96 chickens randomly divided into four groups: control group fed diet with sunflower oil (SO) and three experimental groups fed diet with addition of CLA (2.86% starter, 4.32% grower) and diet with addition of CLA (1.43% starter, 2.16% grower) and SO or CS (1.43% starter, 2.16% grower).

On the 35th d of life eight birds per treatment were slaughtered and the femur, humerus, and tibia were isolated for further analysis. Using DXA method, bone mineral content (BMC) and bone mineral density (BMD) were measured. Furthermore, weight and length of bones were assessed. The weight, BMD, and BMC in chickens from CS + CLA group were significantly higher when compared with CLA group. The significant differences were noted for BMC between control and CS + CLA birds. No marked differences of bone parameters were observed between control group and CLA, and SO + CLA groups. In conclusion, the results indicate that false flax oil and CLA can replace sunflower oil in chickens feeding, and demonstrate the effectiveness of false flax oil on the enhancement of bone properties in broiler chickens.

Publication: Bull. Vet. Inst. Pulawy 56, 93–97, 2012, tab. 1. In English, summary in English.

Radosław Piotr Radzki, Marek Bieńko, Edyta Albera, Marta Kankofer

**ERYTHROCYTE ANTIOXIDATIVE ENZYMES IN EXPERIMENTALLY INDUCED
OSTEOPENIA IN RATS**

The study aimed at the determination of dynamic relationship between mineralisation processes and antioxidative/oxidativestatus during the development of osteopenia. One hundred and two healthy female Wistar rats at the age of 2 months and initial bodyweight of 200 g were used in the experiment. The rats were divided into control (CON, n = 6), sham operated (SHO, n = 48), and ovariectomised (OVX, n = 48) groups. Animals from SHO (n = 6) and OVX (n = 6) groups were sacrificed every week during 8 weeks of the experiment in order to detect dynamic changes in examined parameters. The samples were collected

weekly from day 7 to day 56. The femora were examined with the use of DXA (bone mineral density) and pQCT (area, mineral content, volumetric density of trabecular and cortical part of distal femora). The pQCT scans were performed 5 mm from distal end of the tibia. The determination of activity of glutathione peroxidase (GSH-Px) and superoxide dismutase (SOD) in haemolysates of erythrocytes were performed spectrophotometrically. Obtained data showed wave like changes in both enzyme activities and bone parameters and indicated the importance of the 2nd–3rd and 5th–6th week after surgery as a key moment for bone metabolism and activity of enzymatic antioxidative defence during the development of osteopenia induced by bilateral ovariectomy. The obtained results proved that alterations inactivity of GSH-Px and SOD, and pQCT ahead the changes registered by DXA by 7 d.

Publication: Bull. Vet. Inst. Pulawy 56, 669–675, 2012, fig. 10. In English, summary in English.

Radosław Piotr Radzki, Marek Bieńko, Stefan Grzegorz Pierzynowski

ANTI-OSTEOPENIC EFFECT OF ALPHA-KETOGLUTARATE SODIUM SALT IN OVARIECTOMIZED RATS

The purpose of the study was to determine the effect of alpha-ketoglutarate sodium salt (AKG) treatment on the mineralization of the tibia in female rats during the development of osteopenia (Experiment 1) and in the condition of established osteopenia (Experiment 2). Thirty-two female rats were ovariectomized (OVX) to induce osteopenia and osteoporosis and another 32 female rats were sham-operated (SHO) and then randomly divided between the two experiments. In Experiment 1, the treatment with AKG started after a 7-day period of convalescence, whereas in Experiment 2 the rats were subjected to a 60-day period of osteopenia fixation, after which the actual experimental protocol commenced. AKG was administered in the experimental solution for drinking at a concentration of 1.0 mol/l and a placebo (PLC) was used as a control solution. After 60 days of experimental treatment the rats in both experiments were sacrificed, the body weight recorded, and blood serum and isolated tibia were stored for further analysis.

The bones were analyzed using tomography and densitometry, and for estimation of mechanical properties the 3-point bending test was used. Serum concentrations of osteocalcin and collagen type I crosslinked C-telopeptide were measured. The anabolic effects of AKG on bone during osteopenia development in Experiment 1 not only stopped the degradation of bone tissue, but also stimulated its mineralization. The usage of AKG in animals with established os-

teopenia (Experiment 2) was not able to prevent bone atrophy, but markedly reduced its intensity. The stimulation of tibia mineralization after AKG treatment has been also argued in healthy SHO animals.

The results obtained prove the effectiveness of AKG usage in the prophylaxis and therapy of osteopenia and osteoporosis, induced by bilateral gonadectomy. Additionally, the results clearly prove that treatment with AKG improves the mineralization of bone tissue in healthy animals.

Publication: J. Bone Miner. Metab. 30, 651–659, 2012, fig. 4, tab. 5. In English, summary in English.

Marcin R. Tatar, Witold Krupski, Barbara Tymczyna, Tadeusz Studziński

EFFECTS OF COMBINED MATERNAL ADMINISTRATION WITH ALPHA-KETOGLUTARATE (AKG) AND B-HYDROXY-B-METHYL BUTYRATE (HMB) ON PRENATAL PROGRAMMING OF SKELETAL PROPERTIES IN THE OFFSPRING

Nutritional manipulations during fetal growth may induce long-term metabolic effects in postnatal life. The aim of the study was to test whether combined treatment of pregnant sows with alpha-ketoglutarate and β -hydroxy- β -methylbutyrate induces additive long-term effects on skeletal system properties in the offspring.

The study was performed on 290 pigs obtained from 24 sows divided into 4 equal groups and subjected to experimental treatment during two weeks before delivery. The first group consisted of control sows, while the second group received alpha-ketoglutarate. The third group was treated with β -hydroxy- β -methylbutyrate and the fourth group underwent combined administration of alpha-ketoglutarate and β -hydroxy- β -methylbutyrate. Piglets obtained from sows were reared until slaughter age to perform morphometric, densitometric and mechanical analyses of femur. Serum evaluations of growth hormone, insulin-like growth factor-1, bone-specific alkaline phosphatase and osteocalcin were performed in newborns and 90-day old piglets; additionally, plasma amino acid concentration was measured in newborns.

Maternal treatment with alpha-ketoglutarate and β -hydroxy- β -methylbutyrate significantly reduced fattening time and increased birth body weight, daily body weight gain, bone weight, volumetric bone mineral density, geometrical parameters and mechanical endurance of femur. These effects were associated with increased serum concentrations of growth hormone, insulin-like growth factor-1, bone-specific alkaline phosphatase and osteocalcin. Furthermore, alpha-ketoglutarate and β -hydroxy- β -methylbutyrate administered solely or in combination significantly increased plasma level of 19 amino acids.

Hormonal and amino acid evaluations in pigs indicate additive effects of AKG and HMB on systemic growth and development; however, determination of bone properties has not shown such phenomenon.

Publication: Nutr. Metab. (London) 9, 39, 2012, tab. 6. In English, summary in English.

Marcin R. Tatar, Adam Brodzki, Renata Pyz-Łukasik, Kazimierz Pasternak,
Maria Szpetna

**SEX-RELATED DIFFERENCES IN SKELETAL MUSCLE AMINO ACID
CONCENTRATIONS IN 20 WEEK OLD TURKEYS**

Sexual dimorphism of growth and development of organs and tissues in poultry species results from differentiated endocrine system and metabolic processes rate, and leads to difference of skeletal muscles mass and final body weight. Our knowledge on physiological variation in free amino acid status of skeletal muscles in meat-type turkeys is strongly limited. The aim of the study was to determine sex-related differences of free amino acid concentration in breast muscles obtained from turkeys at the age of 20 weeks. The experiment was performed with 34 birds divided into two equal groups consisting of females and males. During whole period of the breeding cycle all birds were kept under identical environmental conditions and had free access to fresh water and feed supplied in accordance to their growth stage. At the age of 20 weeks of life, final body weights of birds were measured and breast muscle samples were obtained. To evaluate free amino acid concentrations in breast muscles, the samples were analyzed with the use of ion-exchange chromatography. Statistical comparison of amino acid concentration in breast muscles of females and males was performed using non-paired Student's t-test. Final body weight was 27.6% higher in male than in female turkeys. Skeletal muscle concentration of glutamine, tryptophan, serine and asparagine was found to be significantly higher in males than in females, while opposite results were obtained analyzing cysteic acid, taurine and valine. In conclusion this study revealed sex-differentiated final body weight and skeletal muscle amino acid concentrations in turkeys. Improved skeletal muscle metabolism of functional amino acids glutamine and tryptophan in males may be postulated as crucial factors responsible for their higher growth rate and final body weight when compared to females. The obtained results may serve to optimizing feed for turkeys and their systemic development.

Publication: J. Poult. Sci. (Tsukuba) 49, 219–223, 2012, tab. 1. In English, summary in English.

Marcin R. Tatara, Witold Krupski, Barbara Tymczyna,
Iwona Łuszczewska-Sierakowska

**BIOCHEMICAL BONE METABOLISM MARKERS AND MORPHOMETRIC,
DENSITOMETRIC AND BIOMECHANICAL PROPERTIES OF FEMUR AND TIBIA
IN FEMALE AND GONAECTOMISED MALE POLISH LANDRACE PIGS**

Disorders of the skeletal system in humans are a serious problem. The aim of the study was to determine occurrence of degenerative changes of vertebrae, degeneration of intervertebral discs, osteophytes of vertebral body margins, and narrowing of intervertebral foramens on several motion segments of cervical spine in physical workers suffering from neck pain (NP). All patients were subjected to computed tomography examination and following three-dimensional shaded surface display reconstructions of the C3–C7 segments. The relationships between intervertebral discs degenerative changes, osteophytes of vertebral body margins, and intervertebral foramens narrowing of cervical spine were determined. The occurrence of degeneration of intervertebral discs and osteophytes of vertebral body margins was stated in 97 and 56 motion segments of the cervical spine, respectively. The occurrence of narrowing of intervertebral foramens on the right and left side of the cervical spine was stated in 84 and 78 motion segments, respectively. Statistically significant relationships were found between the investigated degenerative changes within single motion segment. In conclusion, positive relationships were found between the occurrence of degeneration of intervertebral discs, osteophytes of anterior vertebral body margins, and narrowing of intervertebral foramens of the cervical spine in physical workers suffering from NP.

Publication: JPCCR (Lublin), 6, 14–19, 2012, tab. 4. In English, summary in English.

Ewa Tomaszewska, Piotr Dobrowolski, Iwona Puzio

**POSTNATAL ADMINISTRATION OF 2-OXOGLUTARIC ACID IMPROVES
THE INTESTINAL BARRIER AFFECTED BY THE PRENATAL ACTION
OF DEXAMETHASONE IN PIGS**

The potential effects of the prenatal administration of dexamethasone and the postnatal treatment with 2-oxoglutaric acid on postnatal development of the small intestine of farm animals have not been examined experimentally. The aim of this study was to establish the changes in morphologic parameters of the small intestine damaged by the prenatal action of dexamethasone in piglets supple-

mented with 2-oxoglutaric acid. Three milligrams dexamethasone was administered intramuscularly every second day from day 70 of pregnancy to parturition and then piglets were supplemented with 2-oxoglutaric acid for 35 d of postnatal life (0.4 g/kg of body weight). The histomorphometry of the pig duodenum and jejunum was determined. Immunohistochemical staining with anti-Ki-67, CD3, null T cells, cadherin, claudin, and neurofilament antibodies was performed. Maternal treatment with dexamethasone decreased and limited the expression of claudin and cadherin in the epithelium. Dexamethasone led to thinning of the myenteron of the duodenum and the middle part of the jejunum in weaned piglets and influenced duodenal glands that became more elongated compared with control glands. Moreover, 2-oxoglutaric acid increased cell proliferation and the amount and maturity of peripheral blood lymphocytes in the duodenum and jejunum. It supported epithelial integrity and changed the circularity of the nerve plexuses. The 2-oxoglutaric acid administered to piglets while suckling induced a complete recovery from intestinal damage caused by the prenatal action of dexamethasone.

Publication: Nutrition 28, 190–196, 2012, fig. 2, tab. 4. In English, summary in English.

Ewa Tomaszewska, Piotr Dobrowolski

**MATERNAL GLUCOCORTICOID TREATMENT AS A MODEL FOR EXAMINING
FOETAL GENDER-SPECIFIC EFFECTS ON THE DEVELOPMENT
THAT INFLUENCES THE BONE METABOLISM OF NEONATAL PIGLETS**

The aim of the study was to investigate gender-specific effects of a maternal treatment with dexamethasone (DEX) at multiple maximum therapeutic doses during the last 25 d of pregnancy on the bone tissue metabolism in neonatal piglets. BMD and BMC were measured. The geometry, histomorphometry, and mechanical properties of bones were determined. The assessment of selected hormones, cytokines, and amino acids was performed in 35-day-old piglets. DEX administered prenatally inhibited neonatal bone development, as well as bone mineral density, and geometrical and mechanical properties of bones. Neonatal GC-induced bone loss was linked with disturbed somatotrophic axis function and decreased serum concentration of GH in male piglets and decreased concentration of IGF-1 in females. Prenatal DEX treatment led to an increase in the concentration of insulin and enhanced activity of bone specific alkaline phosphatase in piglets of both genders.

Publication: Bull. Vet. Inst. Pulawy 56, 247–253, 2012, fig. 1, tab. 5. In English, summary in English.

Ewa Tomaszewska, Piotr Dobrowolski, Andrzej Krzysztof Siwicki

**MATERNAL TREATMENT WITH DEXAMETHASONE AT MINIMAL THERAPEUTIC
DOSES INHIBITS NEONATAL BONE DEVELOPMENT
IN A GENDER-DEPENDENT MANNER**

The structural quality of bone is genetically determined, and stays under the influence of hormonal modification. An effect of prenatal treatment with multiple therapeutic minimal doses of DEX on the growth and mineralization of skeletal system of piglets at weaning dependent on gender was considered in undertaking this study. Sows were treated i.m. with dexamethasone at the dose of 0.03 mg kg^{-1} body weight every second day during the last 45 days of pregnancy. Prenatal treatment with DEX resulted in decreased weight, length, geometric parameters and histomorphometry of limb bones and influenced bone quality that was expressed by decreased values of BMD, the ultimate and maximum elastic strengths about 40, 60 and 40%, respectively. Prenatal DEX administration to male piglets via their mothers significantly enhanced the concentration of leptin and decreased the concentration of GH and insulin. Moreover, negative effect of DEX treatment on bone tissue was connected with changes of free amino acid pool of male piglets. Moreover, female pigs had unaffected mass and length of bones. This result demonstrated that maternal DEX action was multifactorial and differently influenced postnatal bone development in the female and male piglets.

Publication: Livestock Sci. 146, 175–182, 2012, fig. 1, tab. 5. In English, summary in English.

Ewa Tomaszewska, Piotr Dobrowolski, Jerzy Wydrych

**POSTNATAL ADMINISTRATION OF 2-OXOGLUTARIC ACID IMPROVES ARTICULAR
AND GROWTH PLATE CARTILAGES AND BONE TISSUE MORPHOLOGY
IN PIGS PRENATALLY TREATED WITH DEXAMETHASONE**

The potential effects of prenatal administration of dexamethasone (DEX) and postnatal treatment with 2-oxoglutaric acid (2-Ox) on postnatal development of connective tissue of farm animals were not examined experimentally.

The aim of this study was to establish changes in morphological parameters of bone and articular and growth plate cartilages damaged by the prenatal action of DEX in piglets supplemented with 2-Ox. The 3 mg of DEX was administered by intramuscular route every second day from day 70 of pregnancy to parturition and then piglets were supplemented with 2-Ox during 35 days of postnatal life (0.4 g/kg body weight). The mechanical properties, BMD and BMC of bones, and histomorphometry of articular and growth plate cartilages were determined.

Maternal treatment with DEX decreased the weight by 48%, BMD by 50% and BMC by 61% of the tibia in male piglets while such action of DEX in female piglets was not observed. DEX led to thinning of articular and growth plate cartilages and trabeculae thickness and reduced the serum GH concentration in male piglets. The administration of 2-Ox prevented the reduction of trabeculae thickness, the width of articular and growth plate cartilages in male piglets connected with higher growth hormone concentration compared with non-supplemented male piglets. The result showed that the presence of 2-Ox in the diet had a positive effect on the development of connective tissue in pigs during suckling and induced a complete recovery from bone and cartilage damage caused by prenatal DEX action.

Publication: J. Physiol. Pharmacol. 63, 547–554, 2012, fig. 1, tab. 4. In English, summary in English.

Barbara Tymczyna, Teresa Bachanek, Marcin R. Tatara, Witold Krupski,
Monika Tymczyna-Sobotka, Iwona Łuszczewska-Sierakowska

**INTERRELATIONSHIPS BETWEEN MORPHOMETRIC, DENSITOMETRIC,
AND MECHANICAL PROPERTIES OF MANDIBLE IN 6-MONTH-OLD MALE PIGS**

The aim of the study was to evaluate interrelationships between final body weight, and morphometric, densitometric, and mechanical properties of the mandible in 6-month-old Polish Large White pigs exposed to dexamethasone and nanocalcium. The study was performed on 27 males, castrated on the 28th d after weaning, and reared until the age of 6 months, after which the animals were slaughtered, and the mandible was obtained. The pigs were divided into four experimental groups: animals given per os nanoparticulate calcium, animals injected with dexamethasone, animals given both nanoparticulate calcium per os and dexamethasone injections, and animals injected with placebo. After the slaughter, morphological properties of the mandible such as bone weight and length were determined. Using computed tomography technique, volumetric bone mineral density (vBMD) of the cortical bone (Cd), mean volumetric bone mineral density (MvBMD), and total bone volume (Bvol) of whole mandible were measured. Areal bone mineral density (BMD) and bone mineral content were evaluated with the use of dual-energy X-ray absorptiometric method. Using three-point bending test, mechanical parameters such as maximum elastic strength (Wy) and ultimate strength (Wf) of mandible were estimated.

Pearson's correlation coefficient (r) was determined between all the investigated variables. The obtained results showed a significantly positive correlation between body weight and mandible weight, mandible length, Bvol, Cd, BMD, BMC, Wy, and Wf. However, statistically insignificant correlations of MvBMD

and body weight, mandible weight, mandible length, and Bvol were observed. Furthermore, Bvol and Cd were not found to be significantly correlated. In conclusion, this study showed numerous positive correlations between final body weight and densitometric, morphometric, and mechanical properties of the mandible. This bone of pigs may be used as an attractive model for further investigation on metabolic response of the skeleton to physiological, nutritional, toxicological, and pharmacological factors influencing bone tissue metabolism.

Publication: Bull. Vet. Inst. Pulawy 56, 177–181, 2012, fig. 1, tab. 1. In English, summary in English.

Barbara Tymczyna, Marcin R. Tatara, Witold Krupski,
Monika Tymczyna-Sobotka, Iwona Łuszczewska-Sierakowska, Teresa Bachanek

**RELATIONSHIPS BETWEEN BIOCHEMICAL BONE METABOLISM INDICES
AND MORPHOMETRIC, DENSITOMETRIC AND MECHANICAL PROPERTIES
OF MANDIBLE IN 6-MONTH-OLD PIGS**

Mandible is used as a bone model for monitoring bone tissue responses to various factors influencing skeletal homeostasis. Considering the lack of experimental data on interrelationships between bone metabolism indices and morphometric, densitometric and mechanical properties of mandible, the aim of this study was to perform such an evaluation in 6-month-old pigs.

Quantitative computed tomography was used to determine bone volume, mean volumetric bone mineral density, cortical bone density and cortical bone area. Using dual-energy X-ray absorptiometry, bone mineral density and bone mineral content were measured for ramus, body and whole jaw. In the three-point bending test, maximum elastic strength and ultimate strength of jaw was determined. Assessment of calcium (Ca), phosphorus (P), magnesium (Mg), parathormone (PTH), growth hormone (GH), insulin-like growth factor-1 (IGF-1), alkaline phosphatase (ALP), bone-specific alkaline phosphatase (BAP), osteocalcin (OC) and C-terminal telopeptide of collagen type-I (CTX) in blood was performed.

Statistically significant correlations in relation to the investigated traits of the jaw were found in the case of ALP, OC, CTX, GH and IGF-1. Significant correlations of ALP activity, OC and IGF-1 concentrations with final body weight were stated ($p < 0.05$).

This study shows the highest predictive value of ALP activity determination in relation to assessment of morphological, densitometric and biomechanical properties of mandible. Evaluation of Ca, P, Mg, BAP and PTH has not confirmed its significance for morphological, densitometric and biomechanical

properties prediction in the jaw of pigs. ALP activity, OC and IGF-1 concentrations would be prognostic for body weight prediction.

Publication: Ann. Agric. Environ. Med. (Lublin) 19, 535–539, 2012, tab. 1. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

JAŚKIEWICZ T., SAGAN A., PUZIO I., SOBCZYŃSKA-WOLEJSZO M.: Effect of the *Camelina sativa* oil in the feed on the fatty acids share in tissues of chickens. (Wpływ oleju lniankowego w paszy na udział kwasów tłuszczowych w tkankach kurcząt).

Ref. XXXXI Scientific Session of The Commission of Animal Nutrition of The Committee on Animal Sciences Polish Academy of Science, Tarnowo Górze, 26–28 IX 2012.

Publication: Proceedings of the XXXXI Scientific Session of The Commission of Animal Nutrition of The Committee on Animal Sciences Polish Academy of Science, 84–85, 2012. In Polish and English.

KRUPSKI W., TATARA M.R., DĄBROWSKI A., BURY P., WALLNER G.: Gastrectomy induces negative changes of bone resorption markers and volumetric bone mineral density (VBMD) of lumbar spine in one-year study.

Ref. XXXIX Annual Congress of Europ. Calcified Tissue Soc., Sztokholm, 19–23 V 2012.

Publication: Bone (San Diego), 50, 145–146, 2012. In English.

KRUPSKI W., TATARA M.R., ROSENBEIGER P., NIEDZIELA D.: High Bone Mass (HBM) of lumbar spine in sheep results from combined neonatal administration with 3-hydroxy-3-methylbutyrate (HMB), calcium and vitamin D₃.

Ref. XXXIX Annual Congress of Europ. Calcified Tissue Soc., Sztokholm, 19–23 V 2012.

Publication: Bone (San Diego), 50, 122, 2012. In English.

NIEDZIELA D., TATARA M.R., KRUPSKI W., TYMCZYNA B., ŁUSZCZEWSKA-SIERAKOWSKA I.: Beneficial effects of long-term alpha-ketoglutarate (AKG) administration on tibia properties in domestic geese.

Ref. XXXIX Annual Congress of Europ. Calcified Tissue Soc., Sztokholm, 19–23 V 2012.

Publication: Bone (San Diego), 50, 112, 2012. In English.

PIERZYŃOWSKI S. G., SZWIEC K., VALVERDE PIEDRA J., GRUJIC D., PRYKHODKO O., FEDKIV O., SKIBO G., USHAKOVA G., KOVALENKO T., OSADCHENKO I., KRUSZEWSKA D., SZYMAŃCZYK S., ŚWIEBODA P., FILIP R., WESTROM B.: Feed supplementation with pancreatic-like enzymes improve growth of exocrine pancreatic insufficient (EPI) pigs.

Ref. XII International Symposium on Digestive Physiology of Pigs. Keystone, Colorado USA, 29 V–1 VI 2012.

Publication: Book of abstracts of the XII International Symposium on Digestive Physiology of Pigs, 111, 2012. In English.

PIERZYŃOWSKI S.G., ŚWIEBODA P., SZWIEC K., GRUJIC D., BOTERMANS J., SVENDSEN J., VALVERDE PIEDRA J. L., PRYKHODKO O., SKIBO G., KOVALENKO T., GONCHAROVA K.,

USHAKOVA G., KRUSZEWSKA D., FILIP R., WESTROM B.: Behavioral changes in response to feeding pancreatic-like enzymes to exocrine pancreatic insufficient (EPI) pigs.
Ref. XII International Symposium on Digestive Physiology of Pigs. Keystone, Colorado USA, 29 V–1 VI 2012.

Publication: Book of abstracts of the XII International Symposium on Digestive Physiology of Pigs, 120, 2012. In English.

PIERZYNOWSKI S.G., SZWIEC K., VALVERDE PIEDRA J.L., GRUIJC D., PRYKHODKO O., FEDKIV O., SKIBO G., USHAKOVA G., KOVALENKO T., OSADCHENKO I., KRUSZEWSKA D., SZYMAŃCZYK S., ŚWIEBODA P., FILIP R., WESTROM B., BOTERMANS J., SVENDSEN J.: Pancreatic-like enzymes applied as a feed supplement improve the growth of pigs with exocrine pancreatic insufficiency.

Ref. XXII International Pig Veterinary Society, IPVS – Happy pigs = healthy people, Jeju, Korea 10–13 VI 2012..

Publication: Proceedings of the XXII International Pig Veterinary Society, IPVS, Jeju, Korea, 543, 2012. In English.

PIERZYNOWSKI S.G., BOTERMANS J., OLSSON A-CH., VALVERDE PIEDRA J.L., WESTROM B., PRYKHODKO O., FEDKIV O., KRUSZEWSKA D., SVENDSEN J.: The behavior of pigs with exocrine pancreatic insufficiency is altered by feed supplemented with pancreatic-like enzymes.

Ref. XXII International Pig Veterinary Society, IPVS – Happy pigs = healthy people, Jeju, Korea, 10–13 VI 2012.

Publication: Proceedings of the XXII International Pig Veterinary Society, IPVS Jeju, Korea, 544, 2012. In English.

PUZIO I., GRABOŚ D., KAPICA M., BIENKO M., RADZKI R.P.: Effect of false flax oil on densitometric and tomographic parameters of female rats bones in the condition of elimination of hormonal function of gonads. (Wpływ oleju lniankowego na parametry densytometryczne i tomograficzne kości szczurów płci żeńskiej w warunkach eliminacji funkcji hormonalnej gonad).

Ref. XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences, 630, 2012. In Polish.

SKRZYPEK T., VALVERDE PIEDRA J.L., SKRZYPEK H., GODLEWSKI M.M., ZABIELSKI R.: The epithelial cell turnover In the small intestine of newborn piglets. (Wymiana komórek nabłonka w jelicie cienkim prosiąt we wczesnym okresie postnatalnym).

Ref. XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences, 192, 2012. In Polish.

SKRZYPEK T., VALVERDE PIEDRA J.L., SKRZYPEK H., ZABIELSKI R.: The development of Peyer patches In the ileum of newborn piglets. A SEM study. (Rozwój żepek Peyera w jelicie krętym nowo narodzonych prosiąt. Badania z zastosowaniem skaningowej mikroskopii elektronowej).

Ref. XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences, 193, 2012. In Polish.

SZWIEC K., VALVERDE PIEDRA J. L., ŚWIEBODA P., FILIP R., PIERZYNOWSKI S.: Conteraction against exocrine pancreatic insufficiency related disorders by microbial enzyme diet supplementation- studiem on experimental pig model. (Przeciwdziałanie skutkom niewydolności zewnątrzwydzielniczej trzustki przez suplementację diety enzymami mikrobiologicznymi – badania na modelowych świniach doświadczalnych).

Ref. XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences, 638, 2012. In Polish.

SZYMAŃCZYK S.E., VALVERDE PIEDRA J. L., KAPICA M., PUZIO I.: The effect of intragastric administration of apelin on the small intestine structure in the rat. (Wpływ dozowanego podawania apeliny na strukturę jelita cienkiego u szczurów).

Ref. XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences, 639, 2012. In Polish.

TATARA M. R., KRUPSKI W., ROSENBEIGER P., NIEDZIELA D., JAKUBCZAK A., KOSTRO K.: Serum concentration of bone turnover markers in male and female silver foxes (*Vulpes vulpes*).

Ref. XXXIX Annual Congress of Europ. Calcified Tissue Soc., Sztokholm, 19–23 V 2012.

Publication: Bone (San Diego), 50, 117, 2012. In English.

TATARA M.R., NIEDZIELA D., KRUPSKI W., ROSENBEIGER P., STUDZIŃSKI T.: Interrelationships between morphological, densitometric and biomechanical properties of humerus in male geese. (Współzależności własności morfologicznych, densytometrycznych i biomechanicznych kości ramiennej samców gęsi).

Ref. XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences 430, 2012. In Polish.

TYMCZYNA B., BACHANEK T., TATARA M.R., KRUPSKI W., TYMCZYNA-SOBOTKA M., ŁUSZCZEWSKA-SIERAKOWSKA I.: Interrelationships between morphometric, densitometric and mechanical properties of mandible in pigs.

Ref. XXXIX Annual Congress of Europ. Calcified Tissue Soc., Sztokholm, 19–23 V 2012.

Publication: Bone (San Diego), 50, 111–112, 2012. In English.

ZABIELSKI R., GODLEWSKI M.M., MATYBA P., VALVERDE PIEDRA J.L., WESTROM B., PIERZYNOWSKI S.G.: Kidney bean lectin extract induces gut maturation resembling weaning.

Ref. XII International Symposium on Digestive Physiology of Pigs, Keystone, Colorado USA 29 V–1 VI 2012.

Publication: Book of abstracts of the XII International Symposium on Digestive Physiology of Pigs, 110, 2012. In English.

OTHER PUBLICATION

KOWALCZYK K., LEŚNOWOLSKA-NOWAK J., PACZOS-GRZĘDA E., NOWAK M., KOPIY L., BUDZYŃSKA B., GREGORCZYK K., BADZIAN B., KOSTRUBA A.: The use of genetically engineered and molecular diagnostics in plants breeding. (Wykorzystanie inżynierii genetycznej i diagnostyki molekularnej w hodowli roślin).

Publication: Środowiskowe aspekty produkcji roślinnej i zwierzęcej. Wydawnictwo UP w Lublinie, 8–16, 2012. In Polish, summary in Polish.

SUB-DEPARTMENT OF BIOCHEMISTRY

Akademicka 12, Lublin

Head: Prof. extraordin. Dr. habil. Marta Kankofer

RESEARCH STUDIES (SUMMARIES)

Marta Giergiel, Maciej Łopucki, Norbert Stachowicz, Marta Kankofer

THE INFLUENCE OF AGE AND GENDER ON ANTIOXIDANT ENZYME ACTIVITIES IN HUMANS AND LABORATORY ANIMALS

Antioxidative/oxidative balance is one of the important factors for homeostasis. Antioxidative systems which protect from peroxidative damage are supposed to be under the influence of steroid hormones.

The implications of this influence are age and gender as well as tissue dependent alterations in antioxidative enzyme activities. Apart from hormonal influence, antioxidative enzymes require the presence of microelements in their active centers as well as concerted action of non enzymatic antioxidants which support enzymes in their scavenging action. The aim of this review is to analyze and compare existing knowledge about the changes in activity of antioxidant enzymes in human and animal females and males of different age. Evidence as regards participation of oxidative stress in senescence are specific diseases which, to some extent, are gender dependent and appear more frequently in males or females. Several experiments in laboratory animals revealed that changes in enzyme activities are reflected in histopathological pictures of cells. The alterations observed during perimenopausal period provide with additional evidence of the participation of steroid hormones in the regulation of antioxidative system activity. Moreover, estrogens themselves exhibit antioxidative activity which is receptor independent. In conclusion, apart from genetic-related influences, also diet and style of life may have an impact on the antioxidative system which requires appropriate supplementation in microelements and vitamins for its effective function of scavenging excess of free radicals.

Publication: Aging Clin. Exp. Res. 24, 561–569, 2012, tab. 2. In English, summary in English.

Witold Kędzierski, Iwona Janczarek, Anna Stachurska

**EMOTIONAL RESPONSE OF NAÏVE PUREBRED ARABIAN COLTS
AND FILLIES TO SYMPATHETIC AND TRADITIONAL TRAINING METHODS**

The aim of this study was to explore the hypothesis that the emotional response of naïve Purebred Arabian colts and fillies to initial training is lower in the case of sympathetic methods compared to the traditional training methods, as well as the response is differentiated with regard to the sex. The group of 32 young Purebred Arabian horses was included in the initial training. Half of the group was subjected to natural training method and other 16 horses were trained using traditional method. Both groups comprised an equal number of colts and fillies. The training lasted a few days, as shortly as possible, with regard to individual horse needs. The horse emotional response to training process was assessed with heart rate (HR) measured telemetrically. The initial training of naïve Purebred Arabian horses with the use of the natural method involved less emotional response than the traditional method. The sympathetic training method modifies the colt response more than it influences the response of the filly. It is concluded that the natural method is particularly desired in training colts.

Publication: J. Equine Vet. Sci. 32, 752–756, 2012, tab. 3. In English, summary in English.

Justyna Lipko-Przybylska, Marta Kankofer

**ANTIOXIDANT DEFENCE OF COLOSTRUM AND MILK
IN CONSECUTIVE LACTATIONS IN SOWS**

Parturition is supposed to be related to oxidative stress, not only for the mother, but also for the newborn. Moreover, it is not clear whether consecutive pregnancies, parturitions, and lactations are similar to each other in regards to intensity of metabolic processes or differ from each other.

The aim of the study was to compare dynamic changes of antioxidative parameters in colostrum and milk of sows taken during 72 h postpartum from animals in consecutive lactations. Activities of glutathione peroxidase (GSH-Px), glutathione transferase (GSH-Tr), and superoxide dismutase (SOD), and amount of vitamin A and C were measured. Healthy pregnant animals were divided into 4 groups according to the assessed lactation: A – 1st lactation (n = 10), B – 2nd and 3rd lactation (n = 7), C – 4th and 5th lactation (n = 11), D – 6th–8th lactation (n = 8). The colostrum was sampled immediately after parturition and after 6, 12, 18 and 36 h while the milk was assessed at 72 h after parturition. Spectrophotometric methods were used for measurements. The activity of antioxidative enzymes and the concentration of vitamin A increased with time postpartum.

The concentration of vitamin C was the highest between the 18th and 36th h postpartum. Dynamic changes in the values of antioxidant parameters measured during the study showed that sows milk provides the highest concentration of antioxidants in the 2nd and 3rd and 4th and 5th lactation giving the best defence against reactive oxygen species to newborns and mammary glands.

Publication: Irish Vet. J. 65, 4–8, 2012, fig. 5, tab. 1. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

JANCZAREK I., STACHURSKA A., KĘDZIERSKI W., WILK I.: Human-horse relationship during natura training. (Relacje między człowiekiem a koniem szkolonym metodami naturalnymi). Ref. LXXVII Congress of the Polish Society of Animal Production, Wrocław, 10–12 IX 2012. *Publication: Proceedings of the Congress of Polish Society of Animal Production, 158, 2012. In Polish.*

KANKOFER M., EHLERS J.P., WAWRZYKOWSKI J.: Pilot Project about the use of problem based learning (PBL) in veterinary biochemistry. Ref. Congress of Association for Medical European Education, Lyon, 25–29 VIII 2012. *Publication: Proceedings of the Congress of Association for Medical European Education, 61, 2012. In English.*

KĘDZIERSKI W.: Effect of exercise on plasma leptin level in sport horses and race horses. (Wpływ wysiłku na stężenie leptyny we krwi koni sportowych i wyścigowych). Ref. XIV Congress of the Polish Society of Veterinary Science, Wrocław, 13–15 IX 2012. *Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Science, 140, 2012. In Polish.*

KĘDZIERSKI W., JANCZAREK I., STACHURSKA A., WILK I.: Horse emotional response to natural training conducted by the method of Monty Roberts and Silversand Horsemanship. (Reakcja emocjonalna koni na trening prowadzony metodą Monty Roberts i Silversand Horsemanship). Ref. LXXVII Congress of the Polish Society of Animal Production, Wrocław, 10–12 IX 2012. *Publication: Proceedings of the Congress of Polish Society of Animal Production, 166, 2012. In Polish.*

KĘDZIERSKI W., STRZELEC K., CYWIŃSKA A., KOWALIK S.: Plasma and salivary cortisol levels as the indicators of stress and fatigue during field exercise test in Thoroughbred horses. Ref. III Conference of the International Society of Wildlife Endocrinology, Vienna, 23–26 IX 2012. *Publication: Wiener Tierärztliche Monatsschrift – Veterinary Medicine Austria, suppl. 1, 63, 2012. In English.*

DEPARTMENT AND CLINIC OF ANIMAL INTERNAL DISEASES

Głęboka 30, Lublin

Head: Prof. ordin Dr. habil. Zbigniew Pomorski
Dr. habil. Krzysztof Lutnicki
Dr. habil. Jacek Madany

RESEARCH STUDIES (SUMMARIES)

Not published in 2012.

DEPARTMENT AND CLINIC OF ANIMAL REPRODUCTION

Głęboka 30, Lublin

Head: Prof. ordin. Dr. habil. Władysław Wawron
Prof. extraordin. Dr. habil. Zygmunt Wrona
Prof. extraordin. Dr. habil. Leszek Krakowski
Dr. habil. Marek Szczubiał

RESEARCH STUDIES (SUMMARIES)

Mariola Bochniarz, Władysław Wawron

HAEMOLYTIC AND PROTEOLYTIC ACTIVITY OF COAGULASE-NEGATIVE STAPHYLOCOCCI ISOLATED FROM MASTITIS COWS

The aim of the present study was to assess the haemolytic and proteolytic activity of coagulase-negative staphylococci (CNS) isolated from cows with *mastitis*. The study was conducted on 100 CNS strains: *S. xylosus* (n=28), *S. chromogenes* (n = 26), *S. haemolyticus* (n = 25), *S. sciuri* (n = 14), *S. warneri* (n = 4), *S. hominis* (n = 2), *S. saprophyticus* (n = 1); 22 CNS were isolated from cows with clinical mastitis and 78 from those with subclinical *mastitis*. The CNS studied showed the ability to produce only α -haemolysin and belonged to one strain – *S. haemolyticus* (21.0% of isolated CNS strains). Haemolysin-positive CNS were responsible for both clinical and subclinical *mastitis* (22.7 and 20.5%, respectively). The ability to produce protease was found in 31.0% of CNS belonging to two strains: *S. chromogenes* and *S. sciuri*. Protease-positive CNS were the etiological factor of both clinical and subclinical *mastitis* (31.8 and 30.8%, respectively). All *S. xylosus*, *S. warneri*, *S. hominis*, and *S. saprophyticus* strains were found protease-negative and haemolysin-negative, irrespective of whether they caused clinical or subclinical *mastitis* in cows.

Publication: Pol. J. Vet. Sci. 15, 61–65, 2012. In English, summary in English.

Roman Dąbrowski, Tomasz Kocki, Jolanta Parada-Turska, Marek Szczubiał

PLASMA KYNURENIC ACID IN BITCHES WITH PYOMETRA

Kynurenine is formed from tryptophan by tryptophan 2,3-dioxygenase and indoleamine 2,3-dioxygenase (IDO). IDO is activated by inflammatory stimuli. Kynurenic acid (KYNA) is produced from L-kynurenine by kynurenine aminotransferases. It has been found as endogenous constituent of various body fluids and tissues, e.g. the urine, saliva, blood serum, gastric and pancreatic juices, kidneys, liver, lungs and muscles. The aim of the present study was to determine KYNA concentrations in serum in healthy bitches (n = 6) and those with pyometra (n = 6). Blood was sampled from the saphenous vein. KYNA was determined by means of the high performance liquid chromatography with fluorescence detection. The mean serum level of KYNA in bitches with pyometra was 328 pmol/ml and was statistically significantly higher ($p < 0.05$) compared to the values in healthy bitches (40 pmol/ml).

Our results show that serum KYNA is significantly elevated during infection of the uterus.

Publication: Reprod. Domestic Animals, 47, 80, 2012, In English, summary in English.

Marek Szczubiał, Roman Dąbrowski, Marta Kankofer, Mariola Bochniarz,
Marcin Komar

CONCENTRATION OF SERUM AMYLOID A AND CERULOPLASMIN ACTIVITY IN MILK FROM COWS WITH SUBCLINICAL MASTITIS CAUSED BY DIFFERENT PATHOGENS

The aim of the study was to determine the concentration of serum amyloid A (SAA) and the activity of ceruloplasmin (Cp) in milk from cows with subclinical mastitis caused by different pathogens. Eighty-four milk samples from cows with subclinical mastitis and fourteen milk samples from healthy cows were examined. SAA concentration was determined using the commercial ELISA kit (Tridelta Development Ltd., Greystones, Wicklow, Ireland). Cp activity was assessed spectrophotometrically, using the Rice method. The results reveal that the concentration of SAA (with exception of CNS) and activity of Cp in cow milk can be regarded as markers of subclinical mastitis, irrespective of the microorganism inducing the disease. In conclusion, measurement of SAA and Cp in milk samples could be a useful method in diagnosing subclinical mastitis in cows, but the method should be adapted for field use.

Publication: Pol. J. Vet. Sci., 2, 291–296, 2012. In English, summary in English.

DEPARTMENT AND CLINIC OF ANIMAL SURGERY

Głęboka 30, Lublin

Head: Prof. extraordin. Dr. habil. Piotr Silmanowicz
Prof. Dr. habil. Ireneusz Balicki
Dr. habil. Izabela Polkowska

RESEARCH STUDIES (SUMMARIES)

Ireneusz Balicki

CLINICAL STUDY ON THE APPLICATION OF TACROLIMUS AND DMSO IN THE TREATMENT OF CHRONIC SUPERFICIAL KERATITIS IN DOGS

Badania kliniczne nad zastosowaniem takrolimusu i DMSO do leczenia przewlekłego powierzchownego zapalenia rogówki u psów

The objective of this study was to assess the treatment of chronic superficial keratitis (CSK) in dogs with the use of tacrolimus and DMSO.

The study was conducted on 16 dogs – 7 males and 9 females, aged 3 to 11 years, diagnosed with CSK. The disease was treated with ophthalmic drops containing 0.02% tacrolimus and 50% DMSO, administered to the ocular surface three times a day. Prior to the treatment and after 5 weeks of therapy, the corneal neovascularisation, pigmentation, and also the redness and depigmentation of the third eyelid margin were assessed. The percentage of the corneal surface afflicted with inflammatory processes was calculated on the basis of photographs taken with the use of IsoCalc.com's Get Area software for Corel DRAW 12.

It was found that the application of tacrolimus and DMSO caused a reduction of inflammatory process and neovascularisation in the cornea. The mean corneal surface afflicted with inflammatory processes was statistically significantly reduced from 69.9% to 43.9% ($p \leq 0.01$) – in case of the right corneas, and from 58.9% to 38.6% in case of the left corneas. Of 32 corneas diagnosed with the

pigmentation, the reduction of the pigmentation was observed in 14, while in 16 the pigmentation increased.

The treatment of CSK with the use of tacrolimus and DMSO causes the reduction in terms of inflammatory processes and neovascularisation, but in many cases does not inhibit the progress of the pigmentation.

Publication: Pol. J. Vet. Sci. 15, 667–676, 2012, fig. 10, tab 4. In English, summary in English.

Ireneusz Balicki, Natalia Nestorowicz, Ron Ofri

FUNDUSCOPIC ABNORMALITIES AND ELECTRORETINOGRAPHY IN CASES OF RETINOPATHY IN GERMAN SHEPHERD DOGS

The aim of the study – to perform a clinical, ophthalmological, and electroretinographic assessment of retinopathic lesions in German shepherd dogs.

The study was conducted on 14 German shepherds diagnosed with retinopathy during the course of an ophthalmological check-up. The animals were systemically healthy police dogs used for patrolling and tracking duties and which were, at times, exposed to considerable physical strain and stress.

Ophthalmological examinations using slit-lamp biomicroscopy, direct and indirect ophthalmoscopy, and photography were performed on all dogs. Electroretinography (ERG) was performed on 10 affected German shepherds and 8 control dogs.

Ophthalmological examination revealed areas of tapetal hyperreflectivity with pigmented centers which were characteristic of inactive chorioretinitis. Most of the lesions were in proximity to blood vessels and in a number of eyes, progression was observed during repeated examinations. Transition from active to inactive lesions, as well as onset in previously unaffected eyes, was also recorded. The ERG recordings showed impaired cone function, with significantly lower b-wave amplitudes and prolonged implicit times, in the mixed rod-cone, photopic, and flicker tests of affected dogs ($P < 0.05$).

Retinopathy observed in German shepherd dogs is characterized by areas of tapetal hyperreflectivity with pigmented centers. The underlying causes of retinopathy in German shepherd dogs remain unknown, though husbandry conditions and proximity of the lesions to blood vessels may suggest an association with physical exertion or circulatory disorders, respectively.

Publication: Vet. Ophthalmol. 15, 1–12, 2012, fig. 6. tab. 2. In English, summary in English.

Piotr Brodzki, Adam Brodzki, Tomasz Piech

THE CASE OF DISTOCIA IN CAT CAUSED BY HYDROCEPHALUS IN FOETUSES

Przypadek ciężkiego porodu u kotki spowodowany wodogłowiem płodów

Distocia (difficult parturition) in small animals is a common problem in veterinary practice. In this case an urgent, professional help is required. Causes of distocia can be classified as maternal (absolute narrowing of the birth canal, uterine inertia or too strong uterine contractions, pelvic obstructions like tumours, abscesses or haematomas) or foetal (absolute foetal oversize, simultaneous impaction of foetuses from uterine horns into the body of the uterus, monstrosities, etc.). The owner or inexperienced veterinarian can contribute or even be the reason of difficult parturition. The authors described the case of distocia in cat caused by hydrocephalus in kitten. This kind of monstrosity occurs extremely rare in queens (female cat). The foetus is unable to move down the birth canal due to oversized head and delivery is ceased. Therapeutic procedure in this case is the only one – cesarean section. The majority of veterinarians think that cesarean section in small animals should be performed in a case of any prolonged delivery regardless the reason. The priority is to rescue foetuses as well as keeping female in a good condition (this will deteriorate due to prolonged labour). Unfortunately, the majority causes of distocia cannot be prevented. Basic knowledge about normal birth process and careful monitoring of animal behaviour by the owner will help to detect problems early and get prompt veterinary assistance. This will give the owner and the female the best chance of delivering live healthy kittens.

Publication: Medycyna Wet. (Lublin) 68, 119–122, 2012. In Polish, summary in English.

Izabela Polkowska, Aleksandra Sobczyńska-Rak, Anna Szyszkowska,
Joanna Koper, Anna Ślósarczyk

**THE USE OF HYDROKSYAPATITE IN THE TREATMENT OF BONE CAVITIES
OCCURRING AFTER SURGICAL REMOVAL OF PATHOLOGICAL LESIONS
IN THE MAXILLA AND THE MANDIBLE**

Zastosowanie hydroksyapatytu w leczeniu ubytków kostnych powstałych w następstwie zmian zapalnych w obrębie szczęki i żuchwy

Hydroxyapatite in the form of granules of different sizes is a popular material used in oral surgery. It is widely used in guided bone regeneration procedures (GBR). The essence of this method is to improve healing of bone cavities by means of implantation material, natural or synthetic, which is placed the bone

cavity. Hydroxyapatite implant reduces volume of blood clot forming within the wound, prevents infection and has osteoconductive properties. What is more, implantation of hydroxyapatite increases bone mechanical strength in this area.

The aim of the study was to describe 3 cases in which hydroxyapatite was used. The material was implanted in two cases in animals in the treatment of oro – nasal fistula and once in human patient in the treatment of bone cavity which occurred after removal of an inflammatory lesion.

Publication: Medycyna Wet. (Lublin) 68, 436–440, 2012, fig. 10. In Polish, summary in English.

Ryszard Kolstrung, Kamil Ciesielczuk, Piotr Silmanowicz

**RATE OF HOOF GROWTH IN THE MALOPOLSKI HORSE
DURING SPRING AND SUMMER**

Tempo przyrastania ścian kopyt koni małopolskich w sezonie wiosenno-letnim

The main objective of the study was to determine a rate of hoof capsule growth. In order to achieve this goal the research was conducted on a group of Malopolski horses under the same usage and feeding conditions. All horses were kept in the same stable. The food basis consisted of hay ad libitum access. The grain was given as a nutritive fodder. From mid-April horses were kept on pasture for approximately 8 hours a day. Horses were saddled and ridden for training and recreation purposes for least 2 hours a day. All mares were barefoot. Measurements were made at 6-week intervals on newly trimmed hoofs of left forelimbs and hindlimbs in the group of 7 mares of the Malopolski breed. Firstly a groove was created in the hoof wall which was parallel to the coronary band. Next, during a hoof growth, the rate of groove descent was measured in 7 point with 1 mm accuracy. Statistics were obtained on a hoof growth at weekly and 6-week intervals. The results show that the horn grows at a rate of approximately 13 mm during 6-week intervals and 2,1 mm weekly. The growth was equal on the whole hoof circumference. There are no differences between growth rates in forelimb and hindlimbs.

Publication: Medycyna Wet. (Lublin) 68, 426–429, 2012, fig. 2, tab. 4. In Polish, summary in English.

REPORTS TO RESEARCH MEETINGS

BALICKI I.: Ophthalmological differential diagnosis of some systemic disorders in dogs and cats. (Okulistyczna diagnostyka różnicowa w przebiegu wybranych zaburzeń ogólnoustrojowych u psów i kotów).

Ref. The XX International Congress of Small Animal Veterinary Medicine. Warszawa, 25–27 X 2012.

Publication: Proceedings of the Congress of Small Animal Veterinary Medicine, 97–100, 2012. In Polish.

BALICKI I., GOLEMEM M.: Ocular abnormalities of Polish greyhound. (Występowanie wad narządu wzroku u chartów polskich).

Ref. The XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the Congress of Polish Society of Veterinary Sciences, 375, 2012. In Polish.

BALICKI I., GOLEMEM M.: Ocular abnormalities of Polish greyhound. (Wady wrodzone u chartów polskich).

Ref. Conference Proceedings ECVO Annual Scientific Meeting, Trieste, 24–27 V 2012.

Publication: Conference Proceedings ECVO Annual Scientific Meeting, Trieste 107, 2012. In English.

BALICKI I., KOMSTA R., SILMANOWICZ P.: Assessment of hip dysplasia, elbow dysplasia, and ocular abnormalities in German shepherds dogs. (Ocena występowania dysplazji stawów biodrowych i łokciowych oraz wad narządu wzroku u owczarków niemieckich).

Ref. The XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the Congress of Polish Society of Veterinary Sciences 285, 2012. In Polish.

BRODZKI A., ŁOPUSZYŃSKI W., BRODZKI P., TATARA M.: Proliferative activity and pharmacological treatment effectiveness monitoring by quantitative evaluation of DNA adducts and sex hormones in dogs with malignant perianal tumors.

Ref.: Southern European Veterinary Conference, Barcelona, 18–20 X 2012.

Publication: Proceedings CD.

BRODZKI A., ŁOPUSZYŃSKI W., BRODZKI P., SOBCZYŃSKA-RAK A.: Clinical, hormonal and immunohistochemical monitoring of pharmacological treatment in dogs with perianal tumors. (Kliniczne, hormonalne i immunohistochemiczne monitorowanie efektów farmakoterapii nowotworów okolicy odbytu u psów).

Ref. The XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences 285, 2012. In Polish.

BRODZKI A., BRODZKI P., SZPETNAR M., TATARA M.: Serum concentration of free amino acids in dogs suffering from benign perianal tumors. (Koncentracja wolnych aminokwasów w surowicy psów z niezłośliwymi nowotworami okolicy odbytu).

Ref. The XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences 285, 2012. In Polish.

KOVACOVA Z., BALICKI I., HOLICKOVA M., TRBOLOVA AS., MIHALOVA M.: A retrospective study of chronic superficial keratitis in 308 German shepherd dogs: 1999–2010.

Ref. Conference Proceedings ECVO Annual Scientific Meeting, Trieste, 24–27 V 2012.

Publication: *Conference Proceedings ECVO Annual Scientific Meeting, Trieste 115, 2012. In English.*

ORZELSKI M., SŁOWIK-ORZELSKA M., SOB CZYŃSKA-RAK A., RÓŻAŃSKA D., MILCZAK A., SILMANOWICZ P. Influence of propofol on anaesthesia and liver function in dogs. (Wpływ znieczulenia z wykorzystaniem propofolu na stan czynnościowy wątroby u psów).

Ref. The XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: *Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 375, 2012. In Polish.*

ORZELSKI M., RÓŻAŃSKA D.: How the owner could help his pet in emergency aid? (Czy w sytuacji nagłego zagrożenia możemy pomóc naszemu pupilowi?)

Ref. Science Festival in Lublin, 15–21 X 2012.

PAMUŁA E., MENASZEK E., ORZELSKI M., RUMIAN Ł., MALISZ P., DOBRZYŃSKI P., SILMANOWICZ P.: Poly (L-lactide-co-glycolide) scaffolds modified with hydroxyapatite or collagen: physicochemical properties and in vivo evaluation.

Ref. IXth World Biomaterials Congress in Chengdu, 1–5 VI 2012.

Publication: *Proceedings of IXth World Biomaterials Congress in Chengdu Innovative Biomaterials and Crossing Frontiers in Biomaterials and Regenerative Medicine, 1, 2012. In English.*

RÓŻAŃSKA D., RÓŻAŃSKI P., ORZELSKI M.: Wild animals as human health hazard – truth and myths. (Zwierzęta dzikie zagrożeniem dla zdrowia i życia człowieka – prawda i mity.)

Ref. Science Festival in Lublin. 15–21 X 2012.

RÓŻAŃSKA D., ŻYLIŃSKA B., ORZELSKI M.: Use of the lip-to-lid flap for replacement of the lower eyelid in a dog. (Rekonstrukcja ubytku powieki dolnej u psa metodą lip-to-lid).

Ref. The XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: *Proceedings of th XIV Congress of Polish Society of Veterinary Sciences 352, 2012. In Polish.*

STEFANOWICZ Z., BALICKI I., KOŁODZIEJSKI W.L.: The attempt to determine of cyclosporin A concentration with the using HPLC method in whole blood and serum of dogs after long-term topical treatment of chronic superficial keratitis. (Próba oznaczenia cyklosporyny A metodą HPLC w pełnej krwi i surowicy psów po długotrwałym leczeniu miejscowym przewlekłego powierzchownego zapalenia rogówki).

Ref. The VII Congress „Analytical applications of liquid chromatography”. Warszawa, 25–26 X 2012.

Publication: *Proceedings of the VII Congress „Analytical applications of liquid chromatography”, 46, 2012. In Polish.*

ŻYLIŃSKA B., STODOLAK-ZYCH E., NOWICKA K., SILMANOWICZ P.: Evaluation of repair of osteochondral defects in rabbits using new composite biomaterials during three-month observation.

Ref.: Biomateriały w medycynie i weterynarii, Ryto, 10–13 X 2012.

Publication: *Engineering of Biomaterials*, XV, 116–117, 141–143, 2012. In English.

OTHER PUBLICATION

BALICKI I.: Examination of hereditary eye diseases in polish hunting dogs. (Badanie wrodzonych wad narządu wzroku u ogarów i gończych polskich).

Publication: *Biuletyn klubu ogara i gończego polskiego (Warszawa)* 10, 23–25, 2012. In Polish.

BALICKI I., TRBOLOVA A.: Episcleritis in dogs. (Zapalenie nadtwardówki u psów).

Publication: *Magazyn Wet.* 21, 524–526, 2012. In Polish, summary in English.

BRODZKI P., BRODZKI A., PIECH T.: Granulosa cell tumour (GCT) in the bitch. (Błoniak ziarnisty jajnika (GCT) u suki)

Publication: *Magazyn Wet.* 21, 84, 988–991, 2012. In Polish, summary in English.

ORZELSKI M., BUCZEK K., ŚMIECH A., RÓŻAŃSKA D., ŻYLIŃSKA B.: Is it only rhynotomy? A case report. (Czy tylko rynchotomia? Opis przypadku).

Publication: *Magazyn Wet.* 21, (183), 916–920, 2012 In Polish, summary in English.

POLKOWSKA I.: A study of the impact of pathogenic bacteria in periodontal diseases on the internal organs of dogs. (Badanie wpływu patogennej flory bakteryjnej w chorobach przyzębia na stan narządów wewnętrznych u psów).

Publication: *Rozprawy Naukowe Uniwersytetu Przyrodniczego w Lublinie*, 355. In Polish.

POLKOWSKA I., SOBCZYŃSKA-RAK A.: Surgical treatment of maxillary and mandibular fractured in dogs. (Chirurgiczne leczenie złamania żuchwy i szczęki u psa).

Publication: *Magazyn Wet.* 21, 906–909, 2012, fig 6. In Polish, summary in English.

SOBCZYŃSKA-RAK A.: The role of VEGF in the process of neovasculogenesis.

Publication: *Tumor Angiogenesis*, edited Sophia Ran, Intech, Rijeka, Croatia, 181–196, 2012. In English.

SOBCZYŃSKA-RAK A., RÓŻAŃSKA D., DĘBIAK P., POLKOWSKA I., SILMANOWICZ P.: Hydronephrosis as a complication of urolithiasis in a dog. (Wodoneczerze jako powikłanie kamicy moczowej u psa).

Publication: *Życie Wet.* 87, 387–400, 2012, fig. 8. In Polish, summary in English.

ŻYLIŃSKA B., ORZELSKI M., SZPONDER T., SILMANOWICZ P.: Canine intussusception – diagnostic and therapeutic problems. (Wgłobienie jelita u psów – problemy diagnostyczne i terapeutyczne).

Publication: *Magazyn Wet.*, 21 (183) 894–904, 2012. In Polish, summary in English.

LABORATORY OF VETERINARY RADIOLOGY AND ULTRASONOGRAPHY

Głęboka 30, Lublin

Head: Dr. Renata Komsta

REPORTS TO RESEARCH MEETINGS

DEBIAK P.: Ultrasonographic analysis of testicular diseases in dogs. (Analiza ultrasonograficzna chorób jąder u psów).

Ref.: XI Meeting PTU. Olsztyn, 31 V – 2 VI 2012.

Publication: Ultrasonography – Quarterly Journal PTU, suppl. 1, 103, 2012. In Polish.

KOMSTA R.: Radiological imaging in respiratory failure. (Rentgenodiagnostyka niewydolności oddechowej).

Ref.: XX International Congress of the Small Animal Veterinary Association PSLWMZ, Warszawa, 5–7 X 2012.

Publication: Conference Proceedings of the XX International Congress of Small Animal Veterinary Association PSLWMZ, 121–125, 2012. In Polish.

KOMSTA R.: Lameness in old dogs. (Kulawizny wieku starczego).

Ref.: XIII Silesian Diagnostic Workshops „Dysfunctions mobility system in dogs and cats”. Wisła, 16–18 III 2012.

Publication: Monography, Silesian Association Veterinary Polyclinic, 45–58, 2012. In Polish.

KOMSTA R.: Juvenile musculoskeletal disorders. (Juwenilne schorzenia narządu ruchu).

Ref.: XIII Silesian Diagnostic Workshops „Dysfunctions mobility system in dogs and cats”. Wisła, 16–18 III 2012.

Publication: Monography, Silesian Association Veterinary Polyclinic, 59–84, 2012. In Polish.

OTHER PUBLICATIONS

ŁOJSZCZYK-SZCZEPANIAK A., BRODZKI A., ŻYLIŃSKA B.: Foreign body in the urinary bladder in a dog – a case study. (Ciało obce w pęcherzu moczowym psa - radiologiczny obraz przypadku).

Publication: Magazyn Wet. 21, 230–234, 2012. In Polish, summary in English.

ŁOJSZCZYK-SZCZEPANIAK A., KOMSTA R., TWARDOWSKI P.: Hypervitaminosis A in cats – a forgotten disease? (Hiperwitaminoza A u kotów – choroba zapomniana?).

Publication: Magazyn Wet. 21, 852–856, 2012. In Polish, summary in English.

ŁOJSZCZYK-SZCZEPANIAK A., SZCZEPANIAK K.O.: Ultrasonography of reptile reproductive system. (Ocena ultrasonograficzna układu rozrodczego gadów).

Publication: Życie Wet. 87, 833–837, 2012. In Polish, summary in English.

DEPARTMENT OF EPIZOOTIOLOGY AND CLINIC OF INFECTIOUS DISEASES

Głęboka 30, Lublin

Head: Prof. ordin. Dr. habil. Stanisław Winiarczyk
Prof. ordin. Dr. habil. Zbigniew Grądziński
Prof. ordin. Dr. habil. Krzysztof Kostro

RESEARCH STUDIES (SUMMARIES)

Łukasz Adaszek, Beata Dzięgiel, Marta Górna, Marcin Garbal,
Romana Wernicka-Furmaga, Stanisław Winiarczyk

THE APPLICATION OF REAL-TIME PCR IN DETECTING OF *Babesia canis* SUBCLINICAL INFESTATION IN DOGS – THE EFFECT OF DIFFERENT DNA ISOLATION METHODS ON THE SENSITIVITY OF PCR

Zastosowanie real-time PCR w wykrywaniu zarażeń subklinicznych *Babesia canis* u psów
– ocena wpływu różnych metod izolacji DNA na czułość PCR

The aim of this study was to use the real time polymerase chain reaction in detection of *Babesia canis* subclinical infestation in dogs and to compare the different DNA isolation methods on the PCR sensitivity. The study included 6 dogs with suspected subclinical babesiosis. DNA for real time polymerase chain reaction were isolated by phenol method as well as by commercial kits Micro AX Gravity (A&A Biotechnology, Gdynia, Poland) and Blood mini (A&A Biotechnology, Gdynia, Poland). In the blood of all six specimens PCR demonstrated the presence of *Babesia canis* DNA. The most efficient proved to be a reaction to which the genetic material was isolated by phenol method. The amount of total DNA obtained in this way, determined spectrometrically ranged 43,7–54,3 ng/μl. Ct value in real-time PCR, for DNA samples isolated in this way was the lowest comparing with other isolation methods and averaged 22,5. Similar results were obtained when DNA was isolated from the blood with a Micro

AX Gravity kit, while the least efficient was a Blood Mini Kit (amount of total DNA, depending on the sample was 14,0–25,1 ng/μl, amplification in real time occurred slowest-average Ct value = 28). For all PCR products, where DNA was isolated using by phenol method or by Micro AX Gravity, readable sequences were obtained. In the case of PCR products where DNA was isolated by Blood Mini Kit, readable sequences were obtained only for 3 out of 6 tested samples. All received in our study sequences of the 18S RNA gene fragment showed a high 99,9–100% homology with the sequence of *Babesia canis* EU622792

These results confirm the usefulness of the real time PCR in the diagnosis of subclinical canine babesiosis and indicate the need for choosing such DNA isolation method for this reaction, which will guarantee the highest efficiency of amplification.

Publication: Medycyna Wet. (Lublin) 68, 362–366, 2012, fig. 2, tab. 2. In Polish, summary in English.

Lukasz Adaszek, Marta Górna, Paweł Klimiuk, Marcin Kalinowski,
Stanisław Winiarczyk

**A PRESUMPTIVE CASE OF CEREBRAL BABESIOSIS IN A DOG IN POLAND
CAUSED BY A VIRULENT *Babesia canis* STRAIN**

The aim of this paper was to present the first case of cerebral canine babesiosis due to infection by *Babesia canis* in a dog in Poland. A 5-year-old American Staffordshire Terrier was presented with an unusual clinical manifestation of acute babesiosis that included neurological signs and pancytopenia. Despite treatment the dog died. Diagnosis was based on microscopic examination of Giemsa-stained blood smears (detection of piroplasms in red blood cells) and post mortem examination of the brain by histopathology and PCR method. The amplified segment of the *Babesia* 18S RNA gene was sequenced. This enabled to determine that the cause of the disease had been the strain 18S RNA-B EU622793. This is one of two *B. canis* strains found endemically in Poland, which reveals a greater virulence than the strain 18S RNA-A EU622792.

The described case indicates that this form of canine babesiosis should be taken into account in differential diagnosis in dogs exhibiting neurological symptoms, especially in the tick activity season.

Publication: Tierarztl. Prax. 40, 367–371, 2012, fig. 3. In English, summary in English.

Łukasz Adaszek, Marta Górna, Stanisław Winiarczyk

ELECTROLYTE LEVEL AND BLOOD PH IN DOGS INFECTED BY VARIOUS 18S RNA STRAINS OF *Babesia canis canis* ON THE EARLY STAGE OF BABESIOSIS

The purpose of the studies was to determine electrolyte disturbances and blood pH changes in dogs with babesiosis and possibly show a connection between the *Babesia (B.) canis* strain causing the infection and the intensity of these irregularities. 40 animals (group 1) with early babesiosis and 40 healthy dogs (group 2) were studied and their blood pH and blood levels of potassium, chlorides; calcium and sodium were determined. At the same time, molecular typing of parasites was carried out to detect which *B. canis* strain (18S RNA-A or 18S RNA-B) had caused the disease in dogs of group 1.

In group 1, four dogs were acidaemic, twelve had normal blood pH, and 24 were alkalaemic. Potassium concentration was below normal in 16 out of 40 dogs (40%) and normal in 24 dogs. Hypochloremia was present in 36 out of 40 dogs; chloride was normal in the remaining four animals. Serum sodium concentration was low in 16 of 40 dogs, normal in 20 of 40 dogs and high in four dogs. Calcium concentration was normal in all 40 dogs.

In dogs of group 2 no abnormalities of haematological or blood biochemical parameters were observed. 29 out of the 40 dogs of group 1 were infected with the 18S RNA-A strain and eleven with the 18S RNA-B strain of *Babesia canis canis*. We did not observe any correlation between the type of strain causing the infection and the electrolyte disturbances in the serum of sick dogs. Hypocalaemia was observed in ten specimen infected with 18S RNA-A and six infected with 18S RNA-B. Additionally, in dogs infected with 18S RNA-A, hyponatraemia (28), hyponatraemia (10), hypernatraemia (2) were observed, as well as blood pH drop (4) or increase (14). The 18S RNA-B-infected dogs suffered from hypochloremia (8), hyponatraemia (6), hypernatraemia (2) and increase in blood pH (10).

The studies conducted did not answer the question of whether the type of electrolyte disturbances in dogs with babesiosis can be connected with the strain of the parasite that induced the disease, as happens in the case of other clinical parameters (Adaszek *et al.*, 2009). Further studies in this respect, conducted on a larger group of animals, are necessary.

Publication: Berl. Munch. Tierarztl. Wochenschr. 125, 45–51, 2012, fig. 2, tab.1. In English, summary in English.

Łukasz Adaszek, Paweł Klimiuk, Maciej Skrzypczak, Marta Górna,
Stanisław Winiarczyk

**THE IDENTIFICATION OF ANAPLASMA SPP. ISOLATED FROM FALLOW DEER
(*Dama dama*) ON A FREE-RANGE FARM IN EASTERN POLAND**

The aim of the present study was to investigate the occurrence of *Anaplasma* spp. in group of 50 fallow deer (*Dama dama*) from free-range farm in eastern Poland and determine what species of *Anaplasma* could infect these animals based on PCR gene sequencing. The PCR technique revealed the presence of 16S RNA *Anaplasma* spp. genetic material in the blood of 7 out of 50 examined animals. The sequences of the PCR products obtained showed a 100% homology with each other and 100% homology with GU 183908 sequence of *A. phagocytophilum*, isolated in our earlier study from a horse with clinical form of anaplasmosis. Here, we report the first molecular evidence of *Anaplasma* spp. among naturally infected fallow deer in eastern Poland.

Publication: Pol. J. Vet. Sci. 15, 393–394, 2012. In English, summary in English.

Łukasz Adaszek, Andrzej Puchalski, Marta Dec, Stanisław Winiarczyk

**ANALYSIS OF THE CULTURE-DERIVED SOLUBLE *Babesia canis canis*
ANTIGENS DERIVED FROM THE POLISH STRAINS OF THE PARASITES**

The aim of this study was to analyse the protein fractions of the soluble parasitic antigen (SPA) from in vitro cultures of the native Polish strains of *Babesia canis canis* and to determine their immunogenicity through Western blotting using the sera of dogs vaccinated with this antigen.

Polyacrylamide gel electrophoresis revealed 21 protein fractions with molecular weights from 12 to 205 kDa. The most intense reaction in Western blotting was observed between the serum antibodies of the SPA-vaccinated dogs and the fraction with the molecular weight of 52 kDa.

Detailed studies on the composition of SPA of *Babesia canis canis* and reactivity of its individual protein fractions can be a starting point for the development of subunit vaccines against babesiosis. Using a preparation with only some electrophoretic fractions of SPA in the production of vaccines would allow to avoid putting an unnecessary protein burden in the vaccine which could cause side effects.

Publication: Tierarztl. Prax. 40, 399–403, 2012, fig. 2. In English, summary in English.

Lukasz Adaszek, Romana Wernicka-Furmaga, Stanisław Winiarczyk

**PRELIMINARY STUDY ON THE SAFETY OF A NEW VACCINE AGAINST
CANINE BABESIOSIS CONTAINING SOLUBLE PARASITIC ANTIGEN (SPA)**

The aim of this study was to assess the safety of the new vaccine against canine babesiosis containing soluble parasitic antigen (SPA) in dogs. The studies were conducted on 15 dogs (5 controls receiving only the adjuvant and 10 individuals which received the SPA antigen of *Babesia canis canis* twice at the interval of two weeks). For the whole period of the study all the animals were under constant clinical observation. Additional hematological and biochemical tests were performed. Flu-like symptoms and local reactions at the injection site were observed in 3 animals from the studied (vaccinated) group and in 2 dogs from the control group. These events were transient, receded spontaneously and did not require any appropriate treatment. In 50% of the individuals of studied group, a slight and spontaneously receding thrombocytopenia developed after the vaccination. However, in none of the animals used in the experiment shock symptoms were observed. The administration of the SPA did not affect the functions of internal organs, which is confirmed by normal results of biochemical tests. The SPA antigen of *Babesia canis* obtained in our study can be considered safe and well tolerated by dogs and therefore it can be used in further studies on the immunization of animals against babesiosis.

Publication: Bull. Vet. Inst. Pulawy 56, 145–148, 2012, fig 1, tab. 1. In English, summary in English.

Marcin Kalinowski, Łukasz Adaszek, Paulina Miłoszewska, Maciej Skrzypczak, Anna Ziętek-Barszcz, Zbigniew Grądzki, Stanisław Winiarczyk

**MOLECULAR ANALYSIS OF A FRAGMENT OF GENE E1B 19K
OF CANINE ADENOVIRUS 2 (CAV-2)
ISOLATED FROM DOGS WITH SYMPTOMS OF COUGH**

The aim of this study was to perform molecular analysis of canine adenovirus 2 (CAV-2) E1B 19K gene fragment isolated from 20 dogs of various breeds (12 males and 8 females aged 1-9 years), with clinical symptoms of upper respiratory tract infections, from the Lubelszczyzna region. Nasal swabs were taken from dogs. DNA of CAV-2 was detected using the PCR method in 16 swabs. All PCR products were sequenced, and the obtained sequences were compared with each other and with the sequence of the E1B 19K gene of the CAV-2 strain from an online database of NCBI GenBank: AC 000003. Based on analysis of the obtained sequences, three polymorphic variants of CAV-2 (No. 1–3) with homol-

ogy of 78–100% were distinguished. The nucleotide and amino acid sequences of the most frequently represented polymorphic variant, No. 1, differed from the sequences of polymorphic variant No. 2 with one substitution. The nucleotide and amino acid sequence of the E1B 19K gene of CAV-2 AC 000003 differed from the analogous sequences of representatives of variant No. 1 with 44 nucleotide and 19 amino acid substitutions. The small number of nucleotide differences in the E1B 19K CAV-2 gene among the examined own isolates, compared with AC 000003, suggest that the infections in dogs were caused by a relatively genetically stable virus which occurs in eastern.

Publication: Pol. J. Vet. Sci. 15, 425–430, 2012, fig 3, tab. 2. In English, summary in English.

Anna Rymuszka, Łukasz Adaszek

**PRO- AND ANTI-INFLAMMATORY CYTOKINE EXPRESSION IN CARP BLOOD
AND HEAD KIDNEY LEUKOCYTES EXPOSED TO CYANOTOXIN STRESS
– AN IN VITRO STUDY**

Cyanotoxins are toxic, secondary metabolites produced by different species of cyanobacteria that are present all over the world in aquatic environments. No data are available about the molecular mechanisms underlying the stress associated with exposure of fish immune cells to low concentrations of cyanotoxins.

The purpose of this study was to determine whether the expression of cytokines that underlie immune regulation are changed after incubation of fish leukocytes with pure cyanotoxins: microcystin-LR (MC-LR), anatoxin-a (Antx-a), or an extract containing Antx-a. The study investigated the relative gene expression of four important cytokines, IL-1 β , TNF- α , IL-10, and TGF- β , in carp head kidney and blood leukocytes exposed to toxins at concentrations of 0.01 or 0.1 $\mu\text{g/ml}$ for 4 h.

The data showed that pure toxins could induce dysregulation of pro-/anti-inflammatory cytokine expression. Expression of cytokine IL-1 β was highly upregulated following Antx-a exposure, whereas MC-LR induced merely moderate reactions. The expression of TNF- α mRNA was significantly suppressed in blood and head kidney cells incubated with toxins at the higher concentration.

These results showed that pure toxins dysregulated the expression of pro-inflammatory cytokines IL-1 β and TNF- α more promptly than the anti-inflammatory cytokines TGF- β and IL-10. In contrast, the studies demonstrated a clearly downward trend of pro-inflammatory cytokines and an upward trend of anti-inflammatory cytokines in leukocytes exposed to an extract containing defined concentrations of Antx-a.

This study suggests that cyanotoxins present in aquatic environments may exert immunotoxic effects by altering the transcription of important mediators of the fish immune system.

Publication: Fish Shellfish Immunol. 33, 382–388, 2012, fig. 3, tab. 1. In English, summary in English.

OTHER PUBLICATIONS

ADASZEK Ł., KUTRZUBA J., KALINOWSKI M., GARBAL M., WINIARCZYK S.: The cases of the nervous distemper in vaccinated dogs – can we talk about a new variant of virus? (Przypadki nerwowej postaci nosówki u szczepionych psów – czy można mówić o nowym wariantcie wirusa?).

Publication: Życie Wet. 87, 597–600, 2012. In Polish, summary in English.

ADASZEK Ł., SURMA-KURUSIEWICZ K., LUFT-DEPTUŁA D., KUTRZUBA J., BILSKI T., WINIARCZYK S.: Atypical tetanus case in a one horse. (Nietypowy przypadek tężca u konia).

Publication: Życie Wet. 87, 686–689, 2012. In Polish, summary in English.

ADASZEK Ł., JAROSZ Ł., KALINOWSKI M., ZIĘTEK J., WINIARCZYK S., GRĄDZKI Z.: The course and diagnosis of intestinal parvovirus infections in the farm minks. (Przebieg i rozpoznanie zakażeń jelitowymi szczepami parwowirusów na fermie norek).

Publication: Weterynaria w terenie 4, 50–51, 2012. In Polish, summary in English.

ADASZEK Ł., GARBAL M., GÓRNA M., ZIĘTEK J., WINIARCZYK S.: Therapy of babesiosis in animals. (Terapia babeszjozy u zwierząt).

Publication: Weterynaria w praktyce 1–2, 39–43, 2012. In Polish, summary in English.

ADASZEK Ł., WINIARCZYK S.: The diversity of protozoa *Babesia* isolated from dogs in the aspects of clinical course of the disease. (Różnorodność pierwotniaków *Babesia* izolowanych od psów w aspekcie kliniki choroby).

Publication: Życie Wet. 87, 17–20, 2012. In Polish, summary in English.

ADASZEK Ł., WERNICKA-FURMAGA R., KUTRZUBA J., WINIARCZYK S.: Cytauxzoonosis – potential threat for european cats (Cytokszoonoza – potencjalne zagrożenie dla kotów w Europie).

Publication: Życie Wet. 87, 302–304, 2012. In Polish, summary in English.

DEPARTMENT OF FOOD HYGIENE OF ANIMAL ORIGIN

Akademicka 12, Lublin

Head: Prof. Dr. habil. Krzysztof Szkucik
Dr. habil. Zygmunt Nowakowski

RESEARCH STUDIES (SUMMARIES)

Zbigniew Bełkot, Michał Gondek

NUTRITIONAL VALUE OF FAT OF MECHANICALLY RECOVERED CHICKEN AND GEESE MEAT

The objective of the present research was to determine nutritional value of fat of mechanically deboned chicken and goose meat in comparison to fat of hand trimmed meat (HTM). The samples for examinations were collected during 20 production cycles.

The studies were carried out on two types of mechanically deboned chickens and geese meat and two types of HTM, i.e. chicken and goose that were combined to form breast and thigh samples. The HTM meat constituted the control. Determination of saturated fatty acid (SFA) content showed significant differences in both types of mechanically deboned poultry meat (MDPM) and the manually cut-off meat. Similar relationships were found in the level of polyunsaturated fatty acids (PUFA). While monounsaturated fatty acid (MUFA) contents were significantly different from those noted in the MDPM, there were no significant differences reported between the mechanically deboned and hand trimmed meat from geese. A predominant saturated fatty acid detected in all the meat types proved to be palmitic acid that accounted for approximately 70% of total saturated fatty acids. In the MUFA group, oleic acid prevailed (C18:1), whereas in the PUFA linoleic acid (C18:2) reached the highest level; these acids made up over 90% of total unsaturated acids.

There were observed significant differences between the chicken and goose MDM fat in terms of SFA/MUFA and SFA/PUFA ratios. Goose meat as well as goose MDM derived from it were characterized by 2-fold higher MUFA content as compared to saturated acids. We found a better balance between unsaturated fatty acids (UFA) and saturated fatty acids (SFA) in the goose MDM fat than in the chicken one. However from the dietetic standpoint, chicken fat provides better quality fatty acid profile than the fat of large slaughter animals. Hence, the MDM additive of both poultry species to processed meat products can serve as a good source of UFAs.

Publication: Folia Vet. suppl.1, (Košice) 56, 10–13, 2012, tab. 1. In English, summary in English.

Waldemar Paszkiewicz, Renata Pysz-Lukasik

BACTERIAL CONTAMINATION OF CALF CARCASSES DURING PRODUCTION CYCLE

The objective of the presented study was to determine microbial contamination of calf muscle tissues in relation to slaughtering process of calves during a slaughter day. In order to determine the total aerobic bacteria count, bacteria from the *Enterobacteriaceae* family and enterococci, 32 carcasses were examined (8 each slaughter day), while 40 carcasses (10 each slaughter day) for the detection of *Salmonella* organisms. Microbiological evaluation of each bacterial group was performed according to the Polish Norms. In most cases, no significant differences were reported between the total aerobic count on calf carcass surfaces as determined at each slaughter cycle. The daily log mean values were lower by 1 up to 1.5 log, respectively, than the maximal bacteria count (M). Bacteria from the *Enterobacteriaceae* family were isolated from 59.4% of the evaluated samples. However, contamination with these bacteria was insignificant – 1.7×10 cfu/cm². Enterococci were isolated from all the investigated samples and contamination ranged from 1.1×10 cfu/cm² up to 4.1×10^2 cfu/cm². *Salmonella* strains were not found in any of the evaluated samples.

The order of the slaughtering calves during a slaughter day and the day of the week when the examination was performed did not have any influence on total microbial contamination of carcasses. Thus, sanitary conditions in the examined abattoir were satisfactory and slaughter process was conducted at high quality level.

Publication: Bull. Vet. Inst. Pulawy 56, 47–49, 2012, tab. 2. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

BELKOT Z., GONDEK M.: Nutritional value of fat of mechanically recovered chicken and geese meat.

Ref. *Hygiena Alimentorum XXXIII*, Štrbské Pleso, 9–11 V 2012.

Publication: Proceedings of the Hygiena Alimentorum XXXIII, 129–133, 2012. In English.

BELKOT Z., GONDEK M.: Presence of pathogenic microorganism on eggshell surface depending on hen maintenance system. (Obecność drobnoustrojów chorobotwórczych na powierzchni jaj konsumpcyjnych w zależności od systemu utrzymania kur niosek.)

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 558, 2012. In Polish.

BELKOT Z., GONDEK M.: The impact of the various systems of maintenance of laying hens on the surface contamination of table eggs. (Wpływ różnych systemów utrzymania kur niosek na zanieczyszczenie powierzchni jaj konsumpcyjnych.)

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 553–554, 2012. In Polish.

BELKOT Z., MAĆKOWIAK-DRYKA M.: Profile of fatty acids in intramuscular fat of horse meat in relation to age and kind of muscles. (Profil kwasów tłuszczowych w tłuszczu śródmięśniowym koni w zależności od wieku i rodzaju mięśni.)

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 555–556, 2012. In Polish.

GONDEK M., BELKOT Z.: Chemical composition of mechanically deboned meat derived for chicken and goose.

Ref. *Hygiena Alimentorum XXXIII*, Štrbské Pleso, 9–11 V 2012.

Publication: Proceedings of the Hygiena Alimentorum XXXIII, 134–137, 2012. In English.

MAĆKOWIAK-DRYKA M., BELKOT Z.: Influence of age and kind of muscles on sensory characteristics of horse meat. (Wpływ wieku i rodzaju mięśni na cechy organoleptyczne mięsa koni.)

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 560, 2012. In Polish.

NOWAKOWSKI Z., SKRZYPEK G.: Distribution and intensity of *Trichinella spiralis* invasion in tongues of experimentally infected rabbits. (Rozmieszczenie i intensywność inwazji *Trichinella spiralis* w językach doświadczalnie zarażonych królików.)

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 561, 2012. In Polish.

PASZKIEWICZ W., PYZ-ŁUKASIK R.: Variability of bacterial contamination of lambs carcasses during slaughter. (Zmienność zanieczyszczenia bakteryjnego tusz jagnięcych w czasie uboju).

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 562, 2012. In Polish.

PASZKIEWICZ W., SZKUCIK K.: Occurrence of pathogenic microorganism in meat of snails. (Występowanie drobnoustrojów chorobotwórczych w mięsie ślimaków).

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 563, 2012. In Polish.

PYZ-ŁUKASIK R., SZKUCIK K., WÓJCIK M.: Ubiquinone Q₁₀ level in rabbit meat. (Poziom ubichinonu Q₁₀ w mięsie królików).

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 564, 2012. In Polish.

SZKUCIK K.: Quality health products obtained from snails in Poland. (Jakość zdrowotna produktów pozyskiwanych od ślimaków w Polsce).

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 504, 2012. In Polish.

SZKUCIK K., STRAWA K.: Variability of bacterial contamination of meat trimmings in relation to meat plant class. (Zmienność zanieczyszczenia bakteryjnego mięsa drobnego w zależności od kategorii zakładu).

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 568, 2012. In Polish.

SZKUCIK K., ZIOMEK M.: Fatty acids profile in edible snail meat.

Ref. *Hygiene Alimentorum XXXIII*, Štrbské Pleso, 9–11 V 2012.
Publication: Proceedings of the Hygiene Alimentorum XXXIII, 304 – 307, 2012. In English.

ZIOMEK M., SZKUCIK K.: Chemical composition of edible snail meat. (Skład podstawowy mięsa ślimaków jadalnych).

Ref. XIV Congress of Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 569, 2012. In Polish.

OTHER PUBLICATIONS

SZKUCIK K., BELKOT Z., GONDEK M.: Occurrence of lesions and qualitative changes in game carcasses in Poland in 2000–2011. (Występowanie zmian chorobowych i odchyleń jakościowych w tuszach zwierząt łownych w Polsce w latach 2000–2011).
Publication: Medycyna Wet. (Lublin) 68, 755–761, 2012, fig.4, tab. 5. In Polish, summary in English.

SZKUCIK K., GONDEK M., BELKOT Z.: Morbid traits and qualitative changes in slaughter pigs in Poland over 2001-2011. (Występowanie zmian chorobowych i odchyleń jakościowych w tuszach świń w Polsce w latach 2001–2011).
Publication: Życie Wet. 87, 770–772, 2012, fig. 2, tab.2. In Polish, summary in English.

SZKUCIK K., MAĆKOWIAK-DRYKA M.: Morbid traits and qualitative changes in slaughter cattle in Poland over 2001–2010. (Występowanie zmian chorobowych i odchyleń jakościowych w tuszach bydła rzeźnego w Polsce w latach 2001–2010).
Publication: Życie Wet. 87, 514–518, 2012, fig. 3, tab.1. In Polish, summary in English.

SZKUCIK K., PYZ-ŁUKASIK R., PASZKIEWICZ W.: Morbid traits and qualitative changes in horse carcasses in Poland in the years 2001–2010. (Występowanie zmian chorobowych i odchyleń jakościowych w tuszach koni rzeźnych w Polsce w latach 2001–2010).
Publication: Medycyna Wet. (Lublin) 68, 418–421, 2012, fig. 2, tab. 1. In Polish, summary in English.

DEPARTMENT OF PATHOLOGICAL ANATOMY

Głęboka 30, Lublin

Head: Prof. extraordin. Dr. habil. Zbigniew Nozdryn-Plotnicki
Dr. habil. Wojciech Łopuszyński

RESEARCH STUDIES (SUMMARIES)

Bożena Nowakowicz-Dębek, Anna Śmiech, Andrzej Zoń, Hanna Bis-Wencel,
Olga Ondrasovicova, Łukasz Wlazło, Wioletta Wnuk

TISSUE PATHOMORPHOLOGY AND IMMUNOHISTOCHEMISTRY IN MINK (NEOVISON VISON) FED BLOOD PLASMA SUPPLEMENTED DIET IN THE PERIOD OF PREPARATION FOR BREEDING

The research carried out at a mink farm aimed to determine the effect of blood plasma supplemented diet applied at the period preparing mink for reproduction on the animal organism. The studies included four groups of mink. The control group received a non-supplemented diet, while the experimental groups had feed with additive of 0.5%, 1.5%, and 2.5% of beef-pork plasma in the daily feed ration. The pathomorphological and immunohistochemical evaluation was performed on the liver, kidneys, lymph nodes, spleen, and bowel from all the groups. Pathomorphological and immunohistochemical changes of various intensity were observed in the examined organs from all experimental groups.

Publication: Bull. Vet. Inst. Pulawy 56, 393–397, 2012, fig. 6. In English, summary in English.

Jacek Piórkowski, Zbigniew Nozdryn-Plotnicki

**PATHOMORPHOLOGICAL EVALUATION OF CHANGES IN THE LIVERS
OF ANIMALS FROM THE LUBLIN PROVINCE IN 2005–2009**

Pathomorphological evaluation of changes in the livers of animals from Lublin province in 2005–2009. The research material comprised the livers collected post mortem and ante mortem from dogs and cats, as well as farm animals, in the Lublin Province during 2005–2009. The material fixed in 4% buffered formalin was subsequently dehydrated and paraffin-embedded. The 4-micron-thick sections were stained with haematoxylin and eosin (HE). The most pathological changes in dogs and cats had occurred in animals over 11-years-of-age.

Angiosarcoma and hepatocellular carcinoma were the most frequent neoplastic changes reported in these animals. This is due to significant pollution of the urban environment where most of these animals came from. Nitrosamines and chloral hydrate play a significant role here. Adipose degeneration and necrosis predominated among the non-neoplastic lesions recognized in all animals is often due to dietary errors committed by pet owners. The influence of animal viral cirrhosis of the liver is not as well understood in animals as in humans and requires further study.

Publication: Medycyna Wet. (Lublin), 68, 680–683, 2012, fig. 2, tab. 2. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

BRZANA A., ŁOPUSZYŃSKI W., KLIMIUK P., SZCZUBIAŁ M.: Topoisomerase-II alfa expression in feline mammary tumours. (Ekspresja topoizomerazy-II alfa w nowotworach gruczołu sutkowego u kotów).

Ref. XIV Congress of the Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences, 293, 2012. In Polish.

KLIMIUK P., ŁOPUSZYŃSKI W., NOZDRYN-PŁOTNICKI Z., BRZANA A.: Evaluation on the predictive value of topoisomerase-II alfa in canine lymphoma. (Ocena wartości predykcyjnej topoizomerazy-II alfa w chłoniakach u psów).

Ref. XIV Congress of the Polish Society of Veterinary Sciences. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of the Polish Society of Veterinary Sciences, 279, 2012. In Polish.

PIÓRKOWSKI J., NOZDRYN-PŁOTNICKI Z.: Estimation of pathomorphological changes in animals. (Ocena zmian patomorfologicznych w tkankach zwierzęcych).

Ref. IX Scientific Festival in Lublin. Lublin, 17–21 IX 2012.

Publication: Proceedings of the IX Scientific Festival in Lublin, UP, 081, 2012. In Polish.

OTHER PUBLICATIONS

LISTOS P.: Civil liability of the subsidiary staff in veterinary medicine. (Odpowiedzialność cywilna personelu pomocniczego w weterynarii).
Publication: VetPersonel 1, 64–65, 2012. In Polish.

LISTOS P.: Penal liability of the subsidiary staff in veterinary medicine employed in the remedial plants for animals (Odpowiedzialność karna personelu pomocniczego zatrudnionego w zakładach leczniczych dla zwierząt).
Publication: VetPersonel 2, 64–65, 2012. In Polish.

LISTOS P.: Ordinal liability of the subsidiary staff in veterinary medicine. (Odpowiedzialność porządkowa personelu pomocniczego lekarzy weterynarii).
Publication: VetPersonel 3, 53–54, 2012. In Polish.

LISTOS P.: Veterinary-law conditions for conducting the resorts for animals. (Prawno-weterynaryjne wymagania dla prowadzenia schronisk dla zwierząt).
Publication: VetPersonel 4, 59–61, 2012. In Polish.

LISTOS P.: Look of the Polish veterinary doctor. Comment for the article “Think before you speak about mistakes” authorship Christopher J. Allen. (Spojrzenie polskiego lekarza weterynarii. Komentarz do artykułu „Pomyśl, zanim opowiesz o swoich błędach” autorstwa Christophera J. Allena).
Publication: Weter. Dypl. 13, 4, 56–57, 2012. In Polish.

DEPARTMENT OF PRECLINICAL VETERINARY SCIENCE

Akademicka 12, Lublin

Head: Prof. ordin. Dr. habil. Ryszard Bobowiec

SUB-DEPARTMENT OF PATHOPHYSIOLOGY

Akademicka 12, Lublin

Head: Prof. ordin. Dr. habil. Ryszard Bobowiec

Dr. habil. Urszula Kosior-Korzecka

RESEARCH STUDIES (SUMMARIES)

Ryszard Bobowiec, Urszula Kosior-Korzecka, Krzysztof Patkowski,
Tomasz Gruszecki, Elżbieta Rusińska

REPRODUCTIVE RESPONSE OF PLS AND BCP EWES EXPOSE TO HCG AT THE OESTROUS CYCLE

Ovulation rate, prolificacy, plasma IGF-I and steroid hormones concentrations were compared among two breeds of Polish ewes exposed to hCG. Both low (PLS) and high prolific group (BCP) ewes were separated randomly into three subgroups (10 ewes each): control animals injected with an equal volume of saline solution, once treated with hCG (300 IU, i.m.) on the 15th day of the oestrus cycle, and twice treated with 300 IU, i.m hCG on the 13th and 15th days of the oestrus cycle. Ovulation rate for once treated PLS and BCP groups (2.6 and 2.9 respectively) were always higher than in double treated groups (2.0 and 2.4 respectively). Stimulatory influence of hCG on ovulation rate was more pronounced in less prolific PLS breed than in BCP sheep. The prolificacy was augmented to a considerably greater extent in ewes exposed to double treatment

with hCG, with significant differences noted only in BCP ewes. In all ewes used in this experiment, the number of ovulatory follicles rose together with the increment of plasma IGF-I concentration. The most influential level of IGF-I on the number of ovulatory follicles following hCG treatment ranged between 28.0–31.0 ng/ml. The obtained results indicate that optimal time to induce extra ovulatory response to hCG is the beginning of estrus, whereas hCG given at the end of estrus time is effective in improving prolificacy in ewes.

Publication: Medycyna Wet. (Lublin) 68, 226–230, 2012, fig. 4, tab. 1. In English, summary in English.

Urszula Kosior-Korzecka, Krzysztof Patkowski,
Ryszard Bobowiec, Marta Wójcik, Elżbieta Tusińska

**SUSTAINED OPPOSITE RELATIONSHIPS BETWEEN ANABOLIC HORMONES
IN PREWEANING TRIPLET LAMBS BORN TO OBESE MOTHERS**

The aim of the study was to analyse the effects of maternal obesity and the litter size on the growth rate and plasma concentrations of GH, IGF-1, insulin, and glucose in ewe lambs during the first 6 weeks of their postnatal life. Seventy-six SCP sheep: 35 ewes and 41 female offspring were used. Before gestation, the ewes were divided into two groups: N – normally weighing and O – obese sheep. After the parturition, the lambing rate and the birth type were estimated. The born female lambs were separated into five groups: IN – singleton and IIN – twin offspring of normally weighing mothers; IO – singleton, IIO – twin and IIIO – triplet offspring of obese mothers. They were weighed at birth and weekly thereafter, until the completion of the 6th week of their postnatal life. Afterward, daily weight gains and concentrations of biochemical parameters were analysed. No significant differences in GH, IGF-1, insulin, and glucose levels between the groups of lambs born to non-obese and obese sheep, both carrying singletons and twins, were found. In contrast, significantly increased concentrations of GH ($P \leq 0.001$), insulin ($P \leq 0.001$), and glucose ($P \leq 0.05$) and markedly dropped level of IGF-1 ($P \leq 0.001$), as well as reduced daily body mass gains in triplets in comparison to other groups of lambs were observed. Maternal obesity caused significant lambing rate's accretion with the rise in triplets' frequency. However, in ewe lambs of this birth type, the disrupted relationships between plasma levels of GH, IGF-1 and growth rate, and between plasma levels of insulin and glucose were found.

Publication: Bull. Vet. Inst. Pulawy 56, 109–114, 2012, fig. 3. In English, summary in English.

Urszula Kosior-Korzecka, Paulina Radwańska, Marta Wójcik

**EFFECT OF 2-METHOXYESTRADIOL ON GONADOTROPIN SECRETION
AND OXIDATIVE STATUS OF PORCINE PITUITARY CELLS IN VITRO**

The aim of the study was to investigate the effect of 2-methoxyestradiol (2-ME) on GnRH-induced LH and FSH secretion by porcine pituitary cells in vitro. Moreover, the concentrations of superoxide anion radical (O_2^-), as a possible mediator of 2-ME action, and malonyldialdehyde (MDA), as an oxidative stress indicator, were estimated. Pituitary cells were cultured in McCoy 5A medium with GnRH (positive control), with GnRH and 3.3×10^{-11} – 3.3×10^{-7} M/L of 2-ME, or with GnRH and 2.7×10^{-9} – 2.7×10^{-8} M/L of 17β -estradiol. The secretion of gonadotropins, as well as concentrations of superoxide anion and MDA were analysed after 2–72 h of the experiment. A positive correlation between 2-ME dose and FSH secretion from anterior pituitary cells ($r = 0.72, 0.95, 0.92, 0.90, 0.85,$ and 0.82 after 2, 6, 18, 24, 48, and 72 h, respectively) was demonstrated. In contrast, a negative correlation between 2-ME concentration and LH secretion was observed ($r = -0.82, -0.72, -0.85, -0.89, -0.93,$ and -0.79 after 2, 6, 18, 24, 48, and 72 h, respectively). The concentration of O_2^- was increasing under the influence of the rising doses of 2-ME, whereas the mean level of MDA was not changing significantly.

Publication: Bull. Vet. Inst. Pulawy 56,373-378, 2012, fig. 3., tab. 1. In English, summary in English.

Joanna Wessely-Szponder, Ryszard Bobowiec, Tomasz Szponder

**THE INFLUENCE OF PORCINE PROPENIN ON NEUTROPHILS ISOLATED
FROM RABBIT BLOOD DURING IMPLANTATION OF CALCIUM SULPHATE
GRAFT MATERIAL INTO THE BONE TISSUE**

Immune dysfunction induced by surgical trauma may comprise either an inappropriately exaggerated inflammatory response or a profound suppression of cell-mediated immunity. Neutrophils are the leading cells in the first response to trauma. It is known that they mediate initial resistance to bacterial infection. Activated neutrophils can degranulate and release some enzymes such as elastase and myeloperoxidase (MPO). The function of elastase is, among others, to kill bacterial, whereas MPO is a specific enzyme of primary granules of neutrophils and a marker of in vivo neutrophil activation. Previous reports estimated that some cathelicidins could act to increase or diminish an innate immune response in which neutrophils participate.

The aim of this study was to evaluate prophenins (PF) isolated from porcine leukocytes in respect to neutrophil activity and survival during implantation of calcium sulphate bone grafts substitution in rabbits. Obtained results pointed out that neutrophils responded to PF depending upon concentration. Thirty min from implantation of calcium sulphate graft, we observed the greatest release of elastase ($57.01 \pm 0.49\%$ of maximal release) in cultures stimulated with 10 mg/ml of PF, at 0 mg/ml was $51.15 \pm 0.23\%$, while after 24 h of incubation the greatest response was at a concentration of 20 mg/ml. MPO release after 30 min from surgery decreased significantly at 10 mg/ml. In higher concentrations, the inhibition was less pronounced. Moreover, we estimated that PF causes cytotoxicity in the highest concentration as well as the apoptosis of neutrophils.

Publication: World Rabbit Sci. 20, 163–171, 2012, fig. 6. In English, summary in English.

Marta Wójcik, Ryszard Bobowiec, Urszula Lisiecka, Krzysztof Kostro

PROLIFERATION, DIFFERENTIATION AND APOPTOSIS OF CHOLINE DEFICIENT ETHIONINE SUPPLEMENTED DIET-RAT OVAL CELLS UNDER THE INFLUENCE OF 2-METHOXYESTRADIOL

Since numerous studies indicate that 2-methoxyestradiol (2-ME) as a metabolite of 17β -estradiol (17β -E2) may exert antitumor activity by unclear mechanism, we undertake the study to elucidate the effect of 2-ME on oval cells (OC) activated by a carcinogenic choline deficient ethionine supplemented diet (CDE diet).

Isolated OC were treated with different concentrations of 2-ME for 24, 48 and 72 hours. In these periods of time phenotypic studies, apoptosis detection and proliferative activity of cells were performed. A marked inhibition of OC proliferation was observed at the presence of $1.0 \mu\text{M}$ of 2-ME, with the lowest value obtained after 48 h. However, at the end of the cells' incubation, maximally reduced proliferative response of OC was attributed to $2.0 \mu\text{M}$ of 2-ME. Simultaneously with the time of incubation the amount of Thy-1-positive cells decreased slightly from 50.5 ± 1.4 to $31.5 \pm 3.6\%$. Contrary to 1.0 and $2.0 \mu\text{M}$ of 2-ME, its lowest value ($0.5 \mu\text{M}$) reduced Thy-1 positive cells after 48 hours. The same 2-ME concentration resulted in the elevation of the cell number expressing CK-19. In turn, the marked increase of albumine-positive cells was observed under $1.0 \mu\text{M}$ of 2-ME and reaching 21.5 ± 6.2 and $23.9 \pm 5.7\%$ after 48 and 72 hours, respectively.

Although the presence of $1.0 \mu\text{M}$ of 2-ME dramatically intensified apoptosis within 24 h of cell culture, the percentage of apoptotic cells remained unchanged

under 2.0 μM of 2-ME. When subjected to the carcinogenic effect of CDE, 2-ME exerts anti-proliferative, proapoptotic, and differentiation effects in OC.

Publication: J. Phys. Pharm. 63, 669–676, 2012, fig. 7. In English, summary in English.

Marta Wójcik, Mario Giorgi, Ryszard Bobowiec

SIGNIFICANCE OF STEM CELLS IN HEPATOCARCINOGENESIS IN RATS

Znaczenie komórek macierzystych w inicjacji nowotworów wątroby u szczurów

Hepatic oval cells (OC) are considered to be the stem cells of the liver and have been linked to the development of hepatocellular carcinoma HCC, one of the most lethal cancers.

The objective of this study was to analyse the proliferative response of OC obtained from rats receiving diethylnisamine DEN. In addition, we investigated the effects of resveratrol (Res) on the proliferation and oxidative markers of OC in vitro. OC isolated by in situ collagenase liver perfusion methods were treated with different concentrations of Res for 24, 48 and 72 hours. At the end of these periods the proliferative activity of OC, the release of superoxide anion by OC and the medium concentration of malonyldialdehyd were analyzed.

The proliferation of OC cultured without Res increased from $\text{IP} = 0.945 \pm 0.02$ to $\text{IP} = 1.525 \pm 0.031$ after 24 and 72 hours respectively. A marked ($p \leq 0.05$) inhibition of OC proliferation was observed in the presence of 1.0, 25 and 100 μM of Res. A significant decrease in the release of O_2^- by OC, observed throughout the experimental period, was attributed to the presence of 25 μM of Res. Exposition of OC to 100 μM of Res inhibited the release of O_2^- only after 48 and 72 hours of incubation. The presence of 25 μM of Res resulted in the depletion of MDA level, which did not exceed 0.19 ± 0.009 nM. Proliferative activity of OC isolated from carcinogenic rats intensified throughout the culture period. When subjected to the carcinogenic effect of DEN, Res exerts anti-proliferative influence on OC. Moreover, our results provide evidence that Res attenuates oxidative stress during hepatocarcinogenesis.

Publication: Medycyna Wet. (Lublin) 68, 562–565, 2012, fig. 4, tab. 1. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

JABŁOŃSKA M., WÓJCIK M.: Activity of Kupffer cells isolated from rats with experimentally induced hepatocellular carcinoma. (Aktywność komórek Kupffera izolowanych od szczurów z doświadczalnie wywołanym rakiem komórek wątrobowych).

Ref.: XVI International Conference Student Scientific Circle, Olsztyn, 15–16 V 2012.

Publication: Proceedings of the XVI International Conference Student Scientific Circle, 219, 2012. In Polish.

KMIECIK J., KOSIOR-KORZECKA U.: Effect of leptin on tyreotropin hormone secretion from ovine pituitary cells *in vitro* under the condition of stimulated and inhibited nitric oxide synthesis. (Wpływ leptyny na wydzielanie hormonu tyreotropowego przez komórki przysadki mózgowej owiec *in vitro* w warunkach pobudzonej i zahamowanej syntezy tlenu azotu).

Ref.: XVII International Conference Student Scientific Circle. Wrocław, 10–11 V 2012.

Publication: Proceedings of the XVII International Conference Student Scientific Circle, 154, 2012. In Polish.

KOSIOR-KORZECKA U., PATKOWSKI K.: The role of kisspeptin, leptin and saturated fatty acids in the pathogenesis of the delayed puberty in sheep. (Znaczenie kisspeptyny, leptyny i nasyconych kwasów tłuszczowych w patogenezie opóźnienia dojrzewania płciowego u owiec).

Ref.: LXXVII Conference of Michal Oczapowski Polish Society of Animal Production, Wrocław, 10–12 IX 2012.

Publication: Proceedings of the LXXVII Conference of Michal Oczapowski Polish Society of Animal Production, 102–103, 2012. In Polish.

KOSIOR-KORZECKA U., RADWAŃSKA P., WITKOWSKA K., BOBOWIEC R.: The effect of changes in leptin receptor expression on somatotropin secretion from ovine pituitary cells *in vitro*. (Wpływ zmian ekspresji receptorów leptynowych na wydzielanie somatotropiny przez komórki przysadki mózgowej owiec *in vitro*).

Ref.: XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 258, 2012. In Polish.

KRAWCZYK M., KOSIOR-KORZECKA U.: The changes in somatotropin secretion under the influence of leptin and ACTH from ovine pituitary cells *in vitro*. (Zmiany w wydzielaniu somatotropiny pod wpływem leptyny i ACTH przez komórki przysadki mózgowej owiec *in vitro*).

Ref.: XVII International Conference Student Scientific Circle. Wrocław, 10–11 V 2012.

Publication: Proceedings of the XVII International Conference Student Scientific Circle, 158, 2012. In Polish.

WESSELY-SZPONDER J., KRAKOWSKI L., KOSIOR-KORZECKA U., BOBOWIEC R.: The relation between activity of endometrium, ovary, and neutrophils in mares in peripartum period. (Zależność między aktywnością endometrium, jajnika i neutrofili u klaczy w okresie okołoporodowym).

Ref.: XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 176, 2012. In Polish.

WÓJCIK M., GIORGI M., BOBOWIEC R.: Significance of stem cells in hepatocarcinogenesis in rats. (Znaczenie komórek macierzystych w nowotworach wątroby u szczurów).
Ref.: XIV Congress of the Polish Society of Veterinary Sciences, Wrocław, 13–15 IX 2012.
Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Sciences, 604, 2012. In Polish.

OTHER PUBLICATION

WÓJCIK M., BOBOWIEC R.: Hepatic oval cells in the liver regeneration and hepatocarcinogenesis. (Wątrobowe komórki owalne w procesach regeneracji wątroby i hepatokarcinogenezie).
Publication: Życie Wet., 87, 216–220, 2012. In Polish.

SUB-DEPARTMENT OF PHARMACOLOGY

Akademicka 12, Lublin

Head: Prof. ordin. Dr. habil. Cezary Kowalski

REPORTS TO RESEARCH MEETINGS

KOWALSKI C.: Preferences in the choice of non-steroidal anti-inflammatory drugs (NLPZ) in dogs and cats. (Preferencje w wyborze niesterydowych leków przeciwzapalnych (NLPZ) u psów i kotów).

Ref.: The XIV Congress of Polish Society of Veterinary Science „The science in practice”. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Science „The science in practice”, 83, 2012. In Polish.

KOWALSKI C., ŁEBKOWSKA-WIERUSZEWSKA B.: Coxibs-choice preference in dogs and cats. (Koksyby – preferencje wyboru u psów i kotów).

Ref.: The II Science Conference „Pharmacological and environmental aspects of rational therapy”. Krynica Górská, 11–14 XII 2012.

Publication: Proceedings of the II Science Conference „Pharmacological and environmental aspects of rational therapy”, 18, 2012. In Polish.

LASIECKA K., KOWALSKI C., ŁEBKOWSKA-WIERUSZEWSKA B.: Effect of antioxidants on oxidative stress diseases – a review. (Wpływ przeciwutleniaczy w chorobach stresu oksydacyjnego – przegląd danych).

Ref.: The II Science Conference „Pharmacological and environmental aspects of rational therapy”. Krynica Górská, 11–14 XII 2012.

Publication: Proceedings of the II Science Conference „Pharmacological and environmental aspects of rational therapy”, 21, 2012. In Polish.

LASIECKA K., ŁEBKOWSKA-WIERUSZEWSKA B., KOWALSKI C.: Coccidiostats in feed for poultry – legal in 2013. (Kokcydiostatyki w paszach dla drobiu – uwarunkowania prawne na 2013 rok).

Ref.: The II Science Conference „Pharmacological and environmental aspects of rational therapy”. Krynica Górská, 11–14 XII 2012.

Publication: Proceedings of the II Science Conference „Pharmacological and environmental aspects of rational therapy”, 23, 2012. In Polish.

ŁEBKOWSKA-WIERUSZEWSKA B., KOWALSKI C.: Effect of ochratoxin and aflatoxin B2 on the biochemical parameters of broiler chickens. (Wpływ ochratoksyny oraz aflatoksyny B2 na parametry biochemiczne kurcząt brojlerów).

Ref.: The XIV Congress of Polish Society of Veterinary Science „The science in practice”. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Science „The science in practice”, 419, 2012. In Polish.

ŁEBKOWSKA-WIERUSZEWSKA B., KOWALSKI C., GIORGI M.: The pharmacokinetics of tramadol in different animal species. (Farmakokinetyka tramadolu u różnych gatunków zwierząt).

Ref.: The II Science Conference „Pharmacological and environmental aspects of rational therapy”. Krynica Górská, 11–14 XII 2012.

Publication: Proceedings of the II Science Conference „Pharmacological and environmental aspects of rational therapy”, 25, 2012. In Polish.

ZAŃ R., KOWALSKI C., ROLIŃSKI Z.: Melatonin as an anxiolytic drug in dogs and cats – own observations. (Melatonina jako lek przeciwlękowy u psów i kotów – obserwacje własne).

Ref.: The XIV Congress of Polish Society of Veterinary Science „The science in practice”. Wrocław, 13–15 IX 2012.

Publication: Proceedings of the XIV Congress of Polish Society of Veterinary Science „The science in practice”, 115, 2012. In Polish.

OTHER PUBLICATIONS

ŁEBKOWSKA-WIERUSZEWSKA B., KOWALSKI C., LASIECKA K.: Preferences in the choice of non-steroidal anti-inflammatory drugs in dogs and cats. (Preferencje w wyborze niesteroidowych leków przeciwzapalnych u psów i kotów).

Publication: Magazyn Wet. 21 (181), 788–792, 2012. In Polish, summary in English.

ŁEBKOWSKA-WIERUSZEWSKA B., KOWALSKI C., SACCOMANINI G., GIORGI M.: The use of tramadol in the injection in dogs. (Zastosowanie tramadolu w iniekcji u psów).

Publication: Magazyn Wet. 21 (182), 870–874, 2012. In Polish, summary in English.

ZAŃ R., ROLIŃSKI Z., KOWALSKI C., BURMAŃCZUK A.: Melatonin, a potentially new anti-cancer drug used in animals. (Melatonina, potencjalnie nowy lek przeciwnowotworowy stosowany u zwierząt).

Publication: Medycyna Wet. (Lublin) 68 (6), 321–324, 2012. In Polish, summary in English.

**SUB-DEPARTMENT OF VETERINARY TOXYCOLOGY
AND ENVIRONMENT PROTECTION**

Akademicka 12, Lublin

Head: Prof. Dr. habil. Grażyna Wałkuska

**RESEARCH STUDIES
(SUMMARIES)**

Monika Wojciechowski, Iwona Wolska-Szabała

CLINICAL CASE OF CHLORALOSE INTOXICATION IN A DOG

Przypadek kliniczny zatrucia chlorazą u psa

Chloralose is a compound often used as a rodenticide and has central nervous system effects of excitation and depression. The clinical features of chloralose poisoning depend on the ingested dose. The objectives of this study were to detail the clinical signs, treatment and prognosis of chloralose intoxication in a dog. The clinical signs were hypothermia, seizures, ataxia, salivation and coughing. Treatment was supportive and symptomatic. The prognosis of chloralose intoxication is good, provided that a symptomatic treatment is instituted early.

Publication: Medycyna Wet. (Lublin), 68, 762–764, 2012, tab. 1. In Polish, summary in English.

Index of authors 2012

vol. 51

- Adaszek Ł. 14, 66, **70**, 77
Albera E. 36
Antushevich H. 33
Augustynowicz-Kopeć E. 11
Bachanek T. 28, 43, 44, 47
Badzian B. 48
Balicki I. **55**, **56**, **59**, 60, **61**
Beeger S. 21
Bełkot Z. **71**, **73**, 73, 75
Bieńko M. 36, 37, 46
Bierła J.B. **33**
Bilski T. 70
Bis-Wencel H. 76
Bobowiec R. **79**, **80**, 81, 82, 83, 84, 85
Bochniarz M. **53**, 54
Boguszewska-Czubara A. 27, 30
Bojar W. 14
Boratyński Z. **28**
Borkowski L. **31**
Botermans J. 34, 35, 45, 46
Brodzki A. 39, 57, 59, 61, 63
Brodzki P. **57**, 59, **61**
Brzana A. 77, 77
Buczek K. 61
Budzyńska B. **48**
Burmańczuk A. 87
Bury P. 45
Choma I.M. **17**
Ciesielczuk K. 58
Cywińska A. 51
Czyżewska U. 20, **21**
Dąbrowski A. 28, 45
Dąbrowski R. **54**, 54
Dec M. **22**, **23**, **24**, 24, 67
Dembiński A. 33
Demkowska-Kutrzepa M. 12, **13**, 13, 14
Dębiak P. 61, **62**
Dobrowolski P. **32**, 40, 41, 42
Dobrzyn P. 20
Dobrzyński P. 60
Dziedzic R. 21
Dworecka-Kaszak B. 21
Dzięgiel B. 64
Ehlers J.P. 51
Ericsson S. 32
Fedkiv O. 34, 35, 45, 46
Filip R. 34,45, 46, 47
Garbal M. 64, 70
Gawron A. 32
Giergiel M. 49
Ginalska G. 31
Giorgi M. 83, 85, 87
Gnat S. 21
Godlewski M.M. 46, 47
Golemem M. 59
Goncharova K. 34, 35, 45
Gondek Ł. 71, 73, **73**, 75
Górna M. 64, 65, 66, 67, 70
Graboś D. 36, 46
Grądzki Z. 11, 68, 70
Graż M. 22
Gregorczyk K. 48
Grooms D.L. 24
Grujic D. 34, 35, 45
Gruszecki T.M. **14**, 79
Grzelak E.M. 17
Guz L. **11**, 11
Hola P. 24,
Holickova M. 60
Huet P. 32
Jabłońska M. **84**
Jakubczak A. 47
Janczarek I. 50, **51**, 51
Jankowska A. 33
Jarosz Ł. 70
Jaśkiewicz T. 36, **45**
Jaworska-Adamu J. 27, 29, 30, **30**
Junkuszew A. 14
Kalinowski M. 65, **68**, 70
Kankofer M. 36,49, 50, **51**, 54
Kapica M. **33**, 46, 47
Karlsson P. 32

Karpiński M. 31
 Kazimierczak W. 13
 Kędziński W. **50**, 51, **51**
 Klimiuk P. 65, 67, 77, **77**
 Kmiecik J. 84
 Kocki T. 54
 Kolstrung R. **58**
 Kołodziejki W.L. 60
 Komar M. 54
 Komsta R. 59, **62**, 63
 Koper J. 57
 Kopy L. 48
 Kosior-Korzecka U. 79, **80**, **81**, 84, **84**
 Kostro K. 14, 47, 82
 Kostruba A. 48
 Kovacova Z. **60**
 Kovalenko T. 34, 35, 45, 46
 Kowalczyk K. **48**
 Kowalik S. 51
 Kowalski C. **86**, 86, 87
 Krajewska M. 11
 Krakowski L. 84
 Krawczyk A. **29**
 Krawczyk M. 84
 Krupski W. 28, 38, 40, 43, 44, **45**, 45, 47
 Kruszewska D. 34, 35, 45, 46
 Kutkowska J. 18
 Kutrzuba J. 70
 Lasiecka K. 82
 Leśnowolska-Nowak J. 48
 Lipiec A. 14
 Lipiec M. 11
 Lipko-Przybylska J. **50**
 Lisiecka U. 82
 Listos P. 13, **78**
 Luft-Deptuła D. 70
 Łebkowska-Wieruszewska B. 86, **86**, **87**
 Łojarczyk-Szczepaniak A. 14, **63**
 Łopucki M. 49
 Łopuszyński W. 13, 59, 77
 Łuszczewska-Sierakowska I. **25**, **27**, 28,
28, 40, 43, 44, 45, 47
 Maćkowiak-Dryka D. 73, **73**, 75
 Majer-Dziedzic B. 17, 21
 Malisz P. 60
 Matuszewski Ł. 31
 Matyba P. 47
 Matysek M. 27
 Mazur L. **18**
 Menaszek E. 60
 Michalski M.M. 15
 Mihalova M. 60
 Milczak A. 60
 Miłozowska P. 68
 Modzelewska-Banachiewicz B. 18
 Nestorowicz N. 56
 Niedziela D. 45, **45**, 47
 Nowak M. 48
 Nowakiewicz A. 19, 21, **21**
 Nowakowicz-Dębek B. **76**
 Nowakowski Z. **73**
 Nowicka K. 61
 Nowik M. 20
 Nozdryn-Plotnicki Z. 77
 Ofri R. 56
 Olsson A-Ch. 46
 Ondrasovicova O. **76**
 Orzelski M. **60**, 60, **61**, 61
 Osadchenko I. 34, 35, 46
 Paczos-Grzęda E. 48
 Paprocka R. 18
 Parada-Turska J. 54
 Pasternak K. 39
 Paszkiewicz W. **72**, **74**, 75
 Patkowski K. 79, 80, 84
 Pawłowska M. 28, 31
 Piech T. 57, 61
 Piersiak T. 31
 Pierzynowski S.G. 32, **34**, **35**, 37, **45**,
46, 47, **47**
 Pietrzak P. 33
 Piórkowski J. **77**
 Polkowska I. 31, **57**, **61**, 61
 Prykhodko O. 34, 35, 45, 46
 Puchalski A. 22, 23, 24, **24**, 67
 Puk A. **11**
 Pumała E. 60
 Puzio I. **36**, 40, 45, **46**, 47I.
 Pyrkowska A. 20
 Pysz-Lukasik R. 39, 72, 74, **74**, 75
 Radej S. 23
 Radwańska P. 81, 84
 Radzki R.P. **36**, **37**, 46
 Roliński Z. 87

Rosenbeiger P. 45, 47
 Róžańska D. 60, **60**, 61
 Róžański P. 60
 Rumian Ł. 60
 Rusińska E. 79
 Rymuszka A. **69**
 Saccomanini G. 87
 Sagan A. 36, 45
 Siemieniuk M. 21
 Silmanowicz P. 58, 59, 60
 Siwicki A.K. 42
 Skibo G. 34, 35, 45, 46
 Skrzypczak M. 67, 68
 Skrzypek G. 73
 Skrzypek H. 46
 Skrzypek T. **46**
 Słowik T. 31
 Słowik-Orzelska M. 60
 Sobczyńska-Rak A.
 Sobczyńska-Wolejszo M. 45
 Stachowicz N. 49
 Stachura R. **24**
 Stachurska A. 50, 51
 Stefanowicz Z. 60
 Stępniewska K. 19
 Stodolak-Zych E. 61
 Strawa K. 74
 Strzelec K. 51
 Studzińska M.B. 12, 13, **13**, 14
 Studziński T. 38, 47
 Surma-Kurusiewicz K. 70
 Svendsen J. 34, 35, 45, 46
 Swieboda P. 34
 Szalak R. **27**, 29, 30
 Szczepaniak K.O. 12, **13**, 14, **14**, 63
 Szczubiał M. **54**, 77
 Szkucik K. 74, **74**, **75**
 Szpetna M. 39, 59
 Szpetnar M. 59
 Szponder T. 61, 81
 Szwiec K. 34, 35, 45, 46, **47**
 Szymańczyk S.E. 45, 46, **47**
 Szyszkowska A. 57
 Śliwa E. 27, 28
 Ślósarczyk A. 31, 57
 Śmiech A. 61, 76
 Świeboda P. 35, 45, 46, 47
 Tatar M.R. 27, 28, **38**, **39**, **40**, 43, 44,
 45, **47**, 59
 Tokarzewski S. 19, **19**, 24
 Tomaszewska E. 32, **40**, **41**, **42**
 Tomczuk K. 12, **13**, **14**, **15**
 Trbolova A. 60, 61
 Twardowski P. 63
 Tylicki A. **20**, 21
 Tymczyna B. **28**, 28, 38, 40, **43**, **44**, 45, **47**
 Tymczyna-Sobotka M. 28, 43, 44, 47
 Urban-Chmiel R. 22, 23, 24, **24**
 Ushakova G. 34, 35, 45, **46**, 46
 Valverde Piedra J.L. 34, 35, 46, 47
 Wallner G. 45
 Waško A. 23
 Wawron W. 53
 Wawrzykowski J. 51
 Wawrzyniak U.E. 18
 Wawrzyniak-Gacek A.. 27, **30**
 Wernicka-Furmaga R. **64**, 68, 70
 Wernicki A. 22, 23, 24
 Wessely-Szponder J. **81**, **84**
 Weström B. 34, 35, 45, 46, 47
 Wilk I. 51
 Winiarczyk S. 64, 65, 66, 67, 68, 70
 Witkowska A. 14
 Witkowska K. 84
 Wlazło Ł. 76
 Wnuk W. 76
 Wojciechowski M. **88**
 Wolska-Szabała I. 88
 Wójcik M. 74, 80, 81, **82**, **83**, 84, **85**
 Wydrych J. 42
 Zabielski R. 33, 46, **47**
 Zabost A. 11
 Zań R. **87**
 Zięba P. 21
 Ziętek-Barszcz A. 68
 Ziętek J. 70
 Zimecki M. 18
 Ziółkowska G. 18, 19, 20, 21, **21**
 Zoń A. 76
 Żylińska B. 60, **61**, 61, 63