
EXCERPTA
VETERINARIA
LUBLIN

Vol. 46 (2007) UNIVERSITY OF LIFE SCIENCES IN LUBLIN 2008

PUBLISHED ANNUALLY
BY
THE FACULTY OF VETERINARY MEDICINE

Editor
Grażyna Ziółkowska

Secretary
Grażyna Wrzosek-Łobocka

© Copyright by Wydawnictwo Uniwersytetu Przyrodniczego w Lublinie, Lublin 2008

ISSN 0239-3298

Technical editor
Ewa Różycka

Project of cover
Barbara Jarosik

WYDAWNICTWO UNIwersYTETU PRZYRODnicZEGO W LUBLINIE

Nakład 350 + 16 egz. Ark. wyd. 6,6. Zam. 50/2008
Skład i druk: Pracownia Poligraficzna UP w Lublinie

CONTENTS

Preface	5
FACULTY OF VETERINARY MEDICINE, Lublin 2007	6
Institute of Biological Bases of Animal Diseases	12
Sub-Department of Fish Diseases and Biology	12
Sub-Department of Parasitology and Invasive Diseases	14
Sub-Department of Poultry Diseases	17
Sub-Department of Veterinary Microbiology	19
Sub-Department of Veterinary Prophylaxis	26
Department of Anatomy and Animal Histology	27
Sub-Department of Animal Anatomy	27
Sub-Department of Histology and Embryology	33
Department of Biochemistry and Animal Physiology	35
Sub-Department of Animal Physiology	35
Sub-Department of Biochemistry	58
Department and Clinic of Animal Internal Diseases	63
Department and Clinic of Animal Reproduction	68
Department and Clinic of Animal Surgery	72
Laboratory of Radiology and Ultrasonography	77
Department of Epizootiology and Clinic of Infectious Diseases	78
Department of Food Hygiene of Animal Origin	84
Department of Pathological Anatomy	89
Department of Preclinical Veterinary Science	91
Sub-Department of Pathophysiology	91
Sub-Department of Pharmacology	95
Sub-Department of Toxicology and Environment Protection	100
Index of authors	103

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, Poland, 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 2007

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, 8 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. Andrzej Wernicki

Vice Dean: Prof. extraordin. Dr. habil. Zbigniew Gładzki
Prof. ordin. Dr. habil. Stanisław Winiarczyk

Professors

Prof. ordin. Dr. habil. Ryszard Bobowiec
Prof. Dr. habil. Zbigniew Boratyński
Prof. ordin. Dr. habil. Regina Cybulska
Prof. Dr. habil. Wojciech Cybulski
Prof. extraordin. Dr. habil. Zbigniew Gładzki
Prof. Dr. habil. Marta Kankofer
Prof. ordin. Dr. habil. Krzysztof Kostro
Prof. extraordin. Dr. habil. Cezary Kowalski
Prof. Dr. habil. Leszek Krakowski
Prof. extraordin. Dr. habil. Zbigniew Nozdryn-Płotnicki
Prof. ordin. Dr. habil. Elżbieta Pełczyńska

Prof. ordin. Dr. habil. Zbigniew Pomorski
Prof. ordin. Dr. habil. Jerzy Rzedzicki
Prof. Dr. habil. Andrzej Bernard Sadzikowski
Prof. Dr. habil. Piotr Silmanowicz
Prof. extraordin. Dr. habil. Antonina Sopińska
Prof. Dr. habil. Krzysztof Szkucik
Prof. ordin. Dr. habil. Władysław Wawron
Prof. ordin. Dr. habil. Andrzej Wernicki
Prof.ordin. Dr. habil. Stanisław Winiarczyk
Prof. extraordin. Dr. habil. Zygmunt Wrona
Prof. Dr. habil. Grażyna Ziółkowska
Dr. habil. Marcin Arciszewski
Dr. habil. Ireneusz Balicki
Dr. habil. Jadwiga Jaworska-Adamu
Dr. habil. Hanna Lutnicka
Dr. habil. Barbara Majer-Dziedzic
Dr. habil. Zygmunt Nowakowski
Dr. habil. Iwona Puzio
Dr. habil. Marek Szczubiał
Dr.habil. Jose Luis Valvedre Piedra
Dr. habil. Grażyna Wałkuska

Assistants, adjuncts and lecturers: 84

Technicians: 57

Received the degree of Doctor of Veterinary Science: 9

Received the degree of Doctor habil.: 2

Students: 1041

Received the diploma of veterinary surgeon: 135

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 Agricultural University

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
Internal diseases of companion animals	30	60	VII, VIII	E
Epidemiology and zoonoses***	30	15	VIII	C

1	2	3	4	5
Veterinary pharmacy	15	15	VII	C
Clinical analyses	-	30	VIII	C
Veterinary ophtalmology***	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	3885 hours
Optional subject	150 hours
Clinical practices	315 hours
<hr/>	
Total	4350 hours

Professional trainings

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

**RESEARCH ACTIVITY
OF VETERINARY MEDICINE FACULTY**

(Published in 2007)

INSTITUTE OF BIOLOGICAL BASES OF ANIMAL DISEASES

30 Głęboka, Lublin

Head: Prof. ordin. Dr. habil. Jerzy Rzedzicki

SUB-DEPARTMENT OF FISH DISEASES AND BIOLOGY

Akademicka 12, Lublin

Head: Prof. extraordin. Dr. habil. Antonina Sopińska
Dr. habil. Hanna Lutnicka

RESEARCH STUDIES (SUMMARIES)

Leszek Guz, Adam Waško, Antonina Sopińska, Marian Jamroz

EXTRACELLULAR PROTEASE PRODUCTION BY *Moritella viscosa*

Moritella viscosa (*Vibrio viscosus*) is a psychrotrophic bacterium found in winter ulcers in salmonids in Norway, Iceland, Scotland, Denmark, Ireland, and Canada, first described as *Vibrio viscosus*. *Moritella viscosa* infections have been detected in various fish species in the field, including salmon, cod, plaice, rainbow trout, and lumpfish. Affected farmed fish were lethargic, dark in colour, showed gill pallor, and exophthalmos. Extracellular, epidermal ulcers were recorded on the scale-covered areas and ranged in diameter from 0,5 to 2,0 cm. The ulcers were superficial or penetrated to the musculature. The disease occurs most frequently at low temperatures, thus explaining the name 'winter ulcer'.

The aim of this study was to investigate the biochemical properties of the bacterium and effect of incubation temperature upon the composition of extracellular proteases produced by *M. viscosa* strain.

The biochemical properties of the bacterium corresponded with those described for a novel *Vibrio* sp. by Lunder [1992] named *Vibrio viscosus*, and Benediktsdottir *et al.* [2000]. The *M. viscosa* cultures were sensitive to amoxicillin, oxolinic acid and oxytetracycline.

The bacteria were grown at 6°C and 16°C for 162 h. Our experiment show that growth of bacteria was considerably slower at 6°C than at 16°C. At 16°C the bacterial growth with its maximum effect after 96 h of incubation time. The lowest caseinase activity was observed in the supernatant fluid of culture grown at 16°C for 124 h. The cultures grown at 6°C showed the lowest bacterial growth, and highest caseinase activity reached its maximum after 48 h of incubation time. Moreover, the elastase activities were not recorded at both 6°C and 16°C.

Substrate gel electrophoresis with gelatin or casein as the substrates demonstrated that *M. viscosa* strain produced two different bands showing proteolytic activity. None of them was affected by the treatment with β -mercaptoethanol. Substrate gel electrophoresis with gelatin and casein as the substrates showed that *M. viscosa* strain had two different proteinase bands, 73,5 kDa and 67,5 kDa. The influence of temperature of incubation on the types of produced proteases was slight so all the proteases detected were produced at both 16°C and 6°C.

Publication: Annales UMCS (Lublin), sectio DD, 62, 95–102, 2007, fig. 3, tab. 1. In English, summary in Polish.

OTHER PUBLICATIONS

LUTNICKA H.: The influence of pesticides on freshwater fish tissues and organs [in:] The fish health protection on fish farms, ed. by J. Żelazny. (Wpływ zanieczyszczenia wód powierzchniowych pestycydami na patologię tkanek i narządów ryb słodkowodnych [w:] Ochrona zdrowia w gospodarce rybackiej).

Publication: Wydawnictwo PIWet-PIB Puławy, 129–138, 2007, In Polish.

SUB-DEPARTMENT OF PARASITOLOGY AND INVASIVE DISEASES

Akademicka 12, Lublin

Head: Prof. Dr. habil. Andrzej Bernard Sadzikowski

RESEARCH STUDIES (SUMMARIES)

Maciej Klockiewicz, Jarosław Kaba, Krzysztof Tomczuk,
Ewa Janecka, Krzysztof Rypuła, Andrzej Bernard Sadzikowski,
Maria Studzińska, Jacek Małecki-Tepicht

THE EPIDEMIOLOGY OF CALF COCCIDIOSIS (*Eimeria* spp.) IN POLAND

The field survey has been performed to study the epidemiology of calf coccidiosis in Poland. It was found that the *Eimeria* spp. coccidia occurred on 93.0% of the investigated farms. *E. bovis* and *E. zuernii* were found more frequently in bigger farms (92.3%) compared to smaller ones (85.1%). However, the intensity of *E. bovis* as well as *E. zuernii* infection remained, in most cases low – 75.4 and 79.8% or moderate – 21.3 and 18.5%, respectively. The intensity of those infections was, $3.1 \times$ and $1.9 \times$ higher in big farms, respectively.

Publication: Parasitol. Res. 101, 121–128, 2007, tab. 10. In English.

Maciej Klockiewicz, Jarosław Kaba, Krzysztof Tomczuk,
Ewa Janecka, Krzysztof Rypuła, Andrzej Bernard Sadzikowski,
Maria Studzińska, Jacek Małecki-Tepicht

OCCURRENCE OF COCCIDIOSIS IN CALVES IN SOME REGIONS IN POLAND

Występowanie kokcydiozy cieląt w wybranych regionach Polski

The epidemiology of calf coccidiosis in Poland has been investigated currently. The estimation of coccidiosis prevalence was performed on 86 herds from 12 districts. It was found that 93% of herds were infected with *Eimeria* spp. while highly pathogenic species: *E. zuernii* and/or *E. bovis* occurred in 88,4% of

herds. It was also noticed that these highly pathogenic species occurred more often in bigger herds.

Publication: Życie Wet. 82, 674–675, 2007, fig. 2, tab. 1. In Polish, summary in English.

Krzysztof Tomczuk, Andrzej Bernard Sadzikowski,
Maria Bernadeta Studzińska, Anna Witkowska, Andrzej Puchalski

**ANTIBODIES TO *NEOSPORA CANINUM* IN SERA OF COWS FROM MEDIUM
AND SMALL FARMS NEAR LUBLIN**

**Przeciwciała przeciwko *Neospora caninum* w surowicach krów
z niewielkich gospodarstw okolic Lublina**

Sera of 188 cows from 14 farms near Lublin were examined with ELISA. Anti-*Neospora caninum* antibodies were detected in 7 animals (3.72% examined). All seropositives cows were bought, 3 of them were daughters of cows imported from the Netherlands. Only one out of seven seropositives cows showed disorders in reproduction (infertility).

Publication: Annales UMCS (Lublin) sectio DD 62, 50–54, 2007, tab. 1. In Polish, summary in English.

REPORTS TO RESEARCH MEETINGS

TOMCZUK K., SADZIKOWSKI A.B., STUDZIŃSKA M., WITKOWSKA A., DEMKOWSKA M., SZCZEPANIAK K.: Occurrence of *Strongylus equinus*, *Strongylus edentatus* and *Strongylus vulgaris* in horses in the South-East Poland. (Das Vorkommen von *Strongylus equinus*, *Strongylus edentatus* und *Strongylus vulgaris* bei Pferden in Sud-Ostpolen). Ref. Tagung der DVG-Fachgruppe „Parasitologie und parasitäre Krankheiten“) Celle. 4–6 VI 2007.

Publication: Diagnostik, Epidemiologie und Bekämpfung von Parasitosen bei Nutz-, Haus- und Heimtieren, 62, 2007. In German.

KLOCKIEWICZ M., KABA J., TOMCZUK K., JANECKA E., RYPUŁA K., SADZIKOWSKI A.B., STUDZIŃSKA M., MAŁECKI-TEPICHT J. : The epidemiology of calf coccidiosis (*Eimeria* spp.).

Publication: Proc. XXIth Int. Conf. WAAVP „From EPG to Genes” Gent, 56–57, 2007. In English

OTHER PUBLICATIONS

SADZIKOWSKI A.B.: Animals the source of parasitic invasions for humans. Invasions of Acarina. (Zwierzęta źródłem inwazji pasożytów dla człowieka. Inwazje roztoczy).
Publication: Aktualności AR (Lublin) 11, 19, 2007. In Polish.

SADZIKOWSKI A.B.: Animals the source of parasitic invasions for humans. Malaria (Zwierzęta źródłem inwazji pasożytów dla człowieka. Malaria (Zimnica)).
Publication: Aktualności AR (Lublin) 11, 19, 2007. In Polish.

SADZIKOWSKI A.B.: Animals the source of parasitic invasions for humans. Leishmaniosis. (Zwierzęta źródłem inwazji pasożytów dla człowieka. Leiszmaniozy).
Publication: Aktualności AR (Lublin) 11, 19, 2007. In Polish.

SADZIKOWSKI A. B., TOMCZUK K., STUDZIŃSKA M. B.: Parasitofauna of hares from corral breeding [in:] From science to hunting. Part I. The small wild animals crisis and the ways of counteraction. Part II. Hare on rescue. (Parazytfauna zajęcy z hodowli kwaterowej [w:] Nauka łowiectwu cz. I. Kryzys zwierzyny drobnej i sposoby przeciwdziałania, cz. II. Zającowi na ratunek).
Publication: Mazowsze, Warszawa, 89–92, tab. 3, 2007. In Polish.

SUB-DEPARTMENT OF POULTRY DISEASES

Akademicka 12, Lublin

Head: Prof. ordin. Dr. habil. Jerzy Rzedzicki

RESEARCH STUDIES (SUMMARIES)

Agnieszka Kolasa, Jerzy Rzedzicki, Monika Skowron

THE INFLUENCE OF SELECTED ANTIBIOTICS THERAPY OF HENS ON THE *Salmonella* Enteritidis PRESENCE IN EGG CONTENTS

One of the methods which can reduce *Salmonella* transmission from the reproductive tract tissues to eggs can be application of antibiotic therapy to infected hens. The researches on the antibiotics effectiveness in salmonellosis therapy have shown that this action can decrease only the number of bacterial population but it did not make total elimination of bacteria. The current paper describes influence of the therapy of hens with selected antibiotics on the presence *Salmonella* Enteritidis in egg contents. The examinations were conducted in two stages. In the first stage, the hens were infected experimentally with *Salmonella* Enteritidis. In the second stage, the infected hens were treated with selected antibiotics (enrofloxacin, norfloxacin, flumequine, amoxicillin and amoxicillin-clavulanic acid). In the present study *S. Enteritidis* was isolated from eggs which were laid from 12 to 24 day interval post inoculation in all experimental groups but on each day the quantity of infected eggs was various. On the 24 day post inoculation, there was the highest amount (29.4%) of all contaminated eggs. After antibiotic therapy of hens in some groups, no infected eggs were detected. It referred to the birds which were treated with enrofloxacin and norfloxacin. The result of the therapy with amoxicillin, amoxicillin-clavulanic acid and flumequine in the other groups was only reduction of infected eggs quantity. To sum up, the findings presented above demonstrate that the antibiotic therapy of hens infected with *Salmonella* Enteritidis has not been always effective in the elimination of these bacteria from the tissues of reproductive tract but the therapy with enrofloxacin and norfloxacin can eliminate the possibility of salmonellas transmission into egg contents. Moreover, these examinations have revealed the correlation between infection of reproductive tract organs (ovary,

oviduct) and the contents of eggs (yolk, white) which were laid by the hens infected with *Salmonella* Enteritidis.

Publication: Medycyna Wet. (Lublin) 63, 1168–1171, 2007, fig. 1, tab. 3. In English, summary in Polish.

REPORTS TO RESEARCH MEETING

KOLASA A., RZEDZICKI J., SKOWRON M.: Antibiotic resistance of *Salmonella* spp. (Antybiotykooporność pałeczek *Salmonella*).

Ref. Conference: „Monitoring of hazards in poultry farming”. Wrocław, 7–8 IX 2007.

Publication: Proceedings of the Conference „Monitoring of hazards in poultry farming”, 61–72, 2007, In Polish.

OTHER PUBLICATIONS

KOLASA A.: The current methods of diagnostics of *Salmonella* infections in poultry. (Współczesne metody diagnostyki zakażeń pałeczkami *Salmonella* u drobiu.)

Publication: Magazyn Wet. Suplement-drób, 10–12, 2007. In Polish.

SKOWRON M.: Angara disease. (Choroba Angara).

Publication: Weterynaria w terenie, 1, 44–46, 2007. In Polish.

PYZIK E.: Ornitobacteriosis of birds. (Ornitobakterioza ptaków).

Publication: Weterynaria w terenie, 4, 25–29, 2007. In Polish.

SUB-DEPARTMENT OF VETERINARY MICROBIOLOGY

Akademicka 12, Lublin

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

RESEARCH STUDIES (SUMMARIES)

Aneta Nowakiewicz, Grażyna Ziółkowska

PHENOTYPIC CHARACTERISTIC OF *Malassezia pachydermatis*

Fenotypowa charakterystyka szczepów *Malassezia pachydermatis*

Yeast like fungi of *Malassezia pachydermatis* species are numbered among the opportunistic agents accounting for the acute dermatoses or even systemic infections in man and animal. They exhibit the clear heterogeneity pertaining to the phenotypic traits and growth requirements. The objective of the present work was to determine a variation degree as well as the biochemical profiles of *M. pachydermatis* strains. The studies were conducted on 40 strains isolated from the auditory canal of the healthy dogs and with otitis externa symptoms recognized. There were assessed the traits of fungus morphology (size and shape of cells and a colony type), expression of extracellular hydrolases (API-ZYM) and the activity of catalase, urease, caseinase, beta-glucosidase, phospholipase and Tween hydrolases: 20, 40, 60 and 80. The obtained results allowed to determine the general metabolism pattern for this species: no fermentability or capacity for assimilation of most carbohydrates, poor proteolytic properties, high activity of enzymes from the phosphatase and lipolytic enzymes groups. On the grounds of the statistical analysis, the examined strains were classified into 7 separate groups of the congenial morphology and a determined level of enzymatic activity. Biotype I includes the big, smooth and creamy-white colonies of high metabolic activity; besides, they exhibit high sensitivity to the inhibitory operation of Tween 20 and Cremophor EL; biotype II shows a rough type of colony growth, the lowest metabolic activity and a lack of expression of lipase C14 and enzymes from the arylamidase group; biotype III comprises the strains of big, smooth colonies, poor total enzymatic activity and with no activity of cystinic arylami-

dase; biotype IV includes the strains of small and smooth colonies, the average metabolic activity but with optimal usability of Tween 40 and 60 hydrolysis products for growth; biotype V groups the strains of the average metabolic activity and without phospholipase activity recorded; biotype VI comprises the strains of smooth, big or medium-sized colonies and a relatively high enzymatic activity and the highest level for alkaline phosphatase and valine arylamidase, phospholipase, catalase, casein, Tween 80 hydrolase; biotype VII is characterized by the highest total enzymatic activity, high capacity for esculin break-down, Tween 40, 60, 80 hydrolysis. The further studies are needed to demonstrate a correlation between the strain classification into a defined biotype and its ecologic or clinical status.

Publication: Medycyna Wet. (Lublin) 63, 448–454, tab. 6. In Polish, summary in English.

Aneta Nowakiewicz, Grażyna Ziółkowska

**A PHENOTYPIC CHARACTERISTICS OF *Malassezia pachydermatis*
II. A PROFILE OF PATHOGENICITY**

Fenotypowa charakterystyka szczepów *Malassezia pachydermatis*
II. Profil patogenności

A recently observed change in a *Malassezia* strain profile manifested itself with the isolation of *M. pachydermatis* species from the cases of human skin lesions and the presence of a lipid-dependent strain in the pathologic material obtained from dogs, combined with high phenotypic variation within *M. pachydermatis* species causes numerous diagnostic difficulties. Considering a fact that morphological and physiological heterogeneity may exhibit a correlation with strain pathogenicity, the objective of the work was to determine the fungus phenotypic characteristics which are likely to be associated with its pathogenicity.

Evaluation included the morphological traits of fungus (cell size and shape as well as colony type), expression of extracellular hydrolases (API-ZYM) and the activity of catalase, urease, casein, beta-glucosidase, phospholipase and Tween hydrolases: 20, 40, 60 and 80.

Considering a source of the analyzed strains origin as a differentiation criterium (animals healthy clinically and with otitis externa symptoms), it was found that the isolates obtained from the pathologic material were generally (80%) characterized with a smooth growth type of light cream, large or medium-sized colonies as well as high activity of lipolytic enzymes, like phospholipase and

hydrolase Tween 80 and valine arylamidase, cystine arylamidase and basic phosphatase. Determination of a profile of *M. pachydermatis* phenotypic characteristics may substantially facilitate defining the pathogenicity of the strains isolated directly from the clinical material.

Publication: Medycyna Wet. (Lublin) 63, 721–726, tab. 6. In Polish, summary in English

Stanisław Tokarzewski, Grażyna Ziółkowska,
Wojciech Łopuszyński, Zbigniew Nozdryn-Płotnicki

Aspergillus fumigatus INFECTION IN PIGEON FLOCK

An aspergillosis outbreak in a flock of near 350 pigeons was described clinically, microbiologically and histopathologically. The pigeons showed dyspnoea, depression, rattling, and dyskinesia, and numerous cases of death were noted. Five young moribund pigeons, litter, and fodder were examined. The examinations were conducted according to the generally accepted methodologies and recommendations for mycological diagnostics. Paraffin sections of the lungs, trachea, pharynx, and thoracic air sacs were stained with haematoxylin and eosin and periodic acid-Schiff method. The mycological examinations demonstrated the presence of *Aspergillus fumigatus* cells in swabs from the beak cavity of living birds and in the lungs and air sacs examined post mortem. The presence of *Candida albicans* and single isolates of *Penicillium* sp. and *Scopulariopsis* sp. were also detected in the beak cavity. The mycological examinations of bedding (coniferous shavings) showed its evident contamination. The dominant presence of *A. fumigatus* and some colonies of *Mucor* sp., *Acremonium* sp., and *Trichoderma* sp. was recorded. A feed supplied, regardless of its kind, did not contain any *A. fumigatus* cells. Macroscopically, white-yellowish nodules observed in the lung and air sacs corresponded to acute aspergillosis lesions. Histopathological analysis of the affected organs displayed multifocal areas of necrosis, inflammatory infiltration, and the presence of fungal hyphae, giant cells, and fibrous tissue proliferation at the periphery of the nodules were noted.

Publication: Bull. Vet. Inst. Pulawy 51, 563–567, fig. 4. In English, summary in Polish.

Grażyna Ziółkowska, Aneta Nowakiewicz

PROTEIN PROFILES OF SUPERFICIAL ANTIGENS *Malassezia pachydermatis* STRAINS

Profile białkowe antygenów powierzchniowych *Malassezia pachydermatis*

Malassezia pachydermatis is one of common commensals of skin and mucous membranes, but in some cases it can cause infections, such as otitis externa or dermatitis, especially in dogs. Using comparative analysis of antigenic structure of strains obtained from the healthy dogs and from those with the clinical symptoms of infection, can be helpful in evaluating the pathogenic features of this yeast.

Obtaining and standardization of the conditions for the surface antigens *M.pachydermatis* isolation was followed by the protein profiles analysis of strains obtained from the healthy dogs and from those with the clinical symptoms of otitis externa.

The research material involved the surface antigens of *M.pachydermatis* strains obtained from the healthy dogs (n = 20) and from those with the clinical symptoms of otitis externa recognized (n = 20). The antigenic preparations were obtained from a 3-day culture of each strain, subjected to the elution with a merthiolate water solution for 1, 3 and 24 h. The protein profile preparations were determined on the grounds of the material electrophoretic separation at the denaturation (SDS-PAGE) and the electrophoregrams analysis with Gel Doc 2000.

The high diversity and complex structure of individual antigen preparations were demonstrated. The strains isolated from the diseased animals, exhibited a clear stronger expression of surface protein antigens and their higher diversity (amount of fractions was averaged 11) comparison with commensalic strains in which the amount of fraction was averaged 5. Superficial antigens of investigated strains showed the presence of common fractions: 68–71, 57–58, 45–46 kDa. In addition, higher frequency of typical fractions for protein profiles of superficial antigens of *M. pachydermatis* pathogenic strains was shown 61–64, 52–53, 43–44, 38–39 i 15–17 kDa (Tab. 2) whereas their presence was not demonstrated for superficial antigens of commensalic strains. Besides, the protein profiles of superficial antigens of „pathogenic” strains were characterized, in relation to commensalic strains, by increased frequency of the following fractions: 59–60, 55–56, 49–50, 36–37, 32–33, 27–28, 25–26, 22–23, 18–20 i 13–14 kDa. Assuming that 50% of a specific fraction is a terminal value, the presence of bands 55–56, 36–37, 27–28 i 18–19 kDa can possibly, in combination with

the presence of typical fractions, suggest pathogenicity of specific *M. pachydermatis* strain.

1. *M. pachydermatis* strains obtained from diseased animals are marked by high protein expression.

2. Protein profiles of superficial antigens are characterized by the presence of fractions found in strains isolated from diseased dogs, fractions found statistically significant in pathogenic strains.

3. The correlation between the origin of the strains and the presence of a given antigenic fraction in its protein profile can suggest a possibility of protein markers of pathogenicity in these fungi.

Publication: Mikol. Lek. 14, 221–226, fig. 7, tab. 3. In Polish, summary in English.

Grażyna Ziółkowska, Stanisław Tokarzewski

OCCURRENCE OF MOULDS IN REPRODUCTIVE GOOSE FLOCKS IN SOUTHERN-EASTERN POLAND

The aim of study was the evaluation of mould incidence in reproductive geese flocks in relation to their environmental conditions. The studies covered 17 farms of reproductive White Italian geese breed in the south-eastern region of Poland. The flock ranged from 190 up to 800 birds provided with permanent veterinary care. The prophylactic programmes included vaccination against Derzsy's disease as well as regular treatment with anthelmintics. The research focused on the assessment of mycotic flora, mainly because the moulds occurring in geese are related to a flock size, type of farm building, laying, and the month in the year. The samples of the swabs from beak cavity and cloaca were collected from 10 randomly selected birds from each flock. Totally, 920 samples from 460 geese were examined. To isolate moulds, the material was inoculated on the Sabouraud solid medium supplemented with chloramphenicol and incubated together at 25°C and 37°C for about 14 d. In the monitored flocks, a high rate of birds contaminated with the moulds was recorded. The presence of fungi was found in 335 (72.8%) of the birds. From the collected material 19 genera of fungi were obtained and their incidence frequency was highly different. The following fungi were isolated most often: *Cladosporium* sp. (19.57%), *Acremonium* sp. (18.04%), *Aspergillus* sp. (13.91%) and *Penicillium* sp. (12.83%),

while some rarer proved to be *Altenaria* sp. (7.83%), *Paecilomyces* sp. (7.61%), *Mucor* sp. (7.17%), *Scopulariopsis* sp. (6.09%), *Chrysosporium* sp. (5.66%) and *Fusarium* sp. (4.13%). The other genera of fungi, i.e. *Pithomyces* sp., *Sporothrix* sp., *Scedosporium* sp., *Trichosporon* sp., *Verticillium* sp., *Phoma* sp., *Trichothecium* sp., *Chaetomium* sp. and *Beauveria* sp. occurred sporadically and their isolation percentage oscillated from 3.48% to 0.87%. Among *Aspergillus* sp., *Aspergillus fumigatus* (66%), *A. versicolor* (17%) and *A. flavus* (9%) dominated. *A. glaucus*, *A. nidulans* and *A. clavatus*, however, occurred sporadically and their isolation percentage ranged from 2 up to 4%.

Publication: Bull. Vet. Inst. Pulawy 51, 553–561, fig. 7, tab. 2. In English, summary in Polish.

REPORTS TO RESEARCH MEETINGS

ZIÓLKOWSKA G., TOKARZEWSKI S.: Treatment and the prevention of mycotic infections – current problems. (Leczenie i profilaktyka infekcji grzybiczych – aktualne problemy).

Ref. International Conference „Monitoring of hazards in poultry farming” Wrocław, 7–8 IX 2007.

Publication: Proceedings of the Conference (Monograph), 160–170, 2007. In Polish.

TOKARZEWSKI S., ZIÓLKOWSKA G.: *Aspergillus* genus – species diversifying but the sensitivity to antifungal preparations. (Grzyby z rodzaju *Aspergillus* – różnicowanie gatunkowe a wrażliwość na preparaty antygrzybicze).

Ref. International Conference „Monitoring of hazards in poultry farming” Wrocław, 7–8 IX 2007.

Publication: Proceedings of the Conference (Monograph), 170–173, 2007. In Polish.

TYLICKI A., ZIÓLKOWSKA G., CZERNIECKI J., BOŁKUN A., SIEMIENIUK M., NOWAKIEWICZ A.: Changes in activity and kinetic properties of pyruvate decarboxylase and malate dehydrogenase in *Candida* and yeast caused by thiamine antivitamin.

Ref. XXXII FEBS Congress, Viena, Austria, 7–12 VII 2007.

Publication: FEBS Journals, 274, suppl. 1, 363, 2007. In English.

OTHER PUBLICATIONS

MAJER-DZIEDZIC B.: Hemorrhagic disease of hares, diagnosis and prophylaxis attempts. [in:] From science to hunting Part I. The small wild animals crisis and the ways of counteraction (Choroba krwotoczna zający, rozpoznanie i próby profilaktyki) [w:] Nauka łowiectwu cz. I. Kryzys zwierzyny drobnej i sposoby przeciwdziałania.

Publication: Mazowsze, Warszawa, 3, 73–75. In Polish, summary in English.

NOWACZYK P., DEPTUŁA W., FITZNER A., MAJER-DZIEDZIC B.: Immune – hematologic picture in rabbits with EBHS virus experimentally – induced. [in:] From science to hunting Part I. The small wild animals crisis and the ways of counteraction (Obraz immunologiczno-hematologiczny u królików eksperymentalnie zakażonych wirusem EBHS) [w:] Nauka łowiectwu cz. I. Kryzys zwierzyny drobnej i sposoby przeciwdziałania.

Publication: Mazowsze, Warszawa, 5, 84–88. In Polish, summary in English.

SUB-DEPARTMENT OF VETERINARY PROPHYLAXIS

Akademicka 12, Lublin

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

REPORTS TO RESEARCH MEETINGS

BEDNAREK D., URBAN-CHMIEL R., SZYMAŃSKA-CZERWIŃSKA M.: Cellular Immune Response of Calves to *M. haemolytica* leukotoxin.

Ref.: III International Conference "Production Diseases in Farm Animals". 29 VII–4 VIII, 2007, Leipzig, Germany.

Publication: Proc. XIII International Conference „Production Diseases in Farm Animals”. 527, 2007. In English.

WERNICKI A., URBAN-CHMIEL R.: Stress in calves as a predisposing factor of diseases (Stres u cieląt jako czynnik usposabiający do występowania chorób).

Ref. Conference „Newborn and environment”, part 3, 8 XII 2007, Wrocław, Poland.

Publication: Proceedings of the Conference „Newborn and environment part 3”, 143–157, 2007. In Polish.

PUCHALSKI A., KOLASA A.: Electrophoretic characterization of outer membrane proteins of selected strains of *Salmonella* Enteritidis. (Charakterystyka elektroforetyczna białek błony zewnętrznej wybranych szczepów *Salmonella* Enteritidis).

Ref. Post. Conference: „Monitoring of hazards in poultry farming”. 7–8 IX 2007 Wrocław, Poland.

Publication: Proceedings of the Conference „Monitoring of hazards in poultry farming”, 111–113, 2007. In Polish.

OTHER PUBLICATIONS

MONBUREAU F., STERCKX S., AUFRAY N., SEBASTIANO L.M., VERMERSCH D., CYBULSKI W., KOWALSKA PYŁKA H., URBAN – CHMIEL R., DESFONTIS J.C., MALBERT C.H., FRASLIN J.M., STANDARDI A., MARIN D.I., ROMAN G.V., NESTOR E., NEGRI V., ARSENE G.G., RISTONI S. GALLEN L., KOUTSOU S.: Bioethics in life and environmental sciences. Animal housing system, behaviour and welfare. (Bioethique en sciences de la vie et de l’environnement. Systèmes de logement, bien- être et comportement des animaux).

Publication: Timisoara, Brumar, 83–100. In English. 91–110. In French 2007.

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
Dr. habil. Marcin Arciszewski

RESEARCH STUDIES (SUMMARIES)

Marcin Bartłomiej Arciszewski

EXPRESSION OF NEURONAL NITRIC OXIDE SYNTHASE IN THE PANCREAS OF THE SHEEP

In numerous mammals, nitric oxide (NO) influences the activity of the exocrine and endocrine pancreas. In this study, immunocytochemistry was utilized to investigate the expression of neuronal nitric oxide synthase (nNOS) in the pancreas of sheep. In double immunocytochemical staining, the co-localization of nNOS with vasoactive intestinal polypeptide (VIP), neuropeptide Y (NPY) or substance P (SP) was studied. The presence of nNOS was confined to the intrapancreatic neurones ($9.6 \pm 1.3\%$) as well as to nerve fibres of the endocrine pancreas and intrapancreatic ganglia. nNOS-immunoreactive (IR) neurones were round and oval in shape and predominantly ($83.3 \pm 2.6\%$) belonged to the middle-size group (25–50 μm). Numerous, fine islets supplying nNOS-IR nerve terminals were devoid of VIP, SP or NPY. Moderately numerous, non-varicose nNOS-IR nerve fibres of intrapancreatic ganglia frequently expressed VIP or NPY, but not SP; $2.2 \pm 0.6\%$ of nNOS-IR intrapancreatic neurones displayed

lack of VIP, whereas $7.5 \pm 0.8\%$ were VIP-IR. All nNOS-IR neurones were devoid of SP. The frequencies of nNOS-IR/NPY-IR and nNOS-IR/NPY-negative intrapancreatic neurons were $2.2 \pm 0.4\%$ and $6.1 \pm 1.1\%$, respectively. Comparison with other mammals indicated that nitrergic innervation of the ovine pancreas is species-determined and may be the reflection of the ruminants' digestion specificity. The possible origin of nNOS-IR nerve fibres and functional significance of NO in the pancreas of sheep were discussed.

Publication: Anatom. Histol. Embryol. 36, 375–381, 2007, fig 4. In English, summary in English

Marcin Bartłomiej Arciszewski, Krzysztof Wąsowicz

NEUROCHEMICAL PROPERTIES OF THE MIDDLE CERVICAL GANGLION IN THE SHEEP

The neurochemical properties of the ovine middle cervical ganglion (MCG) were studied using antibodies raised against tyrosine hydroxylase (TH), dopamine β -hydroxylase (D β H), neuropeptide Y (NPY), substance P (SP), calcitonin gene-related peptide (CGRP), vasoactive intestinal polypeptide (VIP) and galanin (GAL). Double-labelling immunocytochemistry revealed that the vast majority ($95.5 \pm 0.8\%$) of postganglionic sympathetic MCG neurons expressed simultaneously both catecholamine-synthesizing enzymes (neurons were TH/D β H-positive). A large population of noradrenergic neurons exhibited immunoreactivity (IR) to NPY ($62.2 \pm 2.2\%$), but single NPY-positive perikarya-lacking noradrenergic markers were also observed ($2.0 \pm 0.3\%$). None of the examined MCG neuronal somata contained SP, CGRP, GAL or VIP. A moderate number of noradrenergic nerve fibres located amongst neuronal cell bodies was also found. In small number of these terminals the presence of NPY or GAL (but not CGRP or VIP) was detected. The ovine MCG was numerously innervated with SP-immunoreactive nerve fibres which occasionally formed basket-like formations around postganglionic neurons. The MCG exhibited a sparse CGRP-immunoreactive innervation and lacked VIP-positive nerve terminals. In many aspects the chemical coding of MCG postganglionic neurons and nerve terminals resembles that found in other mammalian cervico-thoracic paravertebral ganglia, but some important species-dependent differences exist. The functional implications of these differences remain to be elucidated.

Publication: Ann. Anatomy, 188, 75–83, 2006, fig 2., tab. 2. In English, summary in English

Marcin Bartłomiej Arciszewski, Krzysztof Wąsowicz

**NORADRENERGIC AND CHOLINERGIC INNERVATION
OF THE ACCESSORY SEXUAL GLANDS IN MALE SHEEP**

Immunohistochemistry was applied to determine the distribution patterns of nerve fibres containing tyrosine hydroxylase (TH), dopamine β -hydroxylase (D β H), neuropeptide Y (NPY), vasoactive intestinal peptide (VIP) and vesicular acetylcholine transporter (VAcHT) in the prostate, seminal vesicle (SV) and bulbourethral glands (BU) of male sheep. In all organs studied, cholinergic innervation was more developed than noradrenergic innervation. Numerous VAcHT-immunoreactive (IR) nerve fibres were found in the muscular layer and mucosa of the SV and BU as well as in the prostate. Similar abundance of noradrenergic nerve fibres (showing immunoreactivity both to TH and D β H) was also found in both layers of the SV and BU (but not in the prostate). In the prostate moderate density of VIP-IR nerve fibres was present but only very scarce NPY-IR nerve fibres were shown. All the studied accessory sexual glands (ASG) of male sheep contained VIP-IR nerve fibres in similar frequency. Double immunohistochemistry revealed that the vast majority of noradrenergic nerve fibres also contained NPY. None of the noradrenergic nerve fibres showed the presence of VAcHT or VIP. The possible functional significance of these findings is discussed.

Publication: Acta Vet. Hungarica 54, 71–83, 2006, fig 1., tab. 2. In English, summary in English.

Marcin Bartłomiej Arciszewski, Anna Zacharko-Siembida

A CO-LOCALIZATION STUDY ON THE OVINE PANCREAS INNERVATION

The expression of D β H and several neuropeptides was investigated in neuronal elements of the ovine pancreas using double immunocytochemical stainings. Immunoreactivities to D β H, NPY, VIP and SP were seen to various extent in nerve terminals associated with the acini, islets, ducts, blood vessels, interlobular connective tissue as well as in the neurons of intrapancreatic ganglia. The expression of CGRP was limited to nerve fibers lying in the connective tissue septa, amongst the acini and in close vicinity to the pancreatic blood vessels. Single GRPpositive nerve endings were located around the acini, ducts and in the interlobular connective tissue. With the exception of the ductal system in a

co-localization of NPY with D β H was frequently found in all regions of the pancreas. Moderately numerous blood vessel-associated VIP-positive nerve fibers as well as the vast majority of VIP-containing intrapancreatic neurons were found to co-express D β H. Single SP-immunoreactive (IR) nerve fibers of the exocrine pancreas and interlobular connective tissue as well as SP-positive intrapancreatic neurons additionally showed the presence of D β H. The co-localization of VIP and NPY was found in nerve terminals located around the blood vessels and acini, in the connective tissue septa as well as in numerous pancreatic neuronal perikarya. Rare nerve terminals located between the acini and around small blood vessels as well as several neurons of intrapancreatic ganglia were VIP-IR/ SP-IR. Simultaneous expression of SP and CGRP was found in nerve fibers supplying large pancreatic arteries and veins, interlobular connective tissue and, occasionally, around the acini. Throughout the pancreas the population of CGRP-positive nerve endings showed a lack of VIP and NPY. In a moderate number of GRP-containing nerve fibers, co-expression of NPY was noted. Nerve terminals containing both GRP and VIP were detected sporadically, whereas none of the GRP-positive nerve terminals showed expression of SP.

Publication: Ann. Anatomy, 189, 157–167, 2007, fig 2., tab. 2. In English, summary in English.

Marcin Bartłomiej Arciszewski, Anna Zacharko-Siembida

CHOLINERGIC INNERVATION OF THE PANCREAS IN THE SHEEP

Antibodies raised against vesicular acetylcholine transporter (VAcHT) were applied to study the cholinergic innervation pattern of the pancreas of the sheep. To determine whether the cholinergic pancreatic neuronal elements contain tyrosine hydroxylase (TH), neuropeptide Y (NPY), vasoactive intestinal peptide (VIP) or substance P (SP) double immunocytochemistry was used. A moderate number of VAcHT-immunoreactive (IR) nerve terminals were distributed between the acini, whereas only single cholinergic nerve fibres innervated the interlobular connective tissue. VAcHT-positive nerve fibres supplying the endocrine pancreas were found only occasionally. The pancreatic blood vessels and ducts system were devoid of VAcHT-containing nerve endings. All intrapancreatic neurons studied showed immunoreactivity to VAcHT, but intrapancreatic ganglia were not innervated with cholinergic nerve fibres. The colocalization of VAcHT and TH or VAcHT and SP was detected in distinct populations of nerve

fibres localized amongst the acini, but not within the islet or in the connective tissue. Single VAcHt-IR nerve terminals co-expressing NPY were distributed around the acini, islets as well as in the connective tissue septa. A moderate number of VAcHt-IR/VIP-IR nerve endings were located in the exocrine pancreas, whereas the islets and connective tissue were innervated with VAcHt/VIP-containing nerve fibres only occasionally. In the vast majority of VAcHt-positive intrapancreatic perikarya the presence of TH was additionally found. A moderate number of VAcHt-IR intrapancreatic perikarya co-expressed NPY, SP or VIP. The results of the present study demonstrate a species-dependent cholinergic innervation pattern of the pancreas of the sheep. The colocalization of VAcHt with the neuropeptides suggests the existence of functional interactions influencing the ovine pancreas (mainly exocrine) activity.

Publication: Acta Biol. Hungarica 54, 71–83, 2007, fig 2., tab. 1. In English, summary in English.

Agnieszka Pedrycz, Zbigniew Boratyński, Marcin Wieczorski, Krystyna Czerny

APOPTOSIS OF FOETAL RENAL TUBULAR EPITHELIAL CELLS AS A LATE EFFECT OF ADRIAMYCIN ACTION. IMMUNOHISTOCHEMICAL ASSESSMENT OF CASPASE 3 EXPRESSION

In previous papers, we noticed that adriamycin administered to female rats before their planned pregnancy has a delaying effect under the form of apoptosis for foetal hepatocytes. The purpose of the present study was quantitative assessment of foetal renal tubular epithelial cells, as an effect means of delaying adriamycin action (apoptotic index). Expression of effector caspase 3 was also assessed. In the investigations, a standard three-step immunohistochemical method was used. The area covered by positive caspase 3 reaction was examined. In the kidneys of foetuses from the experimental group, an increase in the apoptotic index was observed. Furthermore, immunohistochemical reaction for caspase 3 covered a statistically significantly larger range as compared to the control group. The delayed effect of adriamycin given to female rats before pregnancy consisted in an increase in apoptosis in foetal renal tubular epithelial cells.

Publication: Bull. Vet. Inst. Pulawy, 51, 131–134, 2007, fig. 2, tab. 1. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

- ARCISZEWSKI M.B.: Expression of neuronal NOS in intrapancreatic ganglia of the sheep.
Ref. XXVIII Convention of Polish Anatomical Society & XLII Symposium of Polish Society of Histochemics and Cytochemics, Poznań, 5–7 IX 2007,
Publication: Folia Morphol. 66, 210, 2007. In English.
- LONC G., SZALAK R., KRAKOWSKA I., BORATYŃSKI Z.: The structures and topography of the amygdala of the chinchilla.
Ref. XXVIII Convention of Polish Anatomical Society & XLII Symposium of Polish Society of Histochemics and Cytochemics, Poznań 5–7 IX 2007.
Publikation: Folia Morphol. 66, 236, 2007. In English.
- ŁUSZCZEWSKA-SIERAKOWSKA I., EUSTACHIEWICZ R., RADZIKOWSKA E., SULEJCZUK D., KRAKOWSKA I., MATYSEK M.: The morphology and topography of nucleus amygdaloideum centrali in pig.
Ref. XXVIII Convention of Polish Anatomical Society & XLII Symposium of Polish Society of Histochemics and Cytochemics, Poznań 5–7 IX 2007.
Publication: Folia Morphol., 66, 237, 2007. In English.
- PAWŁOWSKA M., PANKOWSKI P., BALA T., DONALDSON J., ŁUSZCZEWSKA-SIERAKOWSKA I., SZYMAŃCZYK-KWAPIK S.E., VALVEDRE PIETRA J.L., KAPICA M., PUZIO I., WESTRÖM B.R., PIERZYŃOWSKI S.G.: Effect of A-ketoglutarate on intestinal mucosa and bone properties in adult rats.
Ref. Vth Physiology Conference of young scientists on digestive system, Lublin 11–12 V 2007.
Publication: J. Physiol. Pharmacol., 58, 56, 2007. In English.
- RADZIKOWSKA E., ŁUSZCZEWSKA-SIERAKOWSKA I., MADEJ B., BURDAN F., MANDZIUK S., WALLNER G., DĄBROWSKI A., MACIEJEWSKI R.: Bening tumors of liver and activity of cathepsin B,D and L in association with oestrogenic therapy.
Ref. XXVIII Convention of Polish Anatomical Society & XLII Symposium of Polish Society of Histochemics and Cytochemics, Poznań 5–7 IX 2007.
Publication: Folia Morphol., 66, 247, 2007. In English.
- SZALAK R., LONC G., EUSTACHIEWICZ R., BORATYŃSKI Z.: The morphology of neurons and topography of gyrus parahippocampalis in chinchillas (*Chinchilla Brevicaudata*).
Ref. XXVIII Convention of Polish Anatomical Society & XLII Symposium of Polish Society of Histochemics and Cytochemics, Poznań 5–7 IX 2007.
Publication: Folia Morphol. 66, 254, 2007. In English.
- ZACHARKO-SIEMBIDA A.: Distribution of SP-immunoreactive neuronal elements in the pancreas of the sheep.
Ref. XXVIII Convention of Polish Anatomical Society & XLII Symposium of Polish Society of Histochemics and Cytochemics, Poznań, 5–7 IX 2007,
Publication: Folia Morphol. 66, 262, 2007. In English.

SUB-DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY

Akademicka 12, Lublin

Head: Prof. ordin. Dr. habil. Regina Cybulska
Dr. habil. Jadwiga Jaworska-Adamu

RESEARCH STUDIES (SUMMARIES)

Hanna Bułhak-Guz, Regina Cybulska, Ewa Czichos, Tomasz Krawczyk,
Andrzej Kulig, Andrzej Chilarski

THE STUDY ON THE PATHOGENESIS OF INTESTINAL DISMOTILITY AND MALABSORPTION IN GASTROSCHISIS ON EXPERIMENTAL MODEL – CHICKEN EMBRYO

Gastroschisis (G) is a congenital defect of the abdominal wall characterized by translocation of intestinal loops outside the abdominal cavity during fetal life through a defect usually located on the right side of the umbilical cord. Translocated fragment of intestines in the extraembryonic cavity is exposed to direct contact with the amniotic fluid (AF) and excrements contained in it (urine and meconium). The abnormalities of intestinal function vary in intensity and the question arises whether dysfunction of the alimentary tract results from morphological changes in the whole intestinal wall or only in the translocated loops. The designed experiments are aimed to answer this question, and also to determine the character and extension of changes in the abdominal wall. The study consisted of an experimental creation of G on chicken embryos model and the subsequent comparison of the histopathological picture of the bowel wall of the intraabdominal loops versus the exteriorized ones. The histopathological examination revealed lesions in the eviscerated loops (exposed to AF activity) including the congestion of the intestinal villi, accumulation of erythrocytes in the villus vessels, concentration of inflammatory small-round cells in the serosa. Our results indicated that: 1) the experimental studies on G showed the differences in the histopathological picture of the eviscerated bowel loops as compared to the intraabdominal ones, 2) lesions in the intestinal epithelium (the congestion of the villi) result from the bowel constriction and can be responsible for malabsorption

in G patients, 3) inflammatory lesions in the serosa are caused by the irritating influence of the AF and can be responsible for postnatal peristalsis impairment.

Publication: Ann. Diagnostic Pediatric Pathol., 10, 109–113, 2006, fig. 7. In English. Summary in English.

REPORTS TO RESEARCH MEETINGS

BULHAK-GUZ H., CYBULSKA R., CZICHOS E., KULIG A., CHILARSKI A.: The study on the pathogenesis of intestinal dismotility and malabsorption in gastroschisis on experimental model – chicken embryo. (Badania nad patogenezą zaburzeń perystaltyki i wchłaniania w jelitach we wrodzonym wytrzewieniu na modelu doświadczalnym – zarodku kurzym).

Ref. XII Congress of the Polish Association of Pediatric Surgeons, Łódź, 13–15 IX 2006.

Publication: The Proceedings of the XII Congress of the Polish Association of Pediatric Surgeons, 16, 2006. In Polish.

BULHAK-GUZ H., CHILARSKI A., SZAFLIK K., WILCZYŃSKI J., SALACIŃSKA B., BANASIK M., CZICHOS E., CYBULSKA R.: Changes in the environment of the embryo – the surgical or the conservative treatment? (Zmiany w środowisku płodu – ingerencja czy leczenie zachowawcze?)

Ref. Scientific Conference „Environmental Conditions and Prophylaxis of Diseases Seen in Developmental Age”, Lublin 16–18 XI 2006.

Publication: Materials of the Scientific Conference „Environmental Conditions and Prophylaxis of Diseases Seen in Developmental Age”, 128, 2006. In Polish.

JAWORSKA-ADAMU J., KRAKOWSKA I., KRAKOWSKI L.: 17 β estradiol impact on expression of α estrogen receptors in hippocampal astrocytes of ovariectomized rabbits.

Ref. CIInd International Meeting of the Anatomische Gesellschaft, Gissen, Germany, 30 III–2 IV 2007.

Publication: Poster Abstract Booklet, 31, 2007. In English.

DEPARTMENT OF BIOCHEMISTRY AND ANIMAL PHYSIOLOGY

Akademicka 12, Lublin

Head: Prof. Dr. habil. Marta Kankofer

SUB-DEPARTMENT OF ANIMAL PHYSIOLOGY

Akademicka 12, Lublin

Head: Dr. habil. Iwona Puzio

RESEARCH STUDIES (SUMMARIES)

Barbara Badzian

THE LEVEL OF EXOGENOUS AMINO ACIDS IN INTESTINE WALL, LIVER AND BLOOD SERUM AFTER APPLICATION OF WATER SOLUBLE VITAMINS IN CHICKEN

Poziom aminokwasów egzogennych w ścianie jelita cienkiego, wątrobie i osoczu krwi kurcząt
po zastosowaniu witamin rozpuszczalnych w wodzie

The aim of the study was to examine the influence of water soluble vitamins such as: thiamin, riboflavin, pyridoxine, vitamin C, folic acid, panthotenic acid, nicotine acid, biotin and cholin on the level of amino acids in wall intestine, liver and blood serum in chickens. Tests were done on 160 alive broiler chicken, breed Hybro G (age 2–4 months). The absorption of amino acids was determined by the method of perfused loops of small intestine. Saline including amino acids such as: L-threonine, L-valine, L-methionine, L-lysine, L-histidine, L-phenylalanine, L-leucine, L-isoleucine and water soluble vitamins in dose 100mg/l was passed through the loops. Next, a level of amino acids was measured by the method of liquid chromatography. The experiment demonstrated,

that water soluble vitamins undoubtedly influenced exogenous amino acid absorption from entrails in chickens. In the wall intestine, the highest level was observed after vitamin B₆ application, while the least reaction after biotin, folic acid and panthotenic acid. All amino acids responded to application of vitamins in the liver. In the blood serum, there was observed high value amino acids after vitamins used together and vitamin B₆, panthotenic acid and biotin administered alone.

Publication: Acta Sci. Pol. Med. Vet., 6, 3–14, 2007, tab.3. In Polish, summaries in English and Polish.

Marta Dąbek, Paweł Podgurniak, Jose Luis Valverde Piedra,
Sylwia Edyta Szymańczyk, Rafał Filip, Anna Wojtasz-Pająk,
Eliza Werpachowska, Małgorzata Podgurniak, Stefan Grzegorz Pierzynowski

**EFFECT OF THE ELECTRICAL CURRENTS GENERATED BY THE INTESTINAL
SMOOTH MUSCLE LAYERS ON PANCREATIC ENZYME ACTIVITY:
AN IN VITRO STUDY**

Gut enzymes in the small intestine are exposed to extremely low electrical currents (ELEC) generated by the smooth muscle. In the present study, the in vitro tests were undertaken to evaluate the effect of these electric currents on the activity of the proteolytic pancreatic digestive enzymes. A simulator generating the typical electrical activity of a pig gut was used for these studies. The electric current emitted by the simulator was transmitted to the samples, containing enzyme and its substrate, using platinum plate electrodes. All samples were incubated at 37°C for 1 h. The changes in optical density, corresponding to enzyme activity, in samples stimulated for 1 h with ELEC was compared with that not exposed to ELEC. The obtained results show that the electrical current with the characteristics of the myoelectrical migrating complex (MMC) has an influence on pancreatic enzyme activity. Increased endopeptidase and reduced exopeptidase activity was observed in the samples treated with ELEC. This observation can be of importance as the analyzed factors which can alter enzymatic activity of the gut are likely to affect feed/food digestibility as well.

Publication: Bioelectromagnetics, 28, 275–280, 2007, fig. 1, tab. 1. In English, summary in Polish.

Rafał Filip, Danuta Kruszewska, Jose Luis Valverde Piedra,
Sylvia Edyta Szymańczyk, Tadeusz Studziński, Piotr Radzki,
Marek Bieńko, Stefan Grzegorz Pierzynowski

**PRANDIAL AND POSTPRANDIAL EXOCRINE PANCREATIC SECRETION AFTER
DUODENAL INFUSION OF ALPHA-KETOGLUTARATE, FORMIC ACID
AND POTASSIUM DI-FORMATE IN PIGS**

The positive effect of acidifiers on performance (growth) may be associated with the stimulation of the pancreatic secretion since some studies have shown a direct relationship between pancreatic enzyme outflow and body weight gain and feed conversion. The aim of the study was to investigate the pancreatic juice (PJ) composition after treatment with alpha-ketoglutarate (AKG), formic acid (FA) and its potassium salt (KDF). Experiments were conducted on 9 pigs (15 ±5 kg. bw.) surgically fitted with a pancreatic duct catheter, a T-cannula in the duodenum and a jugular vein catheter. The piglets were fed a standard diet twice daily and had free access to tap water. During the prandial period, duodenal infusions of KDF, FA, AKG or saline 0.9% NaCl (2.5 ml/h/kg bw.) were carried out in experimental and control pigs, respectively. PJ was analyzed for volume, protein content and trypsin activity, and blood assayed for cholecystokinin (CCK). Both AKG and KDF had stimulatory effects on the PJ outflow. The PJ volume increased significantly in the prandial phase ($p < 0.05$) in the AKG group and increased significantly in both the prandial and postprandial phases ($p < 0.05$) in the KDF group. Formic acid did not stimulate exocrine pancreatic secretion. There were no effects on protein and trypsin output and plasma CCK levels after the treatment. In conclusion, the exocrine pancreatic secretion can be stimulated by oral supplementation with AKG and KDF and this effect is mediated mainly by secretin since only volume outflow was altered in the pigs.

Publication: J.P.C.C.R. 1, 60–64, 2007, fig. 3. In English, summary in English.

Alicja Jankowska, Daniel Laubitz, Damien Guillaume, Anna Kotunia,
Małgorzata Kapica, Romuald Zabielski

**THE EFFECT OF PENTAGHRELIN ON AMYLASE RELEASE FROM THE RAT
AND PORCINE DISPERSED PANCREATIC ACINAR CELLS *IN VITRO***

Ghrelin-28 was found to inhibit the pancreatic enzyme output in rats, although the effect of pentaghrelin has not been studied. The effect of ghrelin on pig exocrine pancreas remains largely unknown. The aim of the present study

was: (1) to establish a model of porcine dispersed pancreatic acinar cells in vitro and compare it with an existing rat model, and (2) to investigate the effect of pentaghrelin on amylase release from the rat and pig pancreatic acini. The rat and porcine acinar cell preparations released amylase in response to cholecystokinin octapeptide (CCK-8) stimulation in a dose-related manner. Pentaghrelin hardly inhibited the amylase release in rat preparations (maximum inhibition with 10^{-9} M pentaghrelin). It stimulated amylase release in porcine preparations, however, no dose response was found in a range of doses between 10^{-10} and 10^{-7} M. Concluding, pentaghrelin may stimulate amylase release from porcine acinar cells through as yet unknown mechanisms.

Publication: Livestock Sci. 108, 65–67, 2007. In English, summary in English.

Małgorzata Kapica, Marta Zabielska, Iwona Puzio, Alicja Jankowska,
Ikuro Kato, Atsukazu Kuwahara, Romuald Zabielski

**OBESTATIN STIMULATES THE SECRETION OF PANCREATIC
JUICE ENZYMES THROUGH A VAGAL PATHWAY IN ANAESTHETIZED
RATS – PRELIMINARY RESULTS**

Obestatin is a 23 amino acid peptide derived from the preproghrelin precursor, and originally purified from the rat stomach mucosa. It was shown that obestatin may counteract the effects of its sister peptide, ghrelin, on food intake and gastrointestinal motility but the other roles in controlling the gastrointestinal function remain unknown. The aim of the present study was to determine the influence of exogenous obestatin on the secretion of pancreatic juice. In anesthetized male Wistar rats the external jugular vein was catheterized, and the common biliary-pancreatic duct was cannulated with polyethylene tubing for collection of pancreatic-biliary juice (P-BJ). Obestatin boluses (30, 100 and 300 nmol/kg b. wt.) were injected intravenously or intraduodenally every 30 min. Obestatin injections were done also in vagotomized (subdiaphragmatic vagotomy) rats. In the examined rats, obestatin intravenous and intraduodenal boluses did not affect the P-BJ volume. On the other hand, obestatin boluses increased the protein output and trypsin activity. Vagotomy abolished the effects of exogenous obestatin administration. In conclusion, the present study has demonstrated for the first time that exogenous obestatin may stimulate the secretion of pancreatic juice enzymes. The effect is dose-dependent and needs intact vagal supply.

Publication: J. Physiol. Pharmacol. 58, 123–130, 2007. In English, summary in English.

Witold Krupski, Marcin Rafał Tatara

**INTERRELATIONSHIPS BETWEEN DENSITOMETRIC, MORPHOMETRIC,
AND MECHANICAL PROPERTIES OF THE TIBIA IN TURKEY**

The aim of the study was to evaluate the interrelationships between the parameters assessed using computed tomography technique and mechanical properties of tibia in male turkeys at different stages of skeletal development. Healthy male turkeys (N = 120) were kept under standard rearing conditions and randomly selected from the farm flock at the age of 4, 8, 12 and 20 weeks of life to obtain right tibia for investigations. By means of computed tomography technique, volumetric bone mineral density of the trabecular and cortical bone, mean volumetric bone mineral density, total bone volume and cortical bone area of tibia were estimated. Geometrical properties, such as cross-sectional area, second moment of inertia, mean relative wall thickness and cortical index, were derived on the basis of computed tomography measurements of horizontal and vertical diameters of the tibia in the midshaft. Using three-point bending test, the mechanical parameters were estimated in terms of maximum elastic strength and ultimate strength of tibia. Pearson's correlation coefficient was determined for all the investigated variables. The obtained results showed age-related changes of the skeletal system in growing turkeys in terms of morphological, densitometric and mechanical properties. Positive correlations between all of the investigated morphometric, densitometric and mechanical parameters of tibia were found except for mean relative wall thickness and cortical index which were negatively correlated with all these parameters. Morphometric and densitometric parameters assessed with computed tomography were significantly correlated with maximum elastic strength and ultimate strength proving the usefulness of this technique for predicting mechanical properties of bones. In conclusion, this study showed computed tomography as a precise and noninvasive technique for determination of skeletal system properties that may serve to monitor *in vivo* the dynamics of the changes of bone metabolism in studies on the physiological, nutritional and pharmacological factors influencing the skeletal system.

Publication: Bull. Vet. Inst. Pulawy, 51, 621–626, 2007, tab. 2. In English, summary in English.

Małgorzata Kwiecień, Anna Winiarska-Mieczan, Małgorzata Kapica

**THE INFLUENCE OF SOME HERBS ON CHEMICAL COMPOSITION,
LIPID METABOLISM INDICES, ALAT AND ASPAT ACTIVITY
IN BROILER CHICKENS LIVER**

The experiment involved 210 Ross broiler chickens raised in cages till 42 day of age. The experimental chickens were fed mixtures with 2% addition of alternatively used herbs: hops cone, linden, melissa, pansy, mint and nettle. In the control group an antibiotic was applied. The aim of the study was to determine the effect of antibiotic substitution with herbs on: weight, chemical composition, total cholesterol level, triacylglycerol, ASAT and ALAT activity in liver. The presence of herbs in mixtures influenced positively broilers body and liver weight. A herb additive has changed the chemical composition of chicken liver. There was recorded a significant rise in dry mass (hop, linden, melissa), total protein (hop, linden, melissa and nettle), ether extract (hop, linden) as well as a crude ash decline (hops, pensy, mint). The level of total cholesterol and triacyloglycerol in livers of chickens fed mixtures with herbs were higher. The activity of ASAT increased, but ALAT decreased.

Publication: Polish J. Natural Sci. 3, 439–444, 2006. In English, summary in English.

Ryszard Maciejewski, Marcin Rafał Tatar, Ewa Śliwa, Kamil Torres,
Andrzej Dąbrowski, Jay Patel, Michał Solecki,
Iwona Łuszczewska-Sierakowska, Łukasz Adaszek

**PRELIMINARY STUDY ON BIOLOGICAL AND PHYSICAL PROPERTIES
OF NEW SURGICAL THREADS FOR SOFT TISSUES**

The aim of the study was to evaluate the physical and biological properties of new surgical threads provided by Matcur, S.A. De C.V., Mexico. The study was performed on 12 piglets of the Polish Large White breed, divided into two equal groups and subjected to surgical procedures at the age of 40 d of life. The first group of animals (control group) underwent a sham operation, whereas the experimental group gastric fundectomy. The fundectomy consisted in cutting out the fundus of the stomach. The soft tissues of the fundectomised stomach were sutured, using catgut quirurgico simple and catgut quirurgico cromico threads. The sham operation included cutting through soft tissues of the abdominal region, which enabled access to the anatomical structures of the stomach, analogically to the experimental group. During the operation procedure, the threads

were assessed for the needle penetration and ability to pass through tissues, the tendency to electrify, twisting ability, elasticity, knot stability and tendency to soak up tissue fluids. The mechanical properties of the threads were investigated using an extension test in Lloyd LRX testing machine. Furthermore, haematological and biochemical analyses of the serum were performed 60 d after the surgery. The obtained results showed very high surgical reliability of the investigated threads with no side effects in any of the experimental animals. The wound healing process was characterized by minimal reaction of the soft tissues. The extension test showed very high mechanical endurance of the investigated threads. Moreover, positive results were obtained after the evaluation of knot stability of the threads. Decreased values of haemoglobin, haematocrit, and daily body weight gain of the animals from the experimental group were observed as negative consequences of the fundectomy.

Publication: Bull. Vet. Inst. Pulawy, 51, 167–171, 2007, fig. 1, tab. 2. In English, summary in English.

Marta Pawłowska

**THE INFLUENCE L-ALANYL-L-GLUTAMINE ON STRUCTURE
AND MINERALIZATION IN FEMUR OF PIGLETS**

Wpływ L-alanylo-L-glutaminy na strukturę oraz mineralizację kości udowej prosiąt

The aim of the study was to investigate the effect of L-alanyl-L-glutamine (Ala-Gln) on the femur structure, geometric and mechanical properties and mineralization in piglets at 8th week of age. The studies were carried out on 23 piglets between 1 and 56 day of life. Piglets received orally either 0,4 g/kg b. wt. of Ala-Gln solution (Ala-Gln group) or 2 ml/kg b.wt. of saline (control). The piglets were sacrificed on 56 day of age and bones were stripped out for further analyses. Bone mineral density in the proximal and distal epiphysis as well as physical parameters (break strength, maximum elastic force) and geometrical properties (cross sectional area, second moment of inertia, mean relative wall thickness) were analyzed. In the histological pictures, trabeculae area, length and density in the femoral epiphysis and metaphysis were measured. Physical, geometrical and morphometrical parameters of the femur tendent to increase in Ala-Gln treated piglets. In conclusion, oral administration of Ala-Gln during 8 weeks of life positively affected the development of the femur in piglets.

Publication: Acta Sci. Pol. Med. Vet., 6, 21–30, 2007, fig. 1, tab. 2. In Polish, summaries in English and Polish.

Marta Pawłowska, Jose Luis Valverde Piedra, Rafał Filip,
Sylwia Edyta Szymańczyk, Małgorzata Kapica, Iwona Puzio,
Henryk Skrzypek, Antonii Gawron, Stefan Grzegorz Pierzynowski,
Tadeusz Studziński

**EFFECTS OF L-ALANYL-L-GLUTAMINE (ALA-GLN) DIPEPTIDE ADMINISTRATION
DURING 35 DAYS OF POSTNATAL LIFE ON INTESTINAL MUCOSA,
BONES PROPERTIES AND PIG PERFORMANCE DURING
THE EARLY POST-WEANING PERIOD**

The rapid growth and development of piglets during the postnatal life is correlated with increased intestinal requirement and cellular demand for metabolic energy supply. Glutamine seems to be indispensable as a metabolic fuel for the intestine and an important nitrogen source for the synthesis of the protein in gut mucosa. The aim of the study was to evaluate the effect of Ala-Gln oral administration on the intestine and bones development during the postnatal and post-weaning period in the pig. Piglets were divided into control and experimental group (oral Ala-Gln administration from birth to 35th d – 0.4 g/kg b wt./d). One week after weaning piglets were slaughtered and intestine and bones were sampled for histological analyses. Bone physical and geometric properties were evaluated according to Ferreti method. Mineral density was analyzed by DEXA method. Ala-Gln treated piglets had higher body weight on 35 d of age compared to control piglets. Mucosa thickness, villi length and crypt depth in the jejunum of Ala-Gln treated piglets showed higher values compared to controls. Bone physical and geometric parameters and mineral density were significantly higher in the Ala-Gln treated piglets. Bone structure revealed a shift in bone organization and mineralization process in Ala-Gln treated piglets. In conclusion, oral administration of Ala-Gln protects the piglets from body weight loss and intestinal hypotrophy correlated with weaning and ensured the normal development of the femora during the post-weaning period in the pig.

Publication: Bull. Vet. Inst. Pulawy 51, 125–129, 2007, fig. 4, tab. 2. In English, summary in Polish.

Marta Pawłowska, Jose Luis Valverde Piedra, Sylwia Edyta Szymańczyk,
Iwona Puzio, Marek Bieńko, Tomasz Skrzypek, Tadeusz Studziński

**THE INFLUENCE L-ALANYL-L-GLUTAMINE (ALA-GLN) ON SMALL INTESTINAL
MUCOSA STRUCTURE AND BONE FEATURES DURING THE FIRST 14 DAYS
OF POSTNATAL LIFE OF PIGS**

The aim of the study was to investigate the effect of L-alanyl-L-glutamine (Ala-Gln) on small intestine development and humerus physical and geometric properties in piglets during the first 14 days of postnatal life. The piglets received orally either 2 ml/kg⁻¹ b.wt. of saline (control) or 0,4 g /kg b. wt. of Ala-Gln solution (Ala-Gln group). The jejunal mucosa showed higher values in the Ala-Gln group. The physical and geometric parameters of the humerus tended to increase in the Ala-Gln treated piglets. This suggests that Ala-Gln exerts a protective effect on the intestinal mucosa and bones during the postnatal development of pig.

*Publication: Polish J. Natural Sci., suppl. 3, 347–352, 2006, fig. 1, tab. 2.
In English, summary in Polish.*

Stefan Grzegorz Pierzynowski, Vajda Sileikiene, Jose Luis Valverde Piedra,
Sylwia Edyta Szymańczyk, Peter Colin Gregory, Danuta Kruszewska,
Rainer Mosentin, Anna Rząsa, Sylwester Kowalik,
Romuald Zabielski, Björn Weström

**ILEAL EXPOSURE TO PIG PANCREATIC JUICE AND BILE INHIBITS EXOCRINE
PANCREATIC SECRETION IN PIGS**

The mechanisms involved in the down regulation of the exocrine pancreas are still not fully elucidated. The purpose of the present study was to examine the effect of duodenal and ileal exposure to pancreatic enzymes and bile on pancreatic secretion. The experiments were performed with pigs fitted with pancreatic duct, ileal and jugular vein catheters and duodenal T-shaped cannula. A negative feedback regulation of pancreatic secretion was found for both duodenal and ileal delivery of pancreatic juice. Pancreatic secretion was unaffected by duodenal delivery of bile and bile salts, while ileal delivery of bile and bile salts lowered it. On the other hand, pancreatic secretion was increased by duodenal lading of commercial non- or activated pancreatic enzyme preparations, thus probably recognized as dietary protein. Plasma cholecystokinin (CCK) level was lowered only by duodenal delivery of pancreatic juice. In conclusion, the results

prove the existence of negative feedback mechanism regulating pancreatic secretion dependent on the presence of pure pancreatic juice or bile at the ileal level. The mechanism at the duodenal level is exclusively sensitive to pure pancreatic juice.

Publication: Livestock Sci. 108, 53–56, 2007, fig. 1, tab. 2. In English, summary in English.

Iwona Puzio, Małgorzata Kapica, Marek Bieńko, Jose Luis Valverde Piedra, Zbigniew Gajewski, Jacek Wilczak, Gustaw Kulasek, Romuald Zabielski

DIETARY BIOACTIVE SUBSTANCES INFLUENCE PERINATAL BONE DEVELOPMENT IN PIGLETS

Bioactive substances including taurine, L-carnitine, polyunsaturated fatty acids, flavonoids and antioxidants were shown to influence the perinatal development of majority of mammalian systems, nervous, gastrointestinal, immune, etc. A blend of bioactive substances and plants was composed to supplement sow feedstuff, and our study aimed to examine the bone parameters in their offspring. Control sows were fed a standard diet alone (n = 6). The sows from the supplemented group (n = 6) received the supplementation from the gestation day 80 until the end of lactation. From each sow two piglets were sacrificed, one on 7 d and the other on 28 d of life. The femur and humerus were isolated, bone mineral density and mineral content were determined using dual energy X-ray absorptiometry. Bone maximum strength and elastic force were determined by a three-point bending test. No differences in the body weight were found. On day 7, the bones of piglets from the supplemented group were characterized by higher weight, physical parameters and bone mineral content as compared to control, no difference in length and bone mineral density was observed. On day 28, no differences in humerus parameters were found as well as in femur mineral density and mineral content. However, in relation to the body weight, the weight and physical parameters of femur were higher in the supplemented group as compared to control. In conclusion, the supplementation of sow diet with bioactive substances influenced the development of bones in their offspring.

Publication: Livestock Sci. 108, 72–75, 2007, tab. 2. In English, summary in English.

Iwona Puzio, Małgorzata Kapica, Paweł Lipiński, Jose Luis Valverde Piedra,
Rafał Starzyński, Marek Bieńko, Mikołaj Gralak, Romuald Zabielski

**THE EFFECT OF IRON SUPPLEMENTATION ON BONE DEVELOPMENT
IN NEONATAL PIGLETS**

The study was carried out on 54 piglets divided into 3 groups: control and two experimental. The animals obtained *i.m.* injection of Fe-dextran: 200mg/piglet at 3 day of life and 75 mg/piglet on 3 and 10 day of life. On day 4, 7 and 14, piglets from each treatment were sacrificed for bone sampling. Weight, length, BMC, BMD, physical and geometrical parameters were measured. In 14-d piglets the mass, maximum strength, resilience limit, BMC and architectural parameters were higher in the experimental piglets than in control. Iron supplemented new-born piglets feed affected skeletal system development, but doublet of reduced dose Fe-dextran did not influence bone parameters.

Publication: Polish J. Natural Sci. suppl. 3, 353 – 359, 2006, tab. 2. In English, summaries in English and Polish.

Radosław Piotr Radzki, Marek Bieńko, Rafał Filip

**THE EFFECT OF STRONTIUM RANELATE ON MINERALIZATION
AND MECHANICAL PROPERTIES OF FEMORA
IN ORCHIDECTOMIZED RATS**

Wpływ ranelinianiu strontu na mineralizację i wytrzymałość mechaniczną kości udowej
orchidektomizowanych szczurów

Metabolic bone diseases such as osteoporosis, diagnosed both in human and animals, can develop in conditions of lack of gonadal steroids during aging or after gonadectomy. The purpose of the study was to determine the effect of Strontium Ranelate (RS) on densitometry and mechanical properties of bone tissue in conditions of experimentally induced osteopenia by bilateral gonadectomy in male Wistar rats. After acclimatization the animals were subjected to sham-operation (SHO) (n = 10) and bilateral orchidectomy (ORX) (n = 20). The ORX rats were subsequently divided into control group (ORX/COM) and group treated with RS (ORX/RS), applied by gavage, in the dose of 900 mg/kg b. w. The experiment lasted for 60 days and then the animals were slaughtered, blood serum collected, and femora isolated. Femora were analyzed using peripheral quantitative computed tomography (pQCT) for determination of volumetric bone mineral density of cortical part of shaft of the column (Ct.vBMD), endosteal and periosteal circumferences, cortical thickness (Ct.Th) and Strength Strain

Index (SSI). The above measurements were performed in 50% of bone length. The bones were also submitted to three-point bending test for estimation of maximal force and force of resilient limit. The activity of alkaline phosphatase (ALP) and concentration of Ca and P in blood serum were determined.

The obtained results indicate that the usage of strontium ranelate in orchidec-tomized rats during 60 days not only inhibits the resorptive processes induced by lack of gonadal steroids, but also accelerated processes of new bone tissue formation, which improved mechanical resistance of femora.

Publication: Medycyna Wet. (Lublin), 63, 1630–1634, 2007, In Polish, sum-mary in English.

Tomasz Skrzypek, Jose Luis Valverde Piedra, Henryka Skrzypek,
Waldemar Kazimierczak, Marzena Biernat, Romuald Zabielski

GRADUAL DISAPPEARANCE OF VACUOLATED ENTEROCYTES IN SMALL INTESTINE OF NEONATAL PIGLETS

The unique feature of enterocytes in newborn mammals is the presence of an apical canalicular system (ACS) leading to production of large vacuoles, impor-tant for colostrum macromolecule uptake. The vacuolated fetal-type enterocytes (VFE) enable transfer of colostrum and milk proteins from the intestinal lumen across the epithelium without losing their biological activity. First VFE are observed in the pig and lamb fetuses in the second trimester of pregnancy, lo-cated at the upper part of villi in the proximal region of the fetal small intestine and subsequently in the middle and distal regions. After birth, the VFE are re-placed with enterocytes lacking ACS. The present study aimed to investigate the depletion of VFE in the small intestine in the sow rearing pig neonates during the first postnatal weeks using scanning electron microscopy (SEM). The SEM analysis demonstrated the gradual disappearance of vacuolated enterocytes in time. VFE remained in the jejunum for a few days after birth, whereas in the duodenum single VFE were present only at birth. In the proximal jejunum, the VFE were localized in the upper part of the villi, and disappeared until the day 3 of life. VFE were present in the mid and distal jejunum, and diminished gradu-ally until day 14 of life. By day 21 of life, the vacuolated cells were observed neither in the jejunum nor ileum. In conclusion, morphology analysis of pig small intestinal mucosa suggests that replacement of fetal type vacuolated en-terocytes is resumed within 21 days after birth.

Publication: J. Physiol. Pharmacol. 58, 87–95, 2007, fig. 7, tab. 1. In Eng-lish, summary in English.

Tomasz Skrzypek, Jose Luis Valverde Piedra, Henryk Skrzypek,
Waldemar Kazimierczak, Sylwia Edyta Szymańczyk, Marta Pawłowska,
Romuald Zabielski

**INTESTINAL VILLI STRUCTURE DURING THE DEVELOPMENT OF PIG
AND WILD BOAR CROSSBREED NEONATES**

Modification in mucosa structure can be used to evaluate intestinal function during the development. The present study aimed to compare the postnatal gut mucosa structure in Polish landrace/Pietrain (PP) and Duroc/Hampshire/wild boar (DHW) crossbreed piglets using scanning electron microscopy. Small intestinal mucosa showed a number of changes characteristic for PP and DHW pigs involving the modification of villi shape, disappearance of transversal furrows, formation of extrusion zones and the presence of apoptotic cell packets.

Publication: Livestock Sci. 109, 38–41, 2007, fig. 4. In English, summary in English.

Sylwia Edyta Szymańczyk, Jose Luis Valverde Piedra, Małgorzata Kapica

**THE EFFECT OF FEEDING RAW AND EXTRUDED GRASS PEA (*Lathyrus sativus L.*)
SEEDS MEAL ON PANCREATIC JUICE SECRETION IN CALF**

Wpływ żywienia paszą zawierającą surową i ekstrudowaną mączkę z nasion lędźwianu siewnego (*Lathyrus sativus L.*) na wydzielanie soku trzustkowego u cieląt

Grass pea seeds (*Lathyrus sativus L.*) can be an alternative protein source for calf feeding, however the content of antinutritional factors (ANFs) limits their use in the raw form, because they decrease enzymatic digestion in the intestine. The aim of this study was to determine the effect of feeding row (RGPSM) and extruded (EGPSM) grass pea seeds meal on pancreatic juice (PJ) secretion in calf. Experiments were conducted on 6 calves that were fitted with a pancreatic duct catheter and a duodenal cannula. During 2 weeks calves were fed milk and a semiliquid diet consisting of a mixture of milk and standard formula CL (control group), RGPSM formula (row grass pea) and EGPSM formula (extruded grass pea). PJ volume, protein content, proteolytic enzymes and amylase activity were analyzed. Feeding calves with the RGPSM formula increased the PJ volume, protein content, proteolytic enzymes and amylase activity, thus feeding the EGPSM formula increased the amount of proteolytic enzymes, other than trypsin. This suggests the inactivation of the majority of ANFs during the extrusion process and a lack of negative effects on the pancreas after EGPSM formula feeding in calf.

Publication: Acta Sci. Pol. Med. Vet., 6, 47–61, 2007, fig. 5. In Polish, summaries in English and Polish.

Sylwia Edyta Szymańczyk, Jose Luis Valverde Piedra, Marta Pawłowska,
Marta Dąbek, Stefan Grzegorz Pierzynowski

**INFLUENCE OF PHOSPHO-GLUCO-PEPTIDES ON BROILER
CHICKENS PERFORMANCE**

The influence of phospho-gluco-peptides (PGP[®]) on the growth performance and carcass characteristics of broiler chickens was evaluated. The study was conducted over a period of 8 weeks under standard poultry farming conditions. The control chickens (n = 120) were fed standard mixtures (starter, grower & finisher) for broilers. The PGP group (n = 120) received a diet supplemented with 0.3, 0.2 and 0.1% PGP, respectively. The diet supplemented with PGP improved performance of the Avian broiler chickens, which was reflected by their significantly higher body weights, higher butchering efficiency, higher meat yield and significantly lower fat percentage. In conclusion, PGPs used as feed additives allow to obtain higher productivity in broiler chickens.

Publication: Polish J. Natur. Sci. suppl. 3, 523–530, 2006, tab. 5. In English, summary in Polish.

Sylwia Edyta Szymańczyk, Jose Luis Valverde Piedra, Tomasz Skrzypek,
Michał Godlewski, Henryk Skrzypek, Marzena Biernat,
Romuald Zabielski, Stefan Grzegorz Pierzynowski

**INFLUENCE OF PHOSPHO-GLUCO-PEPTIDES ON THE STRUCTURE
AND FUNCTION OF DIGESTIVE TRACT IN BROILER CHICKENS**

The aim of the study was to investigate the influence of phosphor-gluco-peptides (PGP[®]) on the digestive tract development and function in Avian broiler chicken. The control chickens (n = 120) were fed standard mixtures (starter, grower & finisher) for broilers. The PGP group (n = 120), received a diet supplemented with 0.3, 0.2 and 0.1% of PGP, respectively. After the periods of 4, 6 and 8 weeks, samples from the gastrointestinal tract were taken for *in vitro* contractile activity, histological and enzyme analysis. PGPs increased small intestinal mucosa thickness, crypt cell proliferation, and proteolytic enzymes activity, while reduced the intestinal contractions in response to acetylcholine.

Publication: Pol. J. Natural Sci. suppl.3, 531–539, 2006, tab. 2. In English, summary in Polish.

Ewa Śliwa, Piotr Dobrowolski, Krzysztof Siwicki, Grzegorz Pierzynowski

**CHANGES OF NON-SPECIFIC DEFENCE MECHANISM IN BLOOD SERUM
OF PIGLETS INDUCED BY PRENATAL AND POSTNATAL ADMINISTRATION
OF ALPHA-KETOGLUTARATE**

The aim of this study was to establish the influence of AKG administered to pregnant sows from the 91st d of pregnancy to farrowing and then to piglets from birth to the 30th d of life, on lysozyme and ceruloplasmin activity, serum total protein content, and the WBC count in blood of piglets, at the age of 14 and 30 d of their postnatal life. The sows were treated *per os* with AKG at the dosage 0.4 g/kg b.w. every day, whereas those of the control were given saline. Piglets born by sows treated with AKG were divided into two groups: the first group was administered oral saline (AKG/PhS group) and the second group received oral AKG at the dosage of 0.4 g/kg b.w./d (AKG/AKG group), during 30 d of their postnatal life. Administration of AKG to sows during pregnancy increased lysozyme activity in piglets at the age of 30 d, which reached the value 7.07 mg/L, while that in the control was 3.90 mg/L. Ceruloplasmin activity decreased during the first 14 d of life in piglets which received AKG as continuation of the prenatal procedure. At the age of 14 d, ceruloplasmin activity decreased to 90.96 IU/L in comparison with the 117.95 IU/L of the control, while the level of total protein was higher (71.83 g/L) than that of the control (64.23 g/L). There is still limited information about the relationship between exposure to AKG during foetal and/or early postnatal life and altered postnatal immune function in piglets.

Publication: Bull. Vet. Inst. Pulawy 51, 297–301, 2007, tab. 1. In English, summary in English.

Ewa Śliwa, Piotr Dobrowolski, Marcin Tatara, Stefan Grzegorz Pierzynowski

**ALPHA-KETOGLUTARATE PARTIALLY PROTECTS NEWBORNS
FROM METABOLIC CHANGES EVOKED BY CHRONIC MATERNAL EXPOSURE
TO GLUCOCORTICIDS**

The foetal and neonatal times are very important for the growth and development of the mechanisms involved in programming metabolic processes in adult life. It was found that in foetal life, critical developmental time-windows for different key factors determine the programming of metabolic processes that persist for a longer time in later life. Dexamethasone, a synthetic glucocorticoid,

is administered in pregnancy to reduce mortality in preterm infants. However, early studies did not examine the effects of maternal simultaneous dexamethasone treatment with alpha-ketoglutarate on glucose, total cholesterol, triacylglycerol and other metabolic markers in blood serum of newborns. This study shows that exposure to excessive maternal dexamethasone during the last 45 days of pregnancy resulted in reduced body weight by 26 % in newborns. Moreover, when dexamethasone was administered with AKG, body weight was reduced by only 13.5% when compared with the control. Total cholesterol concentrations in sows and their newborns in the Dex groups were higher by 81 and 79%, compared with the control values in sows and in newborns, respectively. Triacylglycerol serum concentrations were higher by 54% in sows from the Dex group and 58% in newborn piglets from these mothers. Glucose concentration was higher by 142% in newborns after maternal dexamethasone treatment in comparison with the control. Serum glucose concentration remained unchanged in sows after simultaneous dexamethasone administration with AKG, but in newborns a 2-fold increase was observed. These foetal metabolic changes after maternal treatment with dexamethasone might be linked not only with long-lasting metabolic disturbances, but with more frequent coronary heart and cardiovascular diseases in later life. Our results indicate that maternal AKG administration to sows during the last 45 days of pregnancy protects from metabolic disturbances in newborns induced by dexamethasone acting at this time and influencing developmental programming of metabolic processes which may persist or appear in later life.

Publication: J. P. C. C. R. (Lublin) 1, 55–59, 2007, tab. 2. In English, summary in English.

Marcin Rafał Tatara, Witold Krupski, Ewa Śliwa,
Ryszard Maciejewski, Andrzej Dąbrowski

**FUNDECTOMY-EVOKED OSTEOPENIA IN PIGS IS MEDIATED
BY THE GASTRIC-HYPOTHALAMIC-PITUITARY AXIS**

The aim of the study was to determine the effects of gastric impairment in pigs on the axial and peripheral skeletal system properties and to test the hypothesis that fundectomy-evoked osteopenia is related to disturbed gastric-hypothalamic-pituitary axis function. Forty-day-old male piglets were subjected to experimental fundectomy (FX group, n = 6) to induce osteopenia, while sham operation was performed in the control (SHO group, n = 6). At the age of 8 months, serum samples were collected, and the animals were sacrificed to obtain

lumbar vertebrae (L₁–L₆) and right humerus for analysis. Using quantitative computed tomography (QCT) and dual-energy x-ray absorptiometry (DEXA) methods, bone mineral density and bone mineral content of the vertebrae and humerus were measured. The compression and three-point bending tests were applied to determine mechanical properties of lumbar vertebrae and humerus, respectively. Furthermore, geometric properties of humerus were assessed. Serum concentrations of ghrelin, growth hormone (GH), insulin-like growth factor-1 (IGF-1), and selected macro- and microelements were also determined. Performed fundectomy decreased body weight in pigs by 66% compared with paired sham operated pigs ($P < 0.0001$). Bone weight, bone mineral density, and bone mineral content of the lumbar vertebrae and humerus were significantly decreased in the fundectomized pigs ($P < 0.01$). Mechanical parameters of the lumbar spine and humerus decreased after the fundectomy, as well. Serum concentrations of ghrelin, GH, and IGF-1 were lowered by 74.4%, 90.6%, and 54.6% in the fundectomized pigs, respectively (all $P < 0.001$). Moreover, the serum concentrations of calcium, magnesium, iron and copper in the fundectomized animals were significantly decreased by 15.5, 45.3, 26.7 and 26.2%, respectively ($P \leq 0.05$). In conclusion, the results obtained showed that both the disturbed gastric-hypothalamic-pituitary axis function and impaired mineral metabolism are associated with development of postfundectomy osteopenia of axial and peripheral skeleton in pigs.

Publication: Exp. Biol. Med. 232, 1449–1457, 2007, tab. 5. In English, summary in English.

Marcin Rafał Tatara, Malin Plumhoff Tygesen, Barbara Sawa-Wojtanowicz,
Witold Krupski, Piotr Majcher, Adrian Paul Harrison

**BONE DEVELOPMENT: THE EFFECT OF SHORT-TERM ALPHA-KETOGLUTARATE
ADMINISTRATION ON LONG-TERM MECHANICAL PROPERTIES
OF RIBS IN RAM LAMBS**

The objective of this study was to determine the long-term effect of alpha-ketoglutarate (AKG) administration during early neonatal life on skeletal development and function, with emphasis on bone exposed to regular stress and used to serve for systemic changes monitoring, the rib. Shropshire ram lambs were randomly assigned to two weight-matched groups at birth. During the first 14 days of life, AKG was administered orally to the experimental group ($n = 12$) at the dosage of 0.1 g/kg body weight per day, while the control group ($n = 11$) received an equal dose of the vehicle. Lambs were slaughtered on 146 day of life

(five left) and right ribs (fourth to eighth) were removed for analysis. The influence of AKG on skeletal system development was evaluated in relation to both geometrical and mechanical properties, as well as quantitative computed tomography (QCT). No significant differences between the groups were recorded in terms of: (1) growth rate, (2) body weight on days 14, 28 and 130 of age or (3) final body weight. The weight and length of ribs were, however, significantly increased in the lambs given AKG for the first 14 days of neonatal life by 8.2% and 3.2%, respectively ($P < 0.01$). Furthermore, AKG administration induced significantly higher bone mineral density of the cortical bone by 7.1% ($P < 0.01$) and improved the mechanical endurance of ribs in terms of the moments of maximum elastic strength and ultimate strength by 10% and 8%, respectively ($P < 0.05$). It could be concluded that AKG has a long-term effect on skeletal development when given early in neonatal life, and the changes in rib properties serve to improve chest mechanics and functioning in young animals. Moreover, neonatal administration of AKG may be considered as an effective factor enhancing proper development and function of the skeleton during growth and later life.

Publication: Small Rumin. Res. 67, 179–183, 2007, fig. 1, tab. 2. In English, summary in English.

Marcin Rafał Tatara, Ewa Śliwa, Witold Krupski

**PRENATAL PROGRAMMING OF SKELETAL DEVELOPMENT IN THE OFFSPRING:
EFFECTS OF MATERNAL TREATMENT WITH β -HYDROXY- β -METHYL BUTYRATE
(HMB) ON FEMUR PROPERTIES IN PIGS AT SLAUGHTER AGE**

Alteration in fetal growth and development in response to prenatal environmental conditions such as nutrition has long-term or permanent effects during postnatal life. The aim of this study was to investigate effects of β -hydroxy- β -methylbutyrate (HMB) treatment of sows during the last 2 weeks of pregnancy on programming of skeletal development in the offspring. The study was performed on 141 pigs born by 12 sows of Polish Landrace breed. Two weeks before delivery, pregnant sows were divided into two groups. The first group consisted of control sows ($N = 6$) that were treated with placebo. Sows that were treated orally with β -hydroxy- β -methylbutyrate ($N = 6$) at the dosage of 0.05 g/kg of body weight per day belonged to the second group. Newborn piglets were weighed and subjected to blood collection for determination of serum levels of growth hormone (GH), insulin-like growth factor-1 (IGF-1), insulin, leptin, glucose and bone alkaline phosphatase (BAP) activity and lipid profile.

At the age of 6 months, the piglets were slaughtered, their femur was isolated for analysis and assessment of lean meat content of carcasses was performed. The effects of maternal administration with HMB on skeletal properties in the offspring were evaluated in relation to bone mineral density and geometrical and mechanical properties. Maternal treatment with HMB increased serum levels of GH, IGF-1 and BAP activity in the newborns by 38.0, 20.0 and 26.0%, respectively ($P < 0.01$). HMB administration significantly increased volumetric bone mineral density of the trabecular and cortical bone of femur in the offspring at the age of 6 months ($P < 0.001$). The weight of femur and geometrical parameters such as cross-sectional area, second moment of inertia, mean relative wall thickness and cortical index were significantly increased after HMB treatment ($P < 0.05$). HMB induced higher values of maximum elastic strength and ultimate strength of femur ($P < 0.01$). Furthermore, lean meat content of carcass was significantly increased in the females born by HMB-treated sows ($P < 0.05$). The obtained results showed that maternal administration with HMB has positive long-term effects on bone tissue and improves volumetric bone mineral density, geometrical and mechanical properties of femur in the offspring. These effects were connected with an increased level of GH and IGF-1 in the newborns indicating involvement of improved somatotrophic axis function in prenatal programming of skeletal development in pigs.

Publication: Bone, 40, 1615–1622, 2007, tab. 3. In English, summary in English.

Jose Luis Valverde Piedra, Stefan Grzegorz Pierzynowski

ATTEMPT TO ESTABLISH A CHRONIC MODEL TO STUDY THE INFLUENCE OF BILE AND PANCREATIC JUICE DIVERSION ON PANCREAS FEEDBACK REGULATION IN CONSCIOUS PIGS

The diversion of pancreatic juice and bile stimulates pancreatic exocrine secretion but the mechanism behind this process is still not clear. The present study investigates the influence of long lasting (10 h) bile diversion or pancreatic juice and bile diversion on the pancreatic secretion in conscious pigs. The experiments were performed on 4 weaned piglets, which had a catheter inserted to the accessory pancreatic duct and bile duct and two cannulas to the duodenum. The depletion of bile alone or both bile and pancreatic juice (PJ) resulted in an increased preprandial pancreatic juice outflow, as compared to controls. Bile diversion increased the pancreatic response to feeding. PJ volume, protein outflow, and trypsin activity values were significantly higher in bile diverted pigs than in

control pigs during the prandial and postprandial periods. While in pancreatic juice and bile diverted piglets the PJ protein outflow and trypsin activity slightly increased in response to feeding, their values were lower than those of the control piglets. In conclusion, both pancreatic juice and bile present in the small intestine play an important role in the regulation of the pancreatic juice secretion.

Publication: Livestock Sci. 109, 46–49, 2007, fig. 2. In English, summary in English.

Romuald Zabielski, Zbigniew Gajewski, Jose Luis Valverde Piedra,
Daniel Laubitz, Jacek Wilczak, Bożena Bałasińska, Gustaw Kulasek

**THE PERINATAL DEVELOPMENT OF THE GASTROINTESTINAL TRACT
IN PIGLETS CAN BE MODIFIED BY SUPPLEMENTATION OF SOW
DIET WITH BIOACTIVE SUBSTANCES**

Dietary bioactive substances involving taurine, L-carnitine, polyunsaturated fatty acids, flavonoids and antioxidants were shown to control the perinatal development in mammals. A blend of bioactive substances was used to supplement the diet of sows according to the optimal needs of their offspring. The present study aimed to examine the development of gastrointestinal tract in their offspring as compared to the offspring from control sows fed the standard diet. The supplemented diet was given from 80 gestation day until the end of lactation period. One piglet from each litter was sacrificed on 1 (i.e., unsuckling neonates), 2, 4, 7, 14, and 28 postnatal day for tissue sampling. At birth, the stomach relative weight was larger in the supplemented group, and the small intestine relative weight was smaller as against control. These differences disappeared within 1–4 postnatal days. The stomach weight was larger on 28 postnatal day in the supplemented group than in control. Gastric protein content and the proteolytic activity in the offspring of the supplemented sows showed a tendency to increase after birth as compared to control, though the differences disappeared after the fourth postnatal day. In conclusion, the supplementation of sow diet with dietary bioactive substances affected primarily the prenatal development of the stomach and small intestine in their offspring.

Publication: Livestock Sci. 109, 34–37, 2007, fig.1, tab. 2. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

- BIELAK M., BIELAK K., SZYMAŃCZYK-KWAPIK S.E., KAPICA M., PUZIO I., PAWŁOWSKA M., CHRUSCIEL T., STEC J., VALVERDE PIEDRA J.L.: The effects of two red kidney bean lectin preparations on the gastrointestinal tract in rat – preliminary studies
Ref. Vth Physiology Conference of Young Scientists on Digestive System, 11–12 V 2007, Lublin, Poland.
Publication: J. Physiol. Pharmacol., 58, 16, 2007. In English.
- CHMIELEWSKA M. A., PUZIO I., KAPICA M., SZYMAŃCZYK S.E., PAWŁOWSKA M., CHRUSCIEL T., STEC J., VALVERDE PIEDRA J.L.: The effect of butyrate and *Yucca Schidigeri* extract on the gastrointestinal tract in weaned pigs – preliminary data.
Ref. Vth Physiology Conference of Young Scientists on Digestive System, 11–12 V 2007, Lublin, Poland.
Publication: J. Physiol. Pharmacol., 58, 22, 2007. In English.
- DOBROWOLSKI P., ŚLIWA E., PIERSIAK T., STUDZIŃSKI T.: Effect of AKG on skeletal development in piglets after prenatal chronic treatment with high dose of dexamethasone using model of ribs.
Ref. VI Baltic Bone and Cartilage Conference and 3rd Baltic Congress of Traumatology and Orthopaedics. Tartu, 6–8 IX 2007.
Publication: Eesti Arst, 8, 592, 2007. In English.
- FILIP R., BIEŃKO M., RADZKI R.P., WESTRÖM B.R., FEDKIV O., PIERZYNOWSKI S.G.: Combined effects of phytohemagglutinin and alpha-ketoglutarate on rat gut morphology and growth.
Ref. Vth Physiology Conference of Young Scientists on Digestive System. Lublin, 11 V 2007.
Publication: J. Physiol. Pharmacol., 58, 23, 2007. In English.
- KOWALIK S., FEDKIV O., DONALDSON J., PAWŁOWSKA M., WESTRÖM B.R., PIERZYNOWSKI S.G.: Total pancreatic insufficiency in early stages of development causes complete growth retardation in piglets.
Ref. Vth Physiology Conference of Young Scientists on Digestive System. Lublin, 11–12 V 2007.
Publication: J. Physiol. Pharmacol., 58, 39, 2007. In English.
- KOWALIK S., WAWRZYŃIAK-GACEK A., PIERSIAK T., ŚLIWA E., PIERZYNOWSKI S.G., STUDZIŃSKI T.: Effect of dietary alpha-ketoglutarate (AKG) on bone collagen metabolism in early stages of life in piglets.
Ref. VI Baltic Bone and Cartilage Conference and III Baltic Congress of Traumatology and Orthopaedics, Tartu 6–8 IX 2007.
Publication: Eesti Arst, 8, 580, 2007. In English.

- KOWALIK S., WAWRZYŃIAK-GACEK A., PIERSIAK T., STUDZIŃSKI T., WESTRÖM B.R., PIERZYŃOWSKI S.G.: Effect of dietary α -ketoglutarate (α AKG) on bone collagen content in young growing piglets.
Ref. Vth Physiology Conference of Young Scientists on Digestive System. Lublin, 11–12 V 2007.
Publication: J. Physiol. Pharmacol., 58, 40, 2007. In English.
- PAWŁOWSKA M., PANKOWSKI P., BALA T., DONALDSON J., ŁUSZCZEWSKA-SIERAKOWSKA I., SZYMAŃCZYK-KWAPIK S.E., VALVERDE PIEDRA J.L., KAPICA M., PUZIO I., WESTRÖM B.R., PIERZYŃOWSKI S.G.: Effect of α -ketoglutarate on intestinal mucosa and bone properties in adult rats.
Ref. Vth Physiology Conference of Young Scientists on Digestive System. Lublin, 11–12 V 2007.
Publication: J. Physiol. Pharmacol., 58, 56, 2007. In English.
- SKRZYPEK T., VALVERDE PIEDRA J.L., SKRZYPEK H., KAZIMIERCZAK W., ZABIELSKI R.: Gradual disappearance of vacuolated enterocytes in small intestine of neonatal piglets
Ref. Vth Physiology Conference of Young Scientists on Digestive System, 11–12 V 2007, Lublin, Poland.
Publication: J. Physiol. Pharmacol. 58, 62, 2007. In English.
- ŚLIWA E., TATARA M. R., PIERZYŃOWSKI S. G., STUDZIŃSKI T.: Sex-dependent effect of alpha-ketoglutarate administered postnatally on ribs development in piglets prenatally treated with dexamethasone.
Ref. XXXIV European Symposium on Calcified Tissues. Kopenhaga, 5–9 V 2007.
Publication: Calcif. Tissue Int., 80 (suppl. 1), 56–57, 2007. In English.
- ŚLIWA E., TATARA M. R., STUDZIŃSKI T.: Sex-dependent effect of dexamethasone administered prenatally on femur development in piglets.
Ref. VI Baltic Bone and Cartilage Conference and III Baltic Congress of Traumatology and Orthopaedics. Tartu, 6–8 IX 2007.
Publication: Eesti Arst, 8, 571–572, 2007. In English.
- TATARA M. R., ŚLIWA E., KRUPSKI W., STUDZIŃSKI T.: 3-hydroxy-3-methylbutyrate administration diminishes fundectomy-induced osteopenia of the lumbar spine in pigs.
Ref. XXXIV European Symposium on Calcified Tissues. Kopenhaga, 5–9 V 2007
Publication: Calcif. Tissue Int. 80 (suppl. 1), 150–151, 2007. In English.
- TATARA M. R., ŚLIWA E., KRUPSKI W., STUDZIŃSKI T.: β -hydroxy- β -methylbutyrate (HMB) improves volumetric bone mineral density, morphometric and mechanical properties of tibia in male turkeys.
Ref. VI Baltic Bone and Cartilage Conference and III Baltic Congress of Traumatology and Orthopaedics. Tartu, Estonia 6–8 IX 2007.
Publication: Eesti Arst, 8, 548, 2007. In English.

TATARA M. R., ŚLIWA E, KRUPSKI W, STUDZIŃSKI T.: Prenatal programming of skeletal development in the offspring: Effects of maternal treatment with 3-hydroxy-3-methylbutyrate (HMB) on femur properties in grown pigs.
Ref. XXXIV European Symposium on Calcified Tissues. Kopenhaga, 5–9 V 2007
Publication: Calcif. Tissue Int. 80 (suppl. 1), 58, 2007. In English.

ZABIELSKA M., KAPICA M., PUZIO I., JANKOWSKA A., KATO I., KUWAHARA A., ZABIELSKI R.
Circulating obestatin may stimulate the secretion of pancreatic enzymes in anaesthetized rats.
Ref.. Vth Physiology Conference of Young Scientists on Digestive System, 11–12 V 2007, Lublin, Poland.
Publication: J. Physiol. Pharmacol. 58, 68, 2007. In English.

OTHER PUBLICATIONS

SKRZYPEK H., SKRZYPEK T., VALVERDE PIEDRA J. L., ZIELIŃSKA-CZERWIEC A., BIERNAT M., ZABIELSKI R.: The development of the small intestine structure in newborn pigs and rats [in:] Controlling the development of the gastrointestinal tract in newborn mammals (Rozwój struktury jelita cienkiego u nowonarodzonych prosiąt i szczurów [w:] Sterowanie rozwojem układu pokarmowego u nowonarodzonych ssaków).
Publication: Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa, 59–84, 2007. In Polish.

DEMBIŃSKI A., KAPICA M., WARZECHA Z., CERANOWICZ P.: The role of leptin and ghrelin in the stomach, intestine and pancreas development [in:] Controlling the development of the gastrointestinal tract in newborn mammals. (Rola leptyny i greliny w rozwoju żołądka, jelit i trzustki [w:] Sterowanie rozwojem układu pokarmowego u nowonarodzonych ssaków).
Publication: Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa, 100–125, 2007. In Polish.

SUB-DEPARTMENT OF BIOCHEMISTRY

Akademicka 12, Lublin

Head: Prof. Dr. habil. Marta Kankofer

RESEARCH STUDIES (SUMMARIES)

Marta Kankofer, Edyta Albera

THE CONCENTRATION OF VITAMIN A AND ITS PROVITAMIN – BETA CAROTENE IN BOVINE RETAINED AND NOT RETAINED PLACENTA

Carotenoids are lipophilic compounds which are involved not only in scavenging reactive oxygen species but also in many important biochemical processes. Peri-parturient period is supposed to be connected with oxidative imbalance detected in blood of mother and newborn. Colostrum contains antioxidants which should protect newborn from stressful conditions. The aim of the present study was to evaluate the relationship of beta carotene and vitamin A concentration between placenta, blood and colostrum of cows and blood of their newborns. 12 pregnant, healthy cows were included into the study. The concentration of beta carotene and vitamin A were established in homogenates of placental tissues obtained immediately after parturition as well as in blood of mother and newborn and colostrum. Additionally, blood and colostrum samples were collected 24 hours after parturition. The determinations were performed using spectrophotometric method at 325 and 453 nm. The concentration of beta carotene was significantly higher in fetal than maternal part of placenta. A plasma level significantly decreased during 24 h after parturition in cows but significantly increased in calves. A colostrum level remained relatively stable during the examined time. The concentration of retinol was significantly higher in fetal compared to maternal part of placenta. Plasma levels, significantly higher in cows than in calves, rose significantly during 24 h after parturition in mothers but remained unchanged in newborns. Colostral concentrations increased significantly during examined period of time. In conclusion, dynamic changes in carotenoid concentrations in blood of mother and newborn as well as in colostrum that occur during 24 h after parturition may indicate the importance of antioxidative defence at this time.

Publication: Acta Vet. 57, 181–189, 2007. In English, summary in English.

Witold Kędzierski

**THE CORRELATIONS OF BLOOD LACTIC ACID AND GLYCEROL LEVELS
IN PUREBRED ARABIAN HORSES DURING EXERCISE TESTS**

The physical effort influences free glycerol concentration in horse blood, as well as glycerol bounded in triacylglycerols. The aim of this study was to evaluate the influence of the intensity of exercise that was measured by a blood lactic acid (LA) level on a plasma glycerol concentration in Purebred Arabian horses. During the training sessions of 36 Arabian horses (26 stallions 3–6 years old and 10 mares aged 3–4 years), 53 exercise tests were performed. Blood samples were taken at rest, at the end of the training session including 1200 meters gallop at racetrack with a speed 8–13 m/s, and thirty minutes later. Blood LA and plasma glycerol concentrations were determined by enzymatic tests. The post-exercise LA value correlated positively with the glycerol concentration determined at the same time ($r = 0.63$) and 30 minutes later ($r = 0.80$).

Publication: Annales UMCS (Lublin) sectio DD 62, 46–52, 2007, fig. 1, tab. 1. In English, summaries in English and Polish.

Witold Kędzierski, Sylwester Kowalik, Iwona Janczarek

**SOME BIOCHEMICAL AND HEMATOLOGICAL BLOOD PARAMETERS
AND HEART RATES OF YOUNG TROTTERS IN CONSECUTIVE PHASES
OF TRAINING**

Wybrane wskaźniki biochemiczne i hematologiczne oraz częstotliwość skurczów serca u koni rasy kłusak francuski w kolejnych etapach treningu

The aim of this work was to evaluate the effects of the race training of young trotters on their heart rates (HR) and the levels of chosen blood parameters. 39 Standardbred horses 1.5–6 years old divided into three age groups were investigated. During the research, horses trotted on the distance of 15 km with the mean speed of 4.0–6.2 m·s⁻¹. Three jugular venous blood samples were taken for each horse: at rest, just after the end of training session and 30 minutes later. Hemoglobin (Hb) and lactic acid (LA) blood concentrations were determined as well as a plasma level of glucose (Glc), glycerol, free fatty acids (FFA), uric acid (UA), total plasma proteins (tPP) and activity of lactate dehydrogenase (LDH). Speed and HR during the training session were recorded by Polar speed and heart-rate telemeters.

In the group of the youngest horses, the lowest blood Hb concentration and the highest plasma Glc level were determined at rest. In this group, the highest increase of tPP and LDH was observed during the training sessions. Moreover, the values of Hb, tPP and LDH remained elevated after exercise. In groups of two-year-old and older trotters, the resting blood Hb level was higher than in the group of yearlings. Plasma glycerol and FFA values determined after exercise in three-year-old and older horses were lower compared to the groups of two-year-old and younger foals. The training process applied had a beneficial influence on the investigated horses fitness.

Publication: Acta Sci. Pol. Med. Vet., 6, 15–24, 2007, tab. 3. In Polish, summary in English.

Witold Kędzierski, Sylwester Kowalik, Iwona Janczarek

INFLUENCE OF INTERVAL AND ENDURANCE TRAINING ON THE LEVEL OF CHOSEN BLOOD PARAMETERS AND HEART RATES IN TROTTERS

Wpływ treningu typu interwałowego i wytrzymałościowego na wielkość wybranych wskaźników krwi i częstość skurczów serca kłusaków

The aim of this study was to compare the effects of types of training: interval versus endurance on heart rates (HR) and the levels of chosen blood parameters in 28 Standardbred trotters, 2–3-years-old, trained for racing. The horses were divided into groups according to type of work. Three jugular venous blood samples were taken from each horse: at rest, just after the end of the training session and after 30 min rest. Hemoglobin (Hb) and lactic acid (LA) blood concentrations were determined as well as the plasma levels of glucose (Glc), glycerol, uric acid (UA), total plasma proteins and the activity of lactate dehydrogenase (LDH). Speed and HR during the training sessions were recorded by Polar speed and heart-rate telemeters.

The interval training induced the increase in blood LA and Hb levels and plasma UA concentration directly proportional to the speed of trotting. A significant rise in the plasma level of glycerol determined immediately after exercise and 30 min later was observed during the intensity interval training session. These changes correlated positively with blood LA level and plasma Glc and negatively with total plasma proteins concentration. The determination of plasma glycerol after exercise in trotters can be a good biochemical marker for assessing the process of interval training.

Publication: Medycyna Wet. (Lublin), 63, 1258–1261, 2007, tab. 2. In Polish, summary in English.

Witold Kędzierski, Grażyna Wałkuska

EFFECTIVENESS OF COPPER SUPPLEMENTATION IN MARES DURING REPRODUCTION SEASON ACCORDING TO FEED ZINC: COPPER RATIO

Intestinal absorption of copper is inhibited by zinc. The aim of this study was to define the maximal value of Zn:Cu ratio in feed ration sufficient to increase the supply of Cu in mares with diagnosed Cu deficiency. The research was conducted in the stud, in which 46 percent of broodmares remained barren due to various reproduction malfunctions shown in the previous reproductive season: lack of estrus and ovulation, silent estrus, a lack of pregnancy after insemination as well as fetal resorptions on 21–35 day of pregnancy. The levels of Cu, Mn, Fe and Zn were determined in blood plasma from 10 barren mares and in fodder samples by atomic spectrophotometry absorption (ASA). During the study, two common mineral supplements were given in doses recommended by the manufacturers, which decreased the Zn:Cu ratio in fodder from 9.0 to 8.3 or 6.0. When Zn:Cu fodder ratio was 8.3, no effects of eight weeks of supplementation were shown. After decreasing this ratio to 6.0, plasma Cu level in mares increased from 5.5 to 12.1 $\mu\text{mol/l}$ and the mating period has proceeded without disturbances since then.

Publication: Annales UMCS (Lublin) sectio DD 62, 63–70, 2007, tab. 3. In English, summaries in English and Polish.

Justyna Przybylska, Edyta Albera, Marta Kankofer

ANTIOXIDANTS IN BOVINE COLOSTRUM

Quality, content and properties of colostrum are crucial for neonate and its further development. Due to essential differences between intrauterine and extrauterine environment, the neonate is exposed to oxidative stress conditions. Colostrum apart from nutrient and immunological components should contain antioxidative systems necessary for the protection against reactive oxygen species. This review describes available data on enzymatic and nonenzymatic antioxidants in colostrum. Due to the fact that the literature concerning bovine colostrum is scanty, the information based on bovine mature milk determinations as well as other species is provided. Bovine colostrum is used not only by calves but also for the production of hyperimmunised colostrum, medicines or feed supplements. Quality of colostrum influences quality of mature milk. This is

another reason, except for health of neonate, why antioxidative properties of bovine colostrum are of special importance and require further detailed elucidation.

Publication: Reprod. Dom. Anim. 42, 402–409, 2007. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

ALBERA E, KANKOFER M.: Ceruloplasmin in colostrum of sows.

Ref. XI Annual Conference of the European Society for Domestic Animal Reproduction, Celle 21–23 VIII 2007.

Publication: Reprod. Dom. Anim. 42, 136, 2007, In English.

SZCZUBIAL M, KANKOFER M, WAWRON W, ALBERA E, DĄBROWSKI R.: Oxidative/antioxidative status in bitches with mammary gland tumours.

Ref. XI Annual Conference of the European Society for Domestic Animal Reproduction, Celle 21–23 VIII 2007.

Publication: Reprod. Dom. Anim. 42, 126, 2007, In English.

OTHER PUBLICATION

KANKOFER M.: Biochemical parameters of human placenta [in:] Dual perfusion of human placental cotyledon in *in vitro* conditions. Ed. M. Łopucki. Parametry biochemiczne łożyska ludzkiego [w:] (Dwustronna perfuzja zrazika łożyska ludzkiego w warunkach *in vitro*).

Publication: Wydawnictwo Bifolium, 52–60, 2007. In Polish.

DEPARTMENT AND CLINIC OF ANIMAL INTERNAL DISEASES

Głęboka 30, Lublin

Head: Prof. ordin Dr. habil. Zbigniew Pomorski

RESEARCH STUDIES (SUMMARIES)

Beata Abramowicz

HAEMOLYSIS AND HAEMATOLOGY CHANGES IN DOGS WITH BABESIOSIS

Hemoliza i zmiany hematologiczne u psów z babeszjozą

The study was carried out on 82 dogs with babesiosis and 20 healthy dogs - control group. The following elements have been determined: RBC, Ht, Hgb, Hgb in serum, WBC, Plt. There was found, in comparison with literature, relatively seldom incidence of advanced anemia (12.20%). However, constant changes were thrombocytopenia (98.80%) and concentration of high hemoglobin in serum.

Publication: Annales UMCS (Lublin), sectio DD, 62, 58–64, 2007. In Polish, summary in English.

Beata Abramowicz

KIDNEY AND LIVER DISTURBANCES IN COURSE OF CANINE BABESIOSIS

Zaburzenie funkcji nerek i wątroby w przebiegu babeszjozy

The study was carried out on 82 dogs with babesiosis and 20 healthy dogs – control group. The following elements have been determined: ALT, bilirubin, urea and creatinine in serum, and Hgb, specific weight and pH in urine. In about 40% of diseased animals, kidney damage in different degree and kidney failure development were found along with a considerable increase of liver indices. In majority cases uraemia (75%), hyperbilirubinaemia (94%) and hemoglobinuria occurred.

Publication: Annales UMCS (Lublin) sectio DD, 62, 81–87, 2007. In Polish, summary in English.

Dorota Pomorska, Lennart Larsson, Czesława Skórska,
Jolanta Sitkowska, Jacek Dutkiewicz

**LEVELS OF BACTERIAL ENDOTOXIN AIR OF ANIMAL HOUSES DETERMINED
WITH GAS CHROMATOGRAPHY – MASS SPECTROMERY
AND LIMULUS TEST**

Air samples were collected on glass fibre filters in 22 animal houses and 3 hay storage barns and examined for the presence of bacterial endotoxin with the *Limulus* (LAL) test and the gas chromatography – tandem mass spectrometry (GC-MSMS) technique, based on detection of 3-hydroxy fatty acids (3-OH-FAs) as chemical markers of the endotoxin lipopolysaccharide. The median concentrations of airborne endotoxin determined with LAL test in poultry houses, sheep sheds, piggeries, cow barns and horse stables were respectively 62.49, 26.2, 3.8, 1.65, and 1.14 $\mu\text{g}/\text{m}^3$, while those determined with the GC-MSMS technique were 1.06, 7.91, 0.2, 0.31, and 1.42 $\mu\text{g}/\text{m}^3$ respectively. The median concentrations of airborne endotoxin determined with LAL test and GC-MSMS technique in hay storage barns were much smaller, 0.09 and 0.03 $\mu\text{g}/\text{m}^3$, respectively. The concentrations of airborne endotoxin (LPS) established with GC-MSMS method in the air of sheep sheds were significantly greater than in all other examined facilities, while those detected in hay storage barns were significantly smaller than in all other examined facilities ($p < 0.05$). The concentrations of airborne endotoxin determined with LAL test and GC-MSMS analysis, in most of animal houses examined (91% by each method) exceeded the threshold limit value for airborne endotoxin of 0.1 $\mu\text{g}/\text{m}^3$ proposed by various authors. A significant correlation ($p < 0.05$) was noted between the concentrations of endotoxin determined with the LAL and GC-MSMS techniques was found in the air samples collected in poultry houses and sheep sheds, but not in other examined facilities. 3-OH FAs with C14-C18 chains were predominant in the air of the facilities under study. A significant correlation ($p < 0.05$) was noted between the concentrations of endotoxin determined with LAL test and the amounts of 3-OH FAs with C14-C16 chains. In conclusion, endotoxin in the concentrations detected in this study may present a respiratory hazard to both humans and livestock animals.

Publication: Ann. Agric. Environ. Med., 14, 291–298, 2007, tab. 3. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

- KUREK Ł., STEC A., MOCHOL J.: The functional state of parenchymatous organs in dairy cows on the farms with balanced feeding. (Stan czynnościowy narządów mięszo- wych krów mlecznych w gospodarstwach wysokoprodukcyjnych o znormalizowa- nym żywieniu).
Ref. Conference „Present problems of farm and comparison animals internal dis- eases” Olsztyn 22 IX 2007.
Publication: Proceedings of the Conference „ Present problems of farm and comparison animals internal diseases”, 28–32, 2007. In Polish.
- MARCZUK J., STEC A.: Hyperlipemic syndrome in horse – full description of clinical case. (Zespół hiperlipemiczny koni – pełny obraz przypadku klinicznego).
Ref. Conference „Present problems of farm and comparison animals internal dis- eases” Olsztyn 22 IX 2007.
Publication: Proceedings of the Conference „ Present problems of farm and comparison animals internal diseases”, 55–63, 2007. In Polish.
- MOCHOL J. STEC. A., KUREK Ł.: Gastroduodenal ulceration in horses – new look at the pathophysiology and aetiopathogenesis of the disease. (Owrzodzenie żołądka i dwu- nastnicy u koni – nowe spojrzenie na patofizjologię i etiopatogenezę schorzenia).
Ref. Conference „Present problems of farm and comparison animal internal diseases” Olsztyn 22 IX 2007.
Publication: Proceedings of the Conference „ Present problems of farm and comparison animals internal diseases”, 48–54, 2007. In Polish.

OTHER PUBLICATIONS

- ABRAMOWICZ B., MILCZAK A.: Clinical picture – canine babesiosis in individual opinion. (Obraz kliniczny babeszjozy psów w ocenie własnej).
Publication: Magazyn Wet., 6, 53–56, 2007. In Polish.
- GAWOR J., TASZKUN I.: Oral hypertrophic mucous membrane inflammation in dog. Clini- cal case presentation. (Rozrostowe zmiany zapalne na błonie śluzowej jamy ustnej psa. Opis przypadku).
Publication: Magazyn Wet., 16, 46–49, 51–56, 2007, In Polish.
- GOŁYŃSKI M., SZCZEPANIK M.: Dermatomycosis in dogs and cats. Antifungal drugs available in Poland. (Dermatomikozy u psów i kotów. Leki przeciwgrzybiczeostęp- ne w Polsce).
Publication: Weterynaria w praktyce, 5, 51–54, 2007. In Polish.
- KUREK Ł., STEC A., MOCHOL J., ŁOPUSZYŃSKI W.: Type III and IV abomasal ulcer in dairy cattle. (Wrzód trawieńca typu III i IV u krów mlecznych).
Publication: Medycyna Wet. (Lublin) 63, 1587–1590, 2007. In Polish, summary in English.

- MADANY J.: Dystrophie and degeneration of cornea in small animal in light of clinical observation. Part II. (Dystrofie i degeneracje rogówki u małych zwierząt z uwzględnieniem obserwacji własnych. Cz. II).
Publication: Magazyn Wet., 16, 42–45, 2007. In Polish.
- MOCHOL J., BRODZKI A., KUREK Ł., ORZELSKI M., STEC A.: Dislocation of ileus in foal: diagnosis and therapy. (Przemieszczenie jelita biodrowego u źrebięcia – rozpoznanie i terapia).
Publication: Medycyna Wet. (Lublin), 63, 344 – 347, 2007. In Polish, summary in English.
- POMORSKA D., SZCZEPANIK M., ŁOPUCKA D.: Hepato-cutaneous syndrome. Diagnostics and therapy. Selected case. (Zespół skórno-wątrobowy. Rozpoznawanie i leczenie. Wybrany przypadek).
Publication: Weterynaria w praktyce, 6, 56–58, 2007. In Polish.
- SZCZEPANIK M.: Dermatology in Practice. Dogs and Cats – Clinical Cases. (Dermatologia w praktyce. Psy i koty – studium przypadków).
Publication: Elamed, Katowice, 2007, pp. 174. In Polish.
- SZCZEPANIK M., BLIMKE Z., ŚMIECH A., TASZKUN I., WILKOLEK P., POPIEL J., POMORSKA D., GOŁYŃSKI M.: Selected genetical dermatoses in dogs and cats self observation. Part II. (Wybrane uwarunkowane genetycznie choroby skóry psów w świetle obserwacji własnych. Cz. II).
Publication: Magazyn Wet., 16, 20–26, 2007. In Polish.
- SZCZEPANIK M., GOŁYŃSKI M.: Ehlers-Danlos syndrome. Astenia skóry (syndrom Ehlersa-Danlos).
Publication: Weterynaria w praktyce, 2, 88–90, 2007. In Polish.
- SZCZEPANIK M., GOŁYŃSKI M., CHMIELECKA K.: Dermatophytosis in cattle – still actual problem. (Dermatofitoza bydła – problem znany od dawna, lecz aktualny).
Publication: Magazyn Wet., 16, 37–42, 2007, In Polish.
- SZCZEPANIK M., GOŁYŃSKI M., POPIEL J., BLIMKE Z., ŚMIECH A., TASZKUN I., WILKOLEK P., POMORSKA D.: Selected genetical dermatoses in dogs and cats self observation. Part III. (Wybrane uwarunkowane genetycznie choroby skóry psów w świetle obserwacji własnych. Cz. III).
Publication: Magazyn Wet., 16, 28–35, 2007. In Polish.
- SZCZEPANIK M., POMORSKA D.: *Sebaceus adenitis*. Clinical case presentation. (Zapalenie gruczołów łojowych. Przypadek kliniczny).
Publication: Weterynaria w praktyce, 3, 18–21, 2007. In Polish.
- SZCZEPANIK M., WILKOLEK P.: *Feline pruritus* – causes and diagnostic management. (Świąd u kotów – przyczyny oraz postępowanie diagnostyczne)
Publication: Magazyn Wet., 16, 51–56, 2007. In Polish.

- TASZKUN I., SZCZEPANIK M.: The cytological examination for canine inflammatory skin disease diagnosis. P. I. The principles of veterinary dermatological cytodiagnostics. (Badanie cytologiczne w rozpoznawaniu zapalnych chorób skóry psów. Cz. I. Podstawy weterynaryjnej cytodiagnosticsy dermatologicznej).
Publication: Magazyn Wet., 16, 9–15, 2007. In Polish.
- WILKOLEK P., POMORSKA D., SZCZEPANIK M.: Atypical case of Flea Allergy in German sheperd dog. (Nietypowy przypadek APZS u owczarka niemieckiego).
Publication: Magazyn Wet., 16, 28–30, 2007. In Polish.
- WILKOLEK P., SZCZEPANIK M.: Horse allergic diagnostic. (Diagnostyka alergologiczna koni).
Publication: Weterynaria w praktyce, 6, 70–74, 2007. In Polish.
- WILKOLEK P., SZCZEPANIK M., GOŁYŃSKI M.: Allergic laryngitis in small animals. (Alergiczny obrzęk krtani u małych zwierząt).
Publication: Magazyn Wet., 16, 18–20, 2007. In Polish.
- WILKOLEK P., SZCZEPANIK M., TASZKUN I.: *Lupus erythematosus*. Autoimmunological skin diseases in dogs and cats. Part II. (Toczeń rumieniowaty. autoimmunologiczne choroby skóry psów i kotów. Część II).
Publication: Weterynaria w praktyce, 3, 12–17, 2007. In Polish.
- WILKOLEK P., TOCZEK W., ŚMIECH A., SZCZEPANIK M.: Calcinosis cutis in the dogs – causes and pathogenesis. (Zwapnienia skóry u psów – przyczyny i patogenезa).
Publication: Życie Wet., 82, 742–745, 2007. In Polish, summary in English.

DEPARTMENT AND CLINIC OF ANIMAL REPRODUCTION

Głęboka 30, Lublin

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

RESEARCH STUDIES (SUMMARIES)

Piotr Brodzki, Zygmunt Wrona, Leszek Krakowski, Adam Brodzki

INFLUENCE OF TAMOXIFEN ON SEXUAL IMPULSE AND SEMEN BIOLOGICAL VALUE IN MALE DOGS

In the recent years cytostatics have been used more and more frequently in animal treatment. Besides their beneficial influence, they have a negative influence on the function of healthy cells and tissues of the animal organism, especially those, in which quick proliferation processes take place. Therefore, the objective of the studies was to determine the effect of tamoxifen on the sexual impulse and selected characteristics of semen quality in dogs. The studies were conducted on 12 male dogs (5 to 10 yr old). The animals were divided into two groups: an experimental one – 6 tamoxifen-treated dogs; a control one – 6 clinically healthy dogs. The clinical examinations evaluating the overall state of health, sexual impulse, and determining testosterone level in the blood serum were performed as well as the study of semen (spermatozoa concentration, percentage of dead spermatozoa, evaluation of spermatozoa morphology, evaluation of spermatozoa cell membrane activity – HOS test). The conducted studies showed that tamoxifen employed had a negative influence on the function of the reproductive system in male dogs and caused the worsening of most of the evaluated characteristics of the semen in the first week of the treatment, and later. Since the second week of the treatment, it produced aspermia with the complete loss of male fertility. The loss of fertility appeared to be periodical and lasted for about 60 days. After that time male dogs regained the ability to produce ejaculate of very weak quality which gradually improved later.

Publication: Bull. Vet. Inst. Pulawy, 51, 383–391, 2007, fig. 2, tab. 3. In English, summary in English.

Piotr Brodzki, Zygmunt Wrona, Leszek Krakowski,
Adam Brodzki, Wojciech Łopuszyński

**EFFECT OF CYCLOPHOSPHAMID ADMINISTRATION ON SOME PARAMETERS
OF CANINE SEMEN**

Wpływ podawania cyclofosfamidu na wartość wybranych parametrów nasienia psów samców

As a consequence of cyclophosphamid treatment in dogs, the majority of evaluated parameters of the semen decreased significantly. The increased percentage of dead spermatozoons as well as reduced concentration in the semen during (86,5 ±68,9) and after (46,3 ±51,8) the treatment with cyclophosphamid were noted. Osmotic resistance test in dogs treated with cyclophosphamid has shown decreased amount of spermatozoons characterized by the proper function of the cellular membrane (78,0 ±3,78). Moreover, lowered percentage of spermatozoons with proper morphological structure (79,1±7,9) and elevated percentage of spermatozoons with principal (11,5 ±4,9) and secondary (9,5 ±3,4) defects in these animals were stated. The histopathologic analysis performed during and after the cyclophosphamid treatment confirmed damaged sperminiferous epithelium that was related to semen quality. In conclusion, treatment with cyclophosphamid at the therapeutic dosage induced negative effects on the investigated parameters and semen quality, disturbing spermatogenesis process.

Publication: Medycyna Wet. (Lublin) 63, 439–443, 2007, fig. 1, tab. 3. In Polish, summary in English.

Roman Dąbrowski

**PARAMETERS OF NON-SPECYFIC IMMUNITY AFTER
OVARIOHYSTERECTOMY IN BITCHES**

Wskaźniki odporności nieswoistej po zabiegach ovariohisterectomii u suk

Ovariohysterectomy is the treatment of choice for pyometra and a common contraceptive method in bitches. The effectiveness of preventing the postoperative complications depends largely on proper monitoring of the health conditions of bitches. The non-specific immunity parameters in the follow-up period are evaluated using the NBT test as well as determining the phagocytic index, percentage of phagocytizing cells, lysozyme activity, serum levels of total protein and its globulin fraction.

Our study shows that the values of selected parameters of non-specific immunity provide valuable information concerning the end of inflammatory reaction caused by discontinuity of tissues in the normal postoperative course. Moreover, the data obtained indicate that such parameters may be used in routine diagnostic procedures for early postoperative complications.

Publication: Medycyna Wet. (Lublin), 63, 557–560, 2007, fig. 5. In Polish, summary in English.

Roman Dąbrowski, Władysław Wawron, Krzysztof Kostro

CHANGES IN CRP, SAA AND HP PRODUCED IN RESPONSE TO OVARIOHYSTERECTOMY IN HEALTHY BITCHES AND THOSE WITH PYOMETRA

The aim of the study was to assess changes in serum CRP, SAA and Hp concentrations in healthy bitches and in those with pyometra undergoing ovariohysterectomy and to establish the usefulness of such determinations for monitoring the postoperative period. Our results indicate that CRP and SAA determinations serve to evaluate the severity of the inflammatory process in pyometra since the concentrations of these acute phase proteins increased immediately after surgery and diminished thereafter. The CRP and SAA response was rapidly produced while Hp concentrations increased in a more gradual manner. Thus, postoperative concentrations of CRP and SAA provide valuable information on the subsidence of the inflammatory response during the follow-up period. Our findings also suggest that acute phase proteins may be employed as routine diagnostic markers for detection of early postoperative complications.

Publication: Theriogenology, 67, 321–327, 2007, fig. 3, tab. 1. In English, summary in English.

Leszek Krakowski, Barbara Zdzińska

SELECTED CYTOKINES AND ACUTE PHASE PROTEINS IN HEIFERS DURING THE OVARIAN CYCLE COURSE AND IN DIFFERENT PREGNANCY PERIODS

In reproductive processes, cytokines and growth factors (IFN- γ , TNF- α , TGF β 1) as well as acute phase proteins (Hp and SAA) promote many important functions, like growth of the ovarian vesicle, ovulation, embryo development, implantation, placenta development and finally delivery. The mutual integration of acute phase proteins with the cytokine system ensures a kind of immunological dialogue between the mother and the developing embryo. All factors disturbing this balance can cause the pregnancy loss or influence negatively the course of the perinatal period.

Publication: Bull. Vet. Inst. Pulawy, 51, 31–36, 2007, tab. 4. In English, summary in English.

Ronald Kusy

OVARIAN DISTURBANCES IN MARES

Schorzenia jajników klaczy

The paper focuses on the structural and functional disturbances diagnosed in changed ovaries in mares. Anamnesis, sexual behavior assessment, rectal palpation and ultrasonography enable to diagnose most of the pathological changes. Determining some of the ovarian disturbances demands biopsy, hormonal and cytogenetic analyses. The presence of small and inactive ovaries can indicate hypofunction or chromosomal hypoplasia. Enlarged ovaries can be accompanied by tumors, hematomas, cysts and abscesses. Some pathological changes influence the ovulatory cycle, others are insignificant for ovarian activity and fertility in mares.

Publication: Medycyna Vet. (Lublin) 63, 1534–1538, 2007, fig. 5. In Polish, , summary in English.

REPORTS TO RESEARCH MEETINGS

DĄBROWSKI R., SZCZUBIAŁ M., KUSY R., PIECH T.: Usefulness of determinations of selected acute phase reaction coefficients in bitches with pyometra undergoing ovariohysterectomy with postoperative complications.

Ref. Conference of the European Society Domestic Animal Reproduction (ESDAR), 21–23 IX 2007, Celle, Germany.

Publication: Reprod. Dom. Anim., 42, 125, 2007. In English.

KUSY R., SZCZUBIAŁ M., DĄBROWSKI R.: Effect of dalarelin suspension on ovarian function and fertility of transitional mares with endometriosis.

Ref. Conference of the European Society Domestic Animal Reproduction (ESDAR), 21–23 IX 2007, Celle, Germany.

Publication: Reprod. Dom. Anim., 42, 131, 2007. In English.

OTHER PUBLICATION

DĄBROWSKI R., KUSY R., SZCZUBIAŁ M., PIECH T.: Pyometra in bitches – continually topical problem. Ropomacicze u suk – problem wciąż aktualny.

Publications: Weterynaria w Praktyce. 2, 38–41, 2007, fig. 6. In Polish, summary In English.

DEPARTMENT AND CLINIC OF ANIMAL SURGERY

Głęboka 30, Lublin

Head: Prof. Dr. habil. Piotr Silmanowicz
Dr. habil. Ireneusz Balicki

RESEARCH STUDIES (SUMMARIES)

Izabela Polkowska, Maciej Orzelski

TRAUMATIC DENTAL LUXATION IN DOG – CLINICAL CASE

Przypadek pourazowego zwichnięcia zęba u psa

The peridontinum includes gingiva, cementum, periodontal ligament and maxillary or mandible bone. Gingival mucous membrane forms the connective fibrous tissue. Space, which is between alveolar bone and cementum is filled up by periodontal membrane. The mechanical function of periodontal membrane consists in teeth fixation in the alveolus as well as stimulating effect on the proper process of bone remodeling. At the moment of trauma, periodontinum can be damaged. The lesions are divided into subluxation, luxation or dental prolapse from the alveolus. The case of German sheepdog with the right canine maxillary tooth luxation was described. Treatment of the dental luxation belongs to emergency procedures, because of the surviving time of peridontinum cells. The optimal time of intervention is 30 minutes from injury.

Publication: Medycyna Wet. (Lublin) 63, 1200–1203, 2007, fig. 11. In Polish, summary in English.

Ireneusz Balicki, Renata Komsta, Piotr Dębiak, Robert Imioło

**CLINICAL AND RADIOGRAPHIC EXAMINATION OF THREE CASES
OF RADIAL HEMIMELIA IN A CAT**

Badania kliniczne i radiograficzne trzech przypadków kończyny połowicznej u kota

The aim of the study was to analyze three cases of radial hemimelia in cats. The disease was diagnosed during the clinical and radiographic examination of the cats, aged between 6 and 16 weeks. Radiographic examination revealed not only the absence of the radial structures of the forearm, deformation of the ulna, but also subluxation of the humeroulnar and anterobrachial joints and the incorrect location of the carpal bones. No attempt was made to treat the abnormal limb in any of cases. After a few months the cats were examined again. In all three cases the abnormality of the limb resulted in different contrains of physical fitness as well as different development of degenerative joints disease. No symptoms of distinct discomfort occurred. Adaptation to the abnormality was very good and with simple assistance the cats were capable of living a farly normal life.

Publication: Medycyna Wet. (Lublin) 63, 1207–1210, 2007 In Polish, summary in English.

Ireneusz Balicki, Dorota Róžańska, Andrzej Ćwiek, Piotr Silmanowicz,
Tomasz Szponder, Adam Brodzki

**SHORT-ACTING ANAESTHESIA IN DOGS WITH THE USE OF MIDAZOLAM
AND XYLAZINE**

Krótkotrwałe znieczulenie psów przy użyciu midazolamu i ksylazyny

The clinical practice of small animals often requires immediate introduction of patient in short-acting anaesthesia. The aim of the study was the estimation of using midazolam, xylazine to short-acting anaesthesia in dogs. The investigation was carried out on 27 dogs. The general anaesthesia was performed by using the mixture including: atropine 0,05 mg/kg, xylazine 1 mg/kg and midazolam 0,3 mg/kg. The drugs were administered intravenously by one syringe in the dose which depends on the effects of action. Anaesthesia was evaluated testing palpebral reflex, corneal reflex, superficial sensibility and pedal reflex. Body temperature, heart rate, respiratory rate, parameters of acid-base balance and blood oxygenation were determined during anaesthesia. Intravenous administration of atropine, xylazine and midazolam in the dose which depends on the effects of action induce general anaesthesia lasts approx. 20 minutes. The anaesthesia was connected with the losing of consciousness and pain sensitivity. This kind of anaesthesia causes transient acid base-balance disturbances and respiratory depression. The method of anaesthesia used in our study provides fast induction and recovery without antagonists. The negative effect on the anaesthetised animals was minimal.

Publication: Medycyna Wet. (Lublin) 63, 72–74, 2007, fig. 3. In Polish, summary in English.

Adam Brodzki

CONCENTRATION OF ZINC AND COPPER IN SKIN NEOPLASTIC TISSUES IN DOGS

The aim of the study was to determine the concentrations of trace elements like, zinc and copper in skin neoplastic tissues and serum in dogs. The study was performed on 26 dogs suffering from malignant and benign neoplastic processes using atomic absorption spectrophotometric apparatus (PAY, UNICAM). The obtained results showed copper and zinc increase in neoplastic tissues and the differences were statistically significant in dogs with malignant processes.

Moreover, the analysis of the serum in dogs with malignant neoplastic processes revealed a significantly decreased concentration of zinc and copper.

Publication: Bull. Vet. Inst. Pulawy, 51, 271–273, 2007. In English, summary in English.

Adam Brodzki, Marcin Tatara

**COPPER AND ZINC CONCENTRATION IN MAMMARY GLAND TUMOR
TISSUE OF DOGS**

Neoplastic process induces disturbance of bioelement metabolism in organism. Zinc and copper play an essential role in the antioxidative processes and protect organism against negative influence of free radicals. The aim of this study was to determine zinc and copper concentration in neoplastic tissue and serum of 24 bitches of different breeds with diagnosed mammary gland tumors. The determination of zinc and copper concentration in serum and analyzed tissues from dogs was performed using spectrophotometric atomic absorption method and PAY-UNICAM apparatus. The obtained results showed a significantly increased concentration of zinc and copper in neoplastic tissues of dogs with malignant tumors. Furthermore, significantly decreased serum concentration of zinc and copper was detected in dogs with malignant tumors. In conclusion, the obtained results indicate that evaluation of copper and zinc concentration in neoplastic tissues and serum of dogs may be useful for the purposes of diagnosis, evaluation of treatment effectiveness and prediction of further prognosis.

Publication: Pol. J. Environ. Studies (Olsztyn), 16, 3A, 38-41, 2007. In English, summary in English.

Izabela Polkowska

TRAUMATIC LESIONS IN ORAL CAVITY

Przypadki pourazowe w okolicy jamy ustnej

The article presents lesions in the oral cavity caused by traffic accidents, animal fights and fall from the height.

Publication: Magazyn Wet. 16, 11-13, fig. 7. In Polish.

REPORTS TO RESEARCH MEETING

- BALICKI I.: Fungal keratitis in horses (Grzybicze zapalenie rogówki u koni).
Ref. Congress: Dogs and horses ophthalmology. The most current problems. Lublin, 21 IV 2007.
Publication: Proceedings of Congress: Dogs and horses ophthalmology. The most current problems, 47–54, 2007, In Polish.
- BALICKI I.: The use of dexamethazone and dimethyl sulfoxide for chronic superficial keratitis treatment in dogs.
Ref. International Veterinary Ophthalmology Meeting, Genowa, 30 V–04 VI 2007.
Publication: Proceedings Book of International Veterinary Ophthalmology Meeting, 173, 2007. In English.
- BALICKI I., TRBOLOVA A.: Treatment of deep corneal lesions in dogs with the use of renal capsule.
Ref. International Veterinary Ophthalmology Meeting, Genowa, 30 V–4 VI 2007.
Publication: Proceedings Book of International Veterinary Ophthalmology Meeting, 174, 2007. In English.
- BALICKI I., ZIÓLKOWSKA G., ŚMIECH A.: The clinical cases of polyetiological equine keratitis (Przypadek zapalenia rogówki o złożonej etiologii u konia).
Ref. Congress: Dogs and horses ophthalmology. The most current problems. Lublin, 21 IV 2007.
Publication: Proceedings of Congress: Dogs and horses ophthalmology. The most current problems, 40–46, 2007, In Polish.
- POLKOWSKA I.: Periodontal therapy in dogs (Leczenie chorób paradontopatycznych u psów).
Ref. The VI th International Veterinary Conference : Small animals diseases, Lvov, 23–25 V 2007.
Publication: Proceedings of the VI th International Veterinary Conference: Small animals diseases, 22–23, 2007. In Polish.

OTHER PUBLICATION

- BALICKI I., RADZIEJEWSKI K.: Prolapse of third eyelid gland of dogs in one's own remark. (Przerost i wypadnięcie gruczołu trzeciej powieki u psów w świetle obserwacji własnych).
Publication: Magazyn Wet. 16, 5–8, 2007. In Polish.

LABORATORY OF VETERINARY RADIOLOGY AND ULTRASONOGRAPHY

Głęboka 30, Lublin

Head: Dr. Renata Komsta

REPORTS TO RESEARCH MEETINGS

DEBIAK P., ŁOJSZCZYK A., KOMSTA R., ŁOPUSZYŃSKI W., KUTRZUBA J.: Peritoneopericardial diaphragmatic hernia in a dog, case history (Przepuklina otrzewnowo – osierdziowa u psa, opis przypadku).

Ref.: International Congress of Diagnostic Imaging Section Polish Small Animal Veterinary Association and Faculty of Veterinary Medicine in Warmińsko – Mazurski University, Olsztyn, 18 XI 2007

Publication: Monograph: Contemporary imaging technologies in diagnosis of chest's organs diseases, 183–185, 2007. In Polish.

KOMSTA R., ŁOPUSZYŃSKI W., ŚMIECH A., DĄBROWSKI R.: Corellation between mammary gland tumors and neoplasma metastases to lungs in bitches (Nowotwory gruczołu sutkowego a przerzuty nowotworowe do płuc u suk).

Ref.: International Congress of Diagnostic Imaging Section Polish Small Animal Veterinary Association and Faculty of Veterinary Medicine in Warmińsko – Mazurski University, Olsztyn, 18 XI 2007

Publication: Monograph: Contemporary imaging technologies in diagnostic of chest's organs diseases, 173–177, 2007. In Polish.

DEPARTMENT OF EPIZOOTIOLOGY AND CLINIC OF INFECTIOUS DISEASES

Głęboka 30, Lublin

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

RESEARCH STUDIES (SUMMARIES)

Łukasz Adaszek, Stanisław Winiarczyk

EPIZOOTICAL SITUATION OF DOG EHRlichIOSIS IN AREA OF LUBELSKIE VOIVODESHIP

Sytuacja epizootyczna erlichiozy psów na terenie Lubelszczyzny

The aim of this study was to estimate an epizootical situation of dog ehrlichiosis in area of Lubelskie Voivodeship. From 76 dogs days there were collected blood samples for molecular and serological (ELISA) examinations against *Anaplasma phagocytophilum*. In all cases the results of PCR. ELISA test revealed anti-*Anaplasma phagocytophilum* antibodies in 16 out of 76 serum samples (21,05%). The presence of antibodies specific for rickettsiae indicates that these dogs had contact with this pathogen. The negative PCR results showed that at the examination time no *Ehrlichia* infection was detected in these dogs.

Publication: Annales UMCS (Lublin) sectio DD 62, 65–72, 2007. In Polish, summary in English.

Łukasz Adaszek, Stanisław Winiarczyk, Jacek Kutrzuba,
Wojciech Łopuszyński, Adam Brzana

ABORTION DUE TO DISTEMPER VIRUS IN RANCH FOXES

Zaburzenia rozrodu na tle zakażeń mięsem nosówki u lisów

The aim of this study was to recognize an etiological factor of the disease with the symptoms of abortion paralysis, pneumonia and puppy death on the ranch fox farm. Clinical, anatomopathological, histopathological, serological, molecular and immunochromatographical examinations were done. On the basis of research results, an infection by distemper virus was diagnosed.

Publication: Życie Wet. 82, 127–129, 2007, fig 3. In Polish, summary in English.

Łukasz Adaszek, Stanisław Winiarczyk, Jacek Kutrzuba,
Wojciech Łopuszyński, Anna Śmiech.

CRYPTOCOCCOSIS IN DOGS

Przypadki kryptokokozy u psów

The aim of this study was to recognize an etiological factor of the diseases in three dogs with symptoms of skin ulceration in the distal parts of pads and in the hypoabdominal region. Microbiological, haemathological and histopathological examinations were done. On the blood agar, the growth of *S. epidermidis* after 24 h incubation was observed. Skin biopsy and histopathological examinations revealed large amount of *Cryptococcus* spores. After six weeks of therapy with ketoconazole and enrofloxacin full recovery in all 3 dogs was noted. On the basis of results of the clinical, microbiological; and histopathological examinations and successful therapy, the etiological factor of these diseases was recognized as *Cryptococcus spp.* and bacteria *Staphylococcus*.

Publication: Życie Wet. 82, 762–765, 2007, fig 3. In Polish, summary in English.

Łukasz Adaszek, Stanisław Winiarczyk, Jacek Kutrzuba,
Katarzyna Surma-Kurusiewicz

IVERMECTIN TOXICOSIS IN CATS

Zatrucia ivermektyną u kotów

Ivermectin in cats is used for the treatment of ear mites, demodecosis and occasionally for endoparasites prevention. Parenteral and oral administration of ivermectin products can result in toxicosis. Reports of ivermectin toxicosis usually involve kitten. This paper describes the symptoms of toxicosis (ataxia, weakness, miosis) and the treatment of intoxicated animals. Application of neostigmine with dexamethazone resulted in full recovery in 3 out of 5 observed cats. The other two animals died during the therapy.

Publication: Życie Wet. 82, 942–944, 2007, fig 1. In Polish, summary in English.

Krzysztof Kostro, Katarzyna Wojcicka-Lorenowicz, Barbara Majer-Dziedzic,
Łukasz Jarosz, Tomasz Piech, Mariusz Mikołajczak

EVALUATION OF LYMPHOCYTE SUBPOPULATION AND SOME CYTOKINES IN RABBITS WITH CHRONIC TRICHOPHYTOSIS

Ocena subpopulacji limfocytów oraz wybranych cytokin u królików z przewlekłą trichofitozą

The aim of the studies was a cytometric analysis of lymphocyte subpopulation with markers CD3, CD4, CD8, CD19 and CD25 and serum level of TNF- α and IL-10 in peripheral blood of rabbits with a chronic trichophytosis caused by *Trichophyton mentagrophytes*. In trichophytic rabbits suppression of cellular immune responses characterized by an increase of percentage of suppressor lymphocytes TCD8⁺ and the decreased proportion of TCD4⁺/TCD8⁺ was noted. In rabbits with chronic trichophytosis, an immunological profile was characterized by increased level of Th2 and hence by increased production of IL-10. The high concentrations of IL-10 most probably generated anergic lymphocytes TCD4⁺ and TCD8⁺ inducing antigenic specific immunosuppression while this cytokine played a key role in regulation of immune response towards restriction of inflammation and increase of humoral immune response together with blocking cytokines of Th1 type.

Publication: Medycyna Wet. (Lublin) 63, 232–237, 2007, fig. 7, tab. 1. In Polish, summary in English.

Krzysztof Kostro, Andrzej Zoń, Paweł Bielański, Łukasz Jarosz

**UNSPECIFIC CELLULAR IMMUNITY IN BREEDING FOXES
IN DIFFERENT BEHAVIORAL TYPES**

Komórkowa odporność nieswoista u lisów hodowlanych w zależności od zachowań behawioralnych

The objective of the studies was comparison of chosen unspecific immune cellular parameters in female polar foxes in different behavioral types in preparturient period. The studies were done on 51 female foxes of the basal breed divided into three groups: confident, timid and aggressive animals. The animals were divided on the basis of behavior in the catching and feeding tests. Statistically significant differences were found in the examined parameters of unspecific cellular immune responses in relation to a behavioral type. The highest values of the NBT reduction, phagocytic and bactericidal activity were noted in the „confident” male foxes and the lowest in the „timid” animals. The observed differences in unspecific cellular immune parameters in breeding foxes of different behavior related to the genome may influence the susceptibility of animals to infectious diseases. In fox breeding selection, irrespectivel of breeding parameters the studies on immunity should be taken into account.

Publication: Medycyna Wet. (Lublin) 63, 322–325, 2007, fig. 5. In Polish, summary in English.

Krzysztof Kostro, Andrzej Zoń, Łukasz Jarosz, Tadeusz Stefaniak

**A LEVEL OF HAPTOGLOBIN, IGG AND LYSOZYME IN SERA OF POLAR FOXES IN
RELATION TO THEIR BEHAVIOR**

Poziom haptoglobiny, immunoglobuliny G i lizozymu w surowicy lisów polarnych
w zależności od typu behawioru

The aim of the studies was to evaluate the usefulness of the determination of a level of haptoglobin, IgG and lysozyme in sera for monitoring the health state of breeding polar foxes of different behavior at the preparturient period. It was found that determination of physiological parameters of unspecific humoral immunity should include behavior of animals. There exist significant differences in the examined parameters of unspecific immune responses and behavior of foxes. The highest and statistically significant level of haptoglobin, IgG and lysozyme was noted in fearful foxes in comparison to aggressive and confident

animals. It can be assumed that lower phagocytic and bactericidal activity noted in the fear foxes in comparison to those in the aggressive and confident animals is compensated by a higher bacteriolytic activity of lysozyme and a higher serum IgG level.

Publication: Medycyna Wet. (Lublin) 63, 864–867, 2007, fig. 3. In Polish, summary in English.

Krzysztof Kostro, Katarzyna Wojcicka-Lorenowicz, Barbara Majer-Dziedzic,
Zbigniew Grądzki, Łukasz Jarosz

**EVALUATION OF LYMPHOCYTE SUBPOPULATION, PHAGOCYtic ACTIVITY
AND OXYGEN METABOLISM OF GRANULOCYTES OF RABBITS INFECTED WITH
Trichophyton mentagrophytes AND IMMUNIZED AGAINST TRICHOPHYTOSIS**

Ocena subpopulacji limfocytów oraz aktywności fagocytarnej i metabolizmu tlenowego granulocytów u królików zakażonych *Trichophyton mentagrophytes* i poddanych wakcynoterapii

The aim of the study was to evaluate the CD3, CD4, CD8, CD19, CD25 T lymphocyte subpopulation and state of granulocytes activity in peripheral blood of rabbits infected with *Trichophyton mentagrophytes* and immunized against trichophytosis by using the flow cytometry method. Our study revealed significant suppression of non-specific cellular antimycotic immunity in rabbits during the development of fungal lesions, which manifested a significant decrease in the phagocytic activity and oxygen metabolism of granulocytes and decrease of subpopulation CD3, CD4, and CD25 T lymphocytes. Simultaneously, the increase of suppressor CD8 T cells and CD4/CD8 T-cells ratio were observed. The vaccine Alopevac can be used as an effective vaccine against rabbits trichophytosis. The Alopevac restored non-specific cellular antimycotic immunity and proper CD4/CD8 T-cells ratio, which contribute to the effective elimination of fungal lesions.

Publication: Medycyna Wet. (Lublin) 63, 1616–1621, 2007, fig. 4. tab. 1. In Polish, summary in English.

Stanisław Winiarczyk, Łukasz Adaszek, Asteria Štefančíkova,
Branislav Pet'ko, Lydía Cislakova, Andrzej Puchalski

**THE SEROLOGICAL INVESTIGATIONS TOWARDS BORRELIOSIS
AND EHRLICHIOSIS IN POPULATIONS OF PIGS AND CATTLE
IN LUBLIN VOIVODESHIP**

Badania w kierunku boreliozy i erlichiozy świni i krów na Lubelszczyźnie

The aim of this paper was the detection of specific antibodies anti-*Borrelia* and anti-*Ehrlichia* in the sera of 28 diseased pigs and 29 diseased cows from the area of Lublin Voivodeship. ELISA tests, and Western blott were done. In ELISA tests 17,86% of porcine sera were positive for spirochetes and 7,14% for *Ehrlichia*. In a bovine group 44,83% of sera specimens were positive for *Borrelia*, and 20,69% for *Ehrlichia*. All sera which were positive in ELISA tests for spirochetes were examined additionally by Western blott method for the presence of antibodies against *Borrelia afzelii* (13 bovine sera, and 5 porcine sera). In 8 out of 13 bovine sera (61,54%) and in one out of 5 (20%) swine sera, that were positive in ELISA test, specific antibodies against *Borrelia* were detected. In all cases IgG immunoglobins reacted strongly with antigens: 31, 39, 41, 66 kDa of *B. afzelii*. The results revealed low specificity of ELISA test for the detection of borreliosis and confirmed the endemic occurrence of *Borrelia* and *Ehrlichia* in the area of Lubelskie Voivodeship.

Publication: Medycyna Wet. (Lublin) 63, 561–565, 2007. In Polish, summary in English.

OTHER PUBLICATIONS

ADASZEK Ł., WINIARCZYK S.: Canine ehrlichiosis. (Erlichioza psów).

Publication: Życie Wet. 82, 991–993, 2007. In Polish, summary in English.

LISIECKA U., KOSTRO K., JAROSZ Ł.: Application of flow cytometry in veterinary medicine.

(Możliwość wykorzystania cytometrii przepływowej w medycynie weterynaryjnej).

Publication: Medycyna Wet. (Lublin) 63, 1040–1044, 2007. In Polish.

DEPARTMENT OF FOOD HYGIENE OF ANIMAL ORIGIN

Akademicka 12, Lublin

Head: Prof. ordin. Dr. habil. Elżbieta Pelczyńska
Prof. Dr. habil. Krzysztof Szkucik
Dr. habil. Zygmunt Nowakowski

RESEARCH STUDIES (SUMMARIES)

Elżbieta Pelczyńska, Waldemar Paszkiewicz

THE HYGIENIC QUALITY OF RAW MILK FROM THE REGION OF EASTERN POLAND IN THE SO CALLED TRANSITION PERIOD

Jakość higieniczna mleka surowego z terenu wschodniej Polski w tzw. okresie przejściowym

Upon Poland's entering EU in 2004, dairy factories were modernized and adapted to EU standards. Only raw milk with a content not exceeding 100 thousand bacteria and up to 400 thousand somatic cells per 1 cm³ could be used for the production of drinking milk. In some regions of Poland, milk did not meet these standards which made it impossible for dairy producers to maintain continuous production. In these conditions some of the regions gained a transition period, until the end of 2006, during which they had the right to „segregate milk”, that is to collect milk that meets EU standards, as well as milk that does not meet them, i.e. with a higher bacteria count (up to 400 thousand) and somatic cell count (up to 500 thousand per 1 cm³).

The aim of the investigation was to evaluate the quality of the raw milk collected by dairies from the producers that were in the adaptation period for EU standards representing two different regions in the eastern part of Poland. The investigations were conducted on raw milk collected from individual farms for two dairy factories (A and B) from different regions of the eastern part of the country. The producers were small farms that maintained an average of 3–4 cows. After it was transported to the dairy, the milk temperature was evaluated according to Polish standards, along with its density, acidity, freezing point, total

bacteria count, somatic cell count per 1 cm³, as well as the presence of inhibitory substances. It was stated that in comparison with milk collected by dairy A, milk from dairy B was characterized by higher acidity, a higher bacterial and somatic cell count per 1 cm³ contamination as well as presence of inhibitory substances. Milk from both dairies did not meet the lower transitional standards and hygienic standards and was unfit for consumption. Results indicate the difficulty small farms face in adapting to the necessary hygienic standards. Poland is among the countries with a strongly fragmented milk production, which results in lesser technological advances in small farms than in the large ones. The implementation of sanitary-veterinary standards connected with the conditions of maintaining the cows' health and handling of the milk after milking is also less advanced. What is crucial in this matter are economic factors as well as ingrained habits of a low hygienic regime in milking and milk storage. However, in the general evaluation of the hygienic quality of Polish milk it is possible to express a measure of satisfaction that a good deal of the measures taken regarding the problem since 2004 have already produced good results.

Publication: Medycyna Wet., (Lublin) 63, 1572–1575, 2007, tab. 1. In Polish, summary in English.

Ryszard Kazimierz Pisarski, Mirosław Zięba, Krzysztof Szkucik

**THE INFLUENCE OF SOME HERBS AS ANTIBIOTIC GROWTH PROMOTER
SUBSTITUTE ON THE RESULTS OF BROILER CHICKEN REARING**

During the experiment with 210 ROSS broilers, the effect of some herbs AGP substituting was examined. The feed compound for control birds contained AGP (*Flavomycin*), whereas experimental feeds comprised 2% of dried herbs, as follows: 1 – hop cone, 2 – lime tree, 3 – lemon balm, 4 – pansy, 5 – peppermint and 6 – nettle. Broilers were fed *ad libitum*. On the last day of experiment 8 chickens from each group were slaughtered and dissected. The effect of herbs was expressed on the basis of final body weight, feed conversion, dressing percentage and the share of muscles and abdominal fat in chilled carcass. It was found that broilers given AGP gained final body weight of 1560 g, which differed significantly only from b.w. of broilers fed hop cone (1194). The best substitutes for AGP were nettle and pansy (1638 and 1642 g, respectively).

Publication: Sovremennyj Naučnyj Vestnik, ser. Biologija Chimija, Rosja (Belgorod) 15 (23), 14 – 19, 2007. In English, summary in English.

Renata Pysz-Lukasik, Waldemar Paszkiewicz

**BACTERIAL CONTAMINATION OF CARCASS SURFACE IN RELATION
TO THE ORDER OF THE SLAUGHTERED SWINE**

Zanieczyszczenie bakteryjne powierzchni tusz w zależności od kolejności ubijanych świń

The aim of the study was to evaluate the bacterial contamination of carcass surface in relation to the order of slaughtering on the day of slaughter. The total bacteria count as well as the enterobacteriaceae, enterococci and *Salmonella* rods were described.

The total count of aerobic bacteria in the swine carcasses vacillated from $4.3 \cdot 10^3$ to $9.7 \cdot 10^3$ micro-organisms per 1 cm^2 . Significant differences in the level of contamination of the examined carcasses were not found. Enterobacteriaceae were detected in 8 samples (27%) and enterococci in 9 (30%). *Salmonella* rods not determined in the examined samples. The order of slaughter of the swine did not influence the general level of bacterial contamination of the carcasses. The sanitary inspection at the examined slaughter house appeared to be at a good level.

Publication: Medycyna Wet., (Lublin) 63, 1611–1612, 2007, tab. 1. In Polish, summary in English.

Krzysztof Szkucik, Ryszard Kazimierz Pisarski, Barbara Nastaj,
Iwona Pijarska, Henryk Malec

THE INFLUENCE OF AGE AT SLAUGHTER OF CHICKS ON BUTCHERING CHARACTERISTICS AND ON THE QUALITY OF MEAT TISSUES

Wpływ wieku ubojowego kurcząt na cechy rzeźne oraz jakość tkanki mięśniowej

The objective of the study was to evaluate the influence of slaughter age of chicks on butchering characteristics such as: butchering productivity, the breast meat and thighs ratio as well as the lard proportion in the refrigerated carcass. The muscles of the left side of the carcass underwent to a sensory evaluation, where samples from the other side were assessed for the following content: dry matter, crude ash, total protein, ether extract and meat water holding capacity. In the intramuscular fat, the fatty acid profile was described. The chicks in group I were raised for 32 days, in group II 38 days, and in group III 44 days.

The influence of age turned out to be significant only in the case of body weight, but even the basic butchering characteristics of the chicks did not differ significantly. With the advance of age the protein and fat levels, both in the

muscle tissue and in the breast muscles grew significantly. The effect of slaughter age on the content of mineral components in the muscle tissue was not confirmed. The level of free water in muscle tissue of slaughtered chicks was significantly higher in 32-day-old chicks than in 38 and 44-day-old chicks. The profile of intramuscular fat depended on age at slaughter. In intramuscular fat of chicks slaughtered at 44-days-of-age, significantly less C14:0, C16:0 and C20:0 acids were confirmed. The proportion of C16:0 acid also diminished, although C18:2 acid increased. In thigh fat, the change in the fatty acid profile was markedly less. The general sensory evaluation as well as tenderness or juiciness of the meat of chicks slaughtered on the 44-day-of-age was clearly higher and it concerned both investigated groups of muscles. There was no evidence that sex had an influence on the basic butchering features or on the basic composition of meat, only essential differences in body weight between roosters and hens were noted in this respect.

The obtained results demonstrated that shortening of the broiler chick raising period does not significantly influence slaughter characteristics. However, the chemical composition, fatty acids profile, and sensory characteristics of the meat were decidedly the most advantageous in the muscles of chicks slaughtered on 44-day-of age.

Publication: Medycyna Wet., (Lublin) 63, 1353–1356, 2007, tab. 7. In Polish, summary in English.

REPORTS TO RESEARCH MEETINGS

PASZKIEWICZ W.: Sanitary regulation in storage and transport of meat and meat products (Przepisy prawne w przechowywaniu i transporcie mięsa i jego przetworów).

Ref. Polish Scientific Conference – Problems in Storage and Transport of Food of Animal Origin. Lublin, 22 VI 2007.

Publication: Proceedings of the Conference – Problems in Storage and Transport of Food of Animal Origin, 43–47, 2007. In Polish.

PISARSKI R.K., SZKUCIK K., ZIĘBA M.: The chemical composition of muscles and sensory traits of meat in broiler chickens fed herbs substituted for antibiotic growth promoter. (Skład chemiczny mięśni i walory sensoryczne mięsa brojlerów otrzymujących zioła zamiast antybiotykowego stymulatora wzrostu).

Ref. II Polish Scientific Conference – Medicinal Plants – Cultivation and Use. Lublin, 17–18 IX 2007.

Publication: Proceedings II Polish Scientific Conference – Medicinal Plants – Cultivation and Use, 350–354, 2007. In Polish.

PISARSKI R.K., ZIĘBA M., SZKUCIK K.: The influence of some herbs substituting for antibiotic growth promoter on the results of broiler chickens rearing
Ref. III International Conference – Science and Education – over the Borders. Dnepropetrovsk, 16–27 XII 2007.

Publication: Proceeding of III International Conference – Science and Education – over the Borders, 19–24, 2007. In English.

PISARSKI R.K., SZKUCIK K.: The effect of feeding broiler chickens growing and finishing complete feeds of lowered energy value
Ref. III International Conference – Science and Education – over the Borders. Dnepropetrovsk, 16–27 XII 2007.

Publication: Proceeding of III International Conference – Science and Education – over the Borders, 24–25, 2007. In English.

DEPARTMENT OF PATHOLOGICAL ANATOMY

Głęboka 30, Lublin

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

RESEARCH STUDIES (SUMMARIES)

Stanisław Dzimira, Marcin Nowak, Adam Brzana, Wojciech Łopuszyński

PROTOTHECOSIS IN A DOG, CASE REPORT

Przypadek prototekozy u psa

Prototheca species are ubiquitous, achlorophyllous unicellular algae. They have been found in water, sewage, slime flux of trees and soil and reportedly cause a rare mycosis-like systemic or local disease in a wide variety of mammals including humans, dogs, cats, pigs and cattle. In this article a case of canine heart protothecosis diagnosed histopathologically post mortem was described.

Publication: Medycyna Wet. (Lublin) 63, 1204–1206, 2007, fig. 5. In Polish, summary in English.

Wojciech Łopuszyński, Zbigniew Nozdryn-Plotnicki, Aleksandra Struzik,
Piotr Dębiak, Jacek Kutrzuba

MEGAESOPHAGUS IN DOGS

Przełyk olbrzymi u psów

Megaesophagus (*dilatatio s. ectasis oesophagi*) defined as esophageal dilatation and dysfunction/paralysis and pathogenesis is characterized by failure of progressive peristaltic waves. Two four-month dogs were presented with a history of regurgitation, vomiting, coughing, and weight loss. One of them had clinical signs of inhalation pneumonia. Diagnosis of megaesophagus was made

by chest radiography. One dog was euthanatized because of the owner's decision. Medical and nutritional therapy was instituted in the other dog with good response to the treatment.

Publication: Magazyn Wet. 16, 7–8, 46–50, 2007, fig 3, tab. 1. In Polish.

REPORTS TO RESEARCH MEETINGS

LISTOS P., NOZDRYN-PŁOTNICKI Z.: Section investigation of animals wounded from fire arms connected with decision of the law organs. (Badanie sekcyjne zwierząt postrzelonych z broni palnej na podstawie "Postanowienia o dopuszczeniu z dowodu z opinii biegłego).

Ref. XIVth Meeting of Polish Society of Forensic Medicine and Criminology. Szczecin, 27–29 IX 2007.

Publication: Proceedings of the XIVth Meeting of Polish Society of Forensic Medicine and Criminology, 94–95, 2007. In Polish.

ŁOPUSZYŃSKI W., HELLEN E.: Cell proliferation study in canine mammary carcinomas.

Ref. XVII European College of Veterinary Internal Medicine-Companion Animals and IX Congress of the European Society of Veterinary Clinical Pathology, Budapest, 13–15 IX 2007.

Publication: Proceedings of the XVII European College of Veterinary Internal Medicine-Companion Animals and IX of European Society of Veterinary Clinical Pathology Congress, 199–200, 2007. In English.

OTHER PUBLICATIONS

MADEJ J.A., ROTKIEWICZ T., NOZDRYN-PŁOTNICKI Z.: Exact pathology of animals. (Patologia szczegółowa zwierząt).

Publication: Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego, 2007. Olsztyn, pp. 710. In Polish.

LISTOS P.: Intections disease control in animals, with a special concern to rabbies in the Polish law before Second World War. (Zwalczanie chorób zakaźnych u zwierząt ze szczególnym uwzględnieniem wścieklizny w przepisach prawa polskiego przed drugą wojną światową [w:] Dawna medycyna i weterynaria).

Publication: Rekol sp. z o. o., Chełmno 2007, 343–366. In Polish.

DEPARTMENT OF PRECLINICAL VETERINARY SCIENCE

Akademia 12, Lublin

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

SUB-DEPARTMENT OF PATHOPHYSIOLOGY

Akademia 12, Lublin

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

RESEARCH STUDIES (SUMMARIES)

Ryszard Bobowiec, Jan Głuszak, Franco Martelli, Marta Wójcik,
Joanna Wessely-Szponder

EFFECT OF VETAHEPAR ON BILE SECRETION IN SHEEP

Wpływ Vetaheparu na wydzielanie żółci u owiec

The effect of Vetehepar (VH), (active ingredient: menbutone), administered per os (p.o.) or i.v., on volume and biliary bile salt secretion was investigated on four sheep, which were cannulated for choledochus and duodenum. The dose of VH 20 mg/kg m.c. given p.o. was most effective in the stimulation of bile salts secretion and volume of bile. The choleric effects of VH began 30 minutes after oral administration and peaked on 60 minute. The augmented volume of bile occurred earlier than the increase in bile salt secretion. Such a response can suggest that the relaxation of the vascular bed in the liver under the influence of VH stimulation anticipates events observed when only 50% of the bile returned to the duodenum. Thus, beneficial effects of VH are especially revealed when disturbances in liver functioning occur.

Publication: Medycyna Wet. (Lublin) 63, 979–981, 2007, fig. 3. In Polish, summary in English.

Urszula Kosior-Korzecka, Ryszard Bobowiec

**EFFECT OF LEPTIN, INSULIN AND IGF-I ON GNRH-INDUCED
LH SECRETION FROM PORCINE PITUITARY CELLS *in vitro***

The objective of the present study was to analyse the response of porcine pituitary cells to leptin, insulin and IGF-I *in vitro*. Pituitary cells were cultured in McCoy 5A medium without hormones (negative control), with GnRH (positive control), with GnRH and 10^{-11} – 10^{-6} M/l of leptin, with GnRH and 3.9–91.0 mIU/l of insulin or with GnRH and 1.03 – $39.2 \cdot 10^{-9}$ M/l of IGF-I, respectively. After 6, 12, 18, 24, 30 and 36 h of cell incubation, secretion of LH was determined. The obtained results show that the effect of leptin and insulin on LH secretion from pituitary cells was dose-dependent. Leptin in concentrations: 10^{-9} , 10^{-8} and 10^{-7} M/l significantly ($P \leq 0.05$) enhanced, whereas 10^{-6} M/l of leptin suppressed LH secretion from porcine pituitary cells. Insulin in a dose from 3.9 up to 13.0 mIU/l caused an increment in higher concentrations, though, a significant ($P \leq 0.05$) drop in LH secretion. Almost full positive correlation ($r = 0.98$) between the level of IGF-I in the culture medium and LH secretion was found.

Publication: Bull. Vet. Inst. Pulawy, 51, 439–443, 2007, fig. 4. In English, summary in English.

Urszula Kosior-Korzecka, Marcin Kalinowski, Ryszard Bobowiec

**CHANGES IN OESTROGENS AND PROGESTERONE SECRETION BY PORCINE
GRANULOSA CELLS UNDER THE INFLUENCE OF ACUTE STRESS – LIKE CONCENTRATIONS OF CORTISOL *IN VITRO***

It is widely confirmed that only severe and prolonged exposure to stressors connected with significant and long – term increment in plasma cortisol concentration can suppress reproduction in female pigs. Therefore, we have undertaken the present study to check if acute stress-like concentrations of cortisol affect oestrogens (17β -oestradiol and oestrone) and progesterone secretion by granulosa cells isolated from 6–7 mm in diameter ovarian follicles of the 5–6 years old cyclic sows ($n = 12$) during the late follicular phase of the oestrous cycle. The granulosa cells were cultured in serum free – DMEM/F 12 medium (1 : 1) supplemented with testosterone (10^{-7} M/l) and gentamicin (20 μ g/ml) without cortisol (control) or with $2,8 \cdot 10^{-7}$, 10^{-6} , 10^{-5} and 10^{-4} mM/l of cortisol, respectively. After 6 and 12 h of the culture with cortisol, medium was collected to determine the concentration of secreted oestrogens (17β -oestradiol – E-2, oestrone – E-1) and progesterone (P-4). The steroids were analysed by HPLC method. Oestrogen and pro-

gesterone secretion was expressed as quantity of hormone released to 1 ml of culture medium by about $5 \cdot 10^5$ granulosa cells during 6 and 12 h, respectively. The proliferation of cells was estimated using MTT test. The obtained results show that cortisol, independently of the concentration used ($2.8 \cdot 10^{-7} - 2.8 \cdot 10^{-4}$ M/l) caused the significant ($P \leq 0.05$) suppression in E-2 and E-1 secretion from porcine granulosa cells *in vitro*, both after 6 and 12 h of culture. Indeed, the effect of cortisol on progesterone secretion from porcine granulosa cells was dose-dependent. Contrary to oestrogens, the growth in P-4 release under the influence of $2.8 \cdot 10^{-7} - 2.8 \cdot 10^{-5}$ M/l of cortisol was observed. There was found a very high positive correlation between P-4 and cortisol dose in this range ($r = 0.81$ after 6 h, $r = 0.72$ after 12 h). However, the highest dose of cortisol ($2.8 \cdot 10^{-5}$ M/l) caused the drop in P-4 secretion (29.95 ± 1.19 pg/ml/ $5 \cdot 10^5$ granulosa cells/ 6 h and 23.45 ± 1.18 pg/ml/ $5 \cdot 10^5$ granulosa cells/12 h) in comparison to control (31.80 ± 1.39 pg/ml/ $5 \cdot 10^5$ granulosa cells/ 6 h and 40.63 ± 2.85 pg/ml/ $5 \cdot 10^5$ granulosa cells/12 h).

Publication: Acta Sci. Pol. Med. Vet. 6, 25–33, 2007, fig. 4. In English, summaries in Polish and English.

Joanna Wessely-Szponder

**THE EFFECT OF TNF α ON NITRIC OXIDE PRODUCTION
BY NEUTROPHILS ISOLATED FROM HEIFERS IN THE COURSE
OF BOVINE RESPIRATORY DISEASE**

In the course of Bovine Respiratory Disease (BRD), lung injury is caused, among others, by neutrophil products, including nitric oxide (NO). Destructive action of this free radical on respiratory tract tissues is stimulated by some cytokines. The purpose of this study was to determine how TNF α influences NO generation by neutrophils in the course of BRD. This study revealed that neutrophils isolated from heifers with acute BRD produced greater amounts of NO than in chronic BRD. In all phases of BRD and in both forms of the disease, the concentration of TNF α in the range of $0.05 \text{ ng} \cdot \text{ml}^{-1}$ to $0.5 \text{ ng} \cdot \text{ml}^{-1}$ had a stimulatory effect on neutrophils after 0.5 h and 24 h incubation. Moreover, the greatest NO production was observed in cultures of neutrophils from the acute BRD in the concentration of $0.5 \text{ ng} \cdot \text{ml}^{-1}$ after 0.5 h and 24 h incubation. After 48 h incubation, NO production increased only at a concentration of $0.05 \text{ ng} \cdot \text{ml}^{-1}$. Above these concentrations production of NO decreased. The most pronounced inhibitory action of TNF α on generation of NO by neutrophils occurred in acute BRD in cultures after 0.5 h at $50 \text{ ng} \cdot \text{ml}^{-1}$, and after 24 h at $5 \text{ ng} \cdot \text{ml}^{-1}$ and was related to diminished viability of neutrophils.

Publication: EJPAU 10 (4), 1–6, 2007, fig. 3. In English, summary in English.

REPORTS TO RESEARCH MEETINGS

GURZYŃSKA A.: Rat hepatocyte proliferation *in vitro* under genisteine and resveratrol (Wpływ genisteiny i resveratrolu na proliferację hepatocytów szczura w warunkach *in vitro*).

Ref.: XII International Conference Student Scientific Circles. Międzynarodowa Konferencja Studenckich Kół Naukowych (XXIV Sejmik), Wrocław, 17–18 V 2007 r.

Publication: *Proceedings of the XII International Conference Student Scientific Circle, Wrocław, 122, 2007. In English.*

KLOTZ K.: The influence of Isoprivet on neutrophil secretory action. (Wpływu isoprivetu na aktywność wydzielniczą neutrofilów w przebiegu zespołu oddechowego u bydła).

Ref.: XII International Conference Student Scientific Circles. Międzynarodowa Konferencja Studenckich Kół Naukowych (XXIV Sejmik), Wrocław, 17–18 V 2007 r.

Publication: *Proceedings of the XII International Conference Student Scientific Circle, Wrocław, 123, 2007. In English*

OLSZEWSKA M.: The neutrophil activity, acute phase level and concentration of vitamin C in plasma in the course of Bovine Respiratory Disease (Aktywność neutrofilów, poziom białek ostrej fazy i stężenie witaminy C w osoczu krwi w przebiegu zespołu w przebiegu zespołu oddechowego u cieląt).

Ref. XXXV International Seminar Student Scientific Circles. Międzynarodowe Seminarium Kół Naukowych, Uniwersytet Warmińsko-Mazurski, Olsztyn 10–11 V 2007 r.

Publication: *Proceedings of the XXXV International Seminar Student Scientific Circle, Wrocław, 500–501, 2007. In Polish*

KIERSKA M.: The proliferative activity and apoptosis of rat hepatocytes under the influence of bile acids *in vitro*. (Aktywność proliferacyjna i apoptoza hepatocytów szczura pod wpływem kwasów żółciowych w warunkach *in vitro*).

Ref.: XXXV International Seminar Student Scientific Circles. Międzynarodowe Seminarium Kół Naukowych, Uniwersytet Warmińsko-Mazurski, Olsztyn 10–11 V 2007 r.

Publication: *Proceedings of the XXXV International Seminar Student Scientific Circle, Wrocław, 113–14, 2007. In Polish.*

OTHER PUBLICATION

WESSELY-SZPONDER J., BOBOWIEC R.: Neoplastic cells as an infective factor in tumour transmission. (Komórki nowotworowe jako czynnik zakaźny w rozprzestrzenianiu się nowotworów).

Publication: *Życie Wet. 82, 823–827, 2007. In Polish, summary in English.*

SUB-DEPARTMENT OF PHARMACOLOGY

Akademicka 12, Lublin

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

RESEARCH STUDIES (SUMMARIES)

Cezary Kowalski, Małgorzata Pomorska

RAPID AND VALIDATED HPLC ASSAY FOR THE DETERMINATION OF OXYTETRACYCLINE IN BIOLOGICAL MATERIAL

A rapid, accurate, simple and reproducible high performance liquid chromatographic (HPLC) method for the determination of oxytetracycline hydrochloride (OTC) in porcine plasma has been developed and validated. The drug and the standard were eluted from 5 μ m Omni Spher (Varian) C18 column (250 \times 4.6 mm I.D.) at room temperature. The mobile phase was composed of ACN-MeOH-(HCOO)₂ (17.5 : 17.5 : 65 v/v/v) (pH adjusted to 2). A flow rate was 1.4 mL/min. The effluent was monitored using a UV-VIS detector set at 360 nm. The retention time of OTC was approx. 3 min. The suggested technique is characterized by superior performance parameters: linearity $R^2 = 0.9999$, recovery = 92.50%, repeatability RSD $\leq 1.39\%$. These results demonstrate the validity of the HPLC method for the analysis of OTC HCL.

Publication: Bull. Vet. Inst. Pulawy, 5, 397–400, 2007, fig. 2. In English, summary in English.

Cezary Kowalski, Małgorzata Pomorska, Beata Łebkowska, Tomasz Sławik

DETERMINATION OF OXYTETRACYCLINE IN BIOLOGICAL MATRIX

Oxytetracycline (OTC) has been used for years in medical and veterinary field. It is a wide-spectrum antibiotic, belonging to the group of tetracyclines with bacteriostatic activity.

Several methods have been presented describing the determination of OTC in premixes and animals tissues. However, these methods are time-consuming

and not as accurate as the method described in this paper. The aim of the present study was to develop a time saving, cost-effective and sensitive method for determination of OTC in biological matrix.

The HPLC procedure for the measurement of OTC in piglets' plasma was fully validated and showed good sensitivity, reproducibility, linearity and selectivity. This makes it valuable and adequate in many applications, particularly in veterinary medicine studies.

According to our best knowledge, the recovery has never reached the level of 90%. In this study the recovery of OTC was determined from blank plasma samples spiked a 100 ng/mL. As was already mentioned, the recovery was 92.50%. The reverse-phase HPLC technique with UV-VIS detection was found to be a convenient and precise method for analysis of the residues of OTC in plasma samples.

It can be concluded that the method developed in the present study can be successfully applied for OTC analysis in plasma.

Publication: Acta Pol. Pharm. Drug Res. 64, 277–280, 2007, fig. 2, tab.1. In English, summary in English.

Anna Sierosławska, Cezary J. Kowalski, Andrzej K. Siwicki,
Elżbieta Terech-Majewska, Anna Rymuszka

THE *in vitro* INFLUENCE OF NORFLOXACIN NICOTINATE ON THE SELECTED IMMUNE CELL FUNCTIONS IN RAINBOW TROUT (*Oncorhynchus mykiss*)

Some antibiotics, except for therapeutic benefits, may also affect various immune mechanisms of the host organism. Norfloxacin belongs to the group of fluoroquinolones, chemotherapeutics that are often used in farmed fish therapy because of their high potency against G(-) fish pathogenic bacteria such as *Escherichia coli*, *Salmonella* sp., *Aeromonas salmonicida*, *Edwardsiella tarda*, and against some G(+) bacteria.

The aim of the study was to assess the influence of norfloxacin nicotinate on the selected immune functions of the cells isolated from head kidney of rainbow trout (*Oncorhynchus mykiss*). To estimate the drug concentrations reached in the organ, fish were given norfloxacin nicotinate orally for five days or in a single intraperitoneal injection, while the drug residues in head kidneys were determined by HPLC. The highest concentration of norfloxacin, 25.60 µg/g, was found 24 h after the drug administration at 60 mg/kg in the single intraperitoneal injection. 7 days after application, the drug amounts in the tissue reached ap-

proximately 10% of the concentrations found 24 h after application, that is 1.41–2.38 µg/g. Then in the in vitro studies leucocytes isolated from fish head kidneys were tested on the lymphocyte proliferative response on mitogens and on respiratory burst activity of phagocytic cells after cell incubation with norfloxacin nicotinate at concentrations of 1, 5, 10, 20, 30, 40, 60 µg/ml. Suppressive effect of the drug was observed on B cell proliferation when the cells were exposed to the higher concentrations used, 30–60 µg/ml. T cells were less sensitive, the effect was seen only in the highest concentration. The drug caused stimulation of respiratory burst activity at 5 µg/ml. Other concentrations applied had no effects on the studied parameter.

Publication: Central Europ. J. Immunol. 32, 92–96, 2007, fig. 2, tab. 1. In English, summary in English.

Monika Szymańska-Czerwińska, Dariusz Bednarek, Cezary Kowalski

**EFFECT OF PREBIOTIC ADDITIVES ON INTERLEUKIN 1 ACTIVITY
AND ALTERNATIONS OF PERIPHERAL BLOOD LEUKOCYTE
SUBPOPULATIONS IN CALVES**

Wpływ dodatku prebiotyków na aktywność interleukiny 1 i zmiany w subpopulacjach leukocytów krwi cieląt

The aim of the study was to examine the influence of prebiotics (mannan oligosaccharides and β-glukanes) on alternations in peripheral blood leukocytes and interleukin 1 (IL1) activity in calves. Calves in group I received feed supplemented by prebiotics. The second group of calves (group II) was the control group and received the same feed, but without prebiotics. The leukocyte subpopulations were determined by flow cytometry and the following parameters were assayed: the total count of leukocytes (WBC), general percentage of lymphocytes (LYM) and their subsets CD2⁺ (T lymphocytes), CD4⁺ (T helper lymphocytes), CD8⁺ (T suppressor/cytotoxic lymphocytes) and WC4⁺ (B lymphocytes) as well as neutrophils (PMNL) and mid-size leukocyte per cent (MID), i.e. total value of monocytes, eosinophils and basophils. Additionally, the interleukin 1 activity in serum of the calves was estimated during the study. The obtained results indicated that the percentage of some subsets of T lymphocytes, such as CD2⁺ and CD8⁺, and also WC4⁺, significantly increased in the peripheral blood of the calves. A similar effect was observed for interleukin 1 (IL1) activity in the serum of the studied calves. The remaining leukocyte parameters did not change significantly.

Publication: Medycyna Wet. (Lublin) 63, 1591–1594, 2007, tab. 3. In Polish, summary in English.

REPORTS TO RESEARCH MEETINGS

- KOWALSKI C., POMORSKA M., KOWALSKA M., ŁEBKOWSKA B.: Adverse effects of veterinary antibiotics on the environment and determination of these drugs in biological matrices.
Ref. II International Science Symposium „Environmental sources of Health hazard” Kazimierz Dolny 26–28 IV 2007.
Publication: Proceedings of the II International Scientific Symposium „Environmental sources of health hazard”, 546, 2007. In English.
- KOWALSKI C., BURMANCZUK A., ZAŃ R.: Threats of the application of the antibiotic treatment during mammary gland inflammation in cows.
Ref. II International Science Symposium „Environmental sources of health hazard” Kazimierz Dolny 26–28 IV 2007.
Publication: Proceedings of the II International Scientific Symposium „Environmental sources of Health hazard”, 548, 2007. In English.
- KOWALSKI C., ŁEBKOWSKA B., BURMAŃCZUK A.: Exploitation of the natura zeolitem in animal production and environment protection.
Ref. II International Science Symposium „Environmental sources of health hazard” Kazimierz Dolny 26–28 IV 2007.
Publication: Proceedings of the II International Scientific Symposium „Environmental sources of Health hazard”, 547, 2007 In English.
- KOWALSKI C., ŁEBKOWSKA B, POMORSKA M.: Immunotoxic properties of the pesticide.
Ref. IV International Onkological Science Conference “Significance of health promotion, profilactic and environmental factors in neoplastic diseases”. Sanok 31 V – 6 VI 2007.
Publication: Proceedings of the IV International Onkological Science Conference „Significance of health promotion, profilactic and environmental factors in neoplastic diseases”, 65, 2007. In English.
- KOWALSKI C., BURMAŃCZUK A., ZAŃ R.: Antiparasitic medicamtion of slaughter animals and the human environment.
Ref. IV International Onkologic Science Conference „Significance of health promotion, profilactic and environmental factors in neoplastic diseases”. Sanok 31 V – 6 VI 2007.
Publication: Proceedings of the IV International Onkological Science Conference „Significance of health promotion, profilactic and environmental factors in neoplastic diseases”, 172, 2007. In English.
- KOWALSKI C., ZAŃ R., BURMAŃCZUK A.: Environmental and health risks caused by application of selected antibiotic agents in veterinary treatment.
Ref. IV International Onkologic Science Conference „Significance of health promotion, profilactic and environmental factors in neoplastic diseases.”Sanok 31 V – 6 VI 2007.
Publication: Proceedings of the IV International Onkological Science Conference „Significance of health promotion, profilactic and environmental factors in neoplastic diseases”, 173, 2007. In English.

ORHER PUBLICATIONS

BURMAŃCZUK A., KOWALSKI C., BURMAŃCZUK Z.: Activity of Ist generation cephalosporins against mastitis bacteria. (Aktywność cefalosporyn I generacji wobec drobnoustrojów powodujących stan zapalny gruczołu mlekowego).

Publication: Biul. Lub. Izby Lek.-Wet., 4, 28–30, 2007. In Polish.

KOWALSKI C., BURMAŃCZUK A., ZAŃ R.: Drugs slaughter animals and the human environment.

Publication: Polish J. Environ. Stud. 16 (5A), 205–208, 2007. In English, summary in English.

KOWALSKI C., ŁEBKOWSKA B., POMORSKA M.: Immunotoxic properties of the pesticides.

Publication: Polish J. Environ. Stud. 16 (5A), 213–216, 2007, tab. 2. In English, summary in English.

KOWALSKI C., ŁEBKOWSKA B., BURMAŃCZUK A., POMORSKA M.: Allergic reactions to selected antibiotics. [in:] Actual problems of immunodiagnosy and immunotoxicology, ed. A.K. Siwicki, E. Skopińska-Różewska. (Odczyny alergiczne po stosowaniu wybranych antybiotyków. [w:] Aktualne problem immunodiagnostyki i immunotoksologii. Red. A.K. Siwickiego i E. Skopińskiej-Różewskiej.)

Publication: Preparation Studio of Publications „Edycja” Olsztyn, 109–125, 2007. In Polish.

KOWALSKI C., ZAŃ R., BURMAŃCZUK A.: Environmental and health risks caused by application of selected antibiotic agents in veterinary treatment

Publication: Polish J. Environ. Stud. 16 (5A), 209–212, 2007, tab. 2. In English, summary in English.

ŁEBKOWSKA B., KOWALSKI C.: Intravenous infusions – application in small and large animals. Part. I. (Wlewy dożylnie – ich funkcje i zastosowanie u dużych i małych zwierząt).

Cz. I.

Publication: Magazyn Wet., 16, 127, 58–59, 2007. In Polish.

ŁEBKOWSKA B., KOWALSKI C.: Intravenous infusions – application in small and large animals. Part. II. (Wlewy dożylnie – ich funkcje i zastosowanie u dużych i małych zwierząt).

Cz.II.

Publication: Magazyn Wet., 16, 129, 48–50, 2007. In Polish.

POMORSKA M. KOWALSKI C.: Antibioticotherapy of anaerobic respiratory tract infections in cows. (Antybiotykoterapia zakażeń beztlenowcowych układu oddechowego u bydła).

Publication: Magazyn Wet. 16, Supplement – Choroby bydła, 62–66, 2007. In Polish.

SUB-DEPARTMENT OF VETERINARY TOXYCOLOGY AND ENVIRONMENT PROTECTION

Akademicka 12, Lublin

Head: Prof. Dr. habil. Wojciech Cybulski
Dr. habil. Grażyna Wałkuska

RESEARCH STUDIES (SUMMARIES)

Lidia Radko, Wojciech Cybulski, Wojciech Rzeski

CYTOTOXICITY OF SALINOMYCIN AND LASALOCID IN A MODEL HEPATOCYTE CELL LINE OF A RAT

Badania cytotoksyczności salinomycyny i lasalocydu w hodowli linii ciągłej hepatocytów szczura

The aims of the study comprised median cytotoxicity indicate (IC_{50}) determination, nature of cell death (apoptosis/necrosis,) assessment and morphology changes observation in FAO cell line culture of hepatocytes subjected to ionophore antibiotics, salinomycin and lasalocid, incubations. INVTTOX – recommended MTT, NRU and KB cytotoxicity tests were used to search mitochondrial, protein synthesis and cells proliferation. In addition cells staining to reveal membrane destruction which established cell death character as well as May-Grunwald & Giemsa staining were carried out. Cytotoxicity indices (IC_{50}) estimated in 24 hour MTT test were at a level $2,41 \pm 0,29$ and $7,93 \pm 0,01 \mu M$, however after 48 hour incubation the values lowered to $0,112739 \pm 0,01$ and $0,59 \pm 0,01 \mu M$ to salinomycin and lasalocid, respectively. Opposite to those, the data of NRU and KB tests were higher, indicating mitochondria as the main subcellular target for the antibiotics action. Determined IC_{50} values were positively related to DL_{50} (the data from references). Hepatocytes death were established as of apoptosis nature. Cell morphology was changed from IC_{50} depended manner; the lower value of the indicate corresponded to more pronounced cytopathologic findings. Summarizing, monolayer cell cultures of rat hepatocytes proved to serve as a useful model for cytotoxicity studies enabling to indicate subcellular targets for ionophore antibiotics.

Publication: Medycyna Wet. (Lublin) 63, 839–843, 2007, fig. 5. In Polish, summary in English.

REPORTS TO RESEARCH MEETINGS

RADKO L., CYBULSKI W., RZESKI W.: The cytotoxic effect of the ionophore antibiotics on human hepatocyte cell line. (Wpływ antybiotyków jonoforowych na linię ciągłą hepatocytów człowieka).

Ref. Vth Conference of Young Scientists Physiology of Digestive System, Lublin, 11–12 V 2007.

Publication: Materials of the Vth Physiology Conference of Young Scientists on Digestive System, Lublin, 59, 2007. In English.

RADKO L., CYBULSKI W., RZESKI W.: Assessment of cytotoxicity of silibinin application method *in vitro* (Ocena cytotoxyczności sylibiny przy zastosowaniu metod *in vitro*)

Ref. IVth Congress of Polish Society of Clinical Pharmacology and Therapy, Secure and Rational Pharmacotherapy, 10-years Polish Society of Clinical Pharmacology and Therapy, Poznan, 2007 V 24–25.

Publication: Problems in Therapy Monitors, 48–49, 2007. In Polish.

RADKO L., CYBULSKI W., RZESKI W.: The cytotoprotection effects of sylimarin on human hepatocyte cell line considering toxicity effects of thiuram (Cytoprotekcyjny wpływ sylimaryny na hepatocyty linii ciągłej człowieka wobec toksycznego działania thiuramu).

Ref. Conference PIW-PIB Puławy – Veterinary Pharmacy in Poland, Puławy 11–12 X 2007.

Publication: Materials of the Scientific Conference– Pharmacy of Veterinary Medicine in Poland, 57–59, 2007. In Polish.

CHAŁABIS-MAZUREK A., JUNKUSZEW A., GRUSZECKI T.M., WIERCIŃSKA K., BOJAR H., GREGUŁA-KANIA M.: The influence of organic forms of selenium on sensory value of muscular tissue of sheep. (Wpływ podawania organicznych form selenu na wartość sensoryczną tkanki mięśniowej jagniąt)

Ref. LXXII Congress of Polish Society of Animal Production, Warszawa, 11–14 IX 2007.

Publication: Materials of the LXXII Congress of Polish Society of Animal Production, 2007. In Polish.

JUNKUSZEW A., CHAŁABIS-MAZUREK A., GRUSZECKI T. M., BOJAR W., LIPIEC A.: Fatty acid composition of meat from lambs fed an organic selenium supplemented feed. (Skład kwasów tłuszczowych w mięsie jagniąt żywionych dietą suplementowaną selenem).

Ref. DGfZ – Schriftenreiheheft 47 „Perspektiven der Schaf- und Ziegenhaltung in Mitteleuropa“. – Internationales Wissenschaftliches Symposium. 4–6 X 2007, Sachsen-Anhalt.

Publication: Materials of DGfZ, 269, 2007. In English.

OTHER PUBLICATIONS

CYBULSKI W.: Treatment of rodenticide poisonings. (Postępowanie w zatruciach środkami gryzoniobójczymi).

Publication: Biul. Lub. Izby Lek.-Wet., 1, 25–27, 2007. In Polish.

CYBULSKI W., CHALABIS-MAZUREK A.: Scientific and professional activity of Professor Adam Kądziołka – teacher's of history of veterinary medicine and deontology. (Działalność naukowa i zawodowa prof. Adama Kądziołki – nauczyciela historii medycyny weterynaryjnej i deontologii)

Publication: Monography of Session of History of Veterinary Medicine, 29–32, 2007. In Polish.

RADKO L., CYBULSKI W.: Application of sylimarin to animals (Zastosowanie sylimaryny u zwierząt).

Publication: Magazyn Wet. 120, 52–54, 2007. In Polish.

RADKO L., CYBULSKI W., SKORUPSKA A.: Professor Zbigniew Lorkiewicz (1923–2001) – Master and Teacher (Profesor Zbigniew Lorkiewicz (1923–2001) – Mistrz i Nauczyciel).

Publication: Monography of Session of History of Veterinary Medicine, 129–133, 2007. In Polish.

RADKO L., CYBULSKI W., RZESKI W.: The effects of sylimarin on hepatocytes of human and rat cell lines. (Wpływ sylimaryny na aktywność hepatocytów linii ciągłej człowieka i szczura). Scientific Conference: Safety of feed for safety of food

Publication: Monography of PIW-PIB Pulawy, 118–120, 2007. In Polish.

RADKO L., CYBULSKI W.: Application of sylimarin in human and animal medicine. (Zastosowanie sylimaryny w medycynie ludzi i zwierząt).

Publication: J. Pre-Clin. Clin. Res., 1, 22–26, 2007. In English.

INDEX OF AUTHORS

Lublin vol. 46

- Abramowicz B. **63, 65**
Adaszek Ł. 40, **78, 79, 80, 83**, 83
Albera E. 58, 61, **62**, 62
Arciszewski M.B. **27, 28, 29, 30, 32**
Arsene G.G. 26
Auffray N. 26
Badzian B. **35**
Bala T. 32, 56
Balicki I. **73, 74, 76**
Bałasińska B. 54
Banasik M. 34
Bednarek D. **26, 97**
Bielak K. 55
Bielak M. **55**
Bieleński P. 81
Bieńko M. 37, 43, 44, 45, 55
Biernat M. 46, 48, 57
Blimke Z. 66
Bobowiec R. **91, 92, 94**
Bojar H. 101
Bojar W. 101
Bołkun A. 24
Boratyński Z. 31, 32
Brodzki A. 66, 68, 69, **74, 74, 75**
Brodzki P. **68, 69**
Brzana A. 79, 89
Bułhak-Guz H. **33, 34**
Burdan F. 32
Burmańczuk A. 98, **99, 99**
Burmańczuk Z. 99
Ceranowicz P. 57
Chałabis-Mazurek A. **101, 101, 102**
Chilarski A. 33, 34
Chmielecka K. 66
Chmielewska M.A. **55**
Chruściel T. 55
Cislakova L. 83
Cybulska R. 33, 34
Cybulski W. 26, 100, 101, **102, 102**
Czerniecki J. 24
Czerny K. 31
Czichos E. 33, 34
Ćwiek A. 74
Dąbek M. **36, 48**
Dąbrowski A. 32, 40, 50
Dąbrowski R. 62, **69, 70, 71, 71, 77**
Dembiński A. **57**
Demkowska M. 15
Deptuła W. 25
Desfontis J.C. 26
Dębiak P. 73, 77, 89
Dobrowolski P. 49, **55**
Donaldson J. 32, 55, 56
Dutkiewicz J. 64
Dzimira S. **89**
Eustachiewicz R. 32
Fedkiv O. 55
Filip R. 36, **37, 42, 45, 55**
Fitzner A. 25
Fraslin J.M. 26
Gajewski Z. 44, 54
Galleni L. 26
Gawor J. **65**
Gawron A. 42
Głuszak J. 91
Godlewski M. 48
Gołyński M. **65, 66, 67**
Gralak M. 45
Grądzki Z. 82
Gregory P.C. 43
Greguła-Kania M. 101
Gruszecki T.M. 101
Guillaume D. 37
Gurzyńska A. **94**
Guz L. **12**
Harrison A.P. 51
Hellen E. 90
Imioło R. 73

Jamroz M. 12
 Janczarek I. 59, 60
 Janecka E. 14, 15
 Jankowska A. 37, 38, 57
 Jarosz Ł. 80, 81, 82, 83
 Jaworska-Adamu J. 34
 Junkuszew A. 101, 101
 Kaba J. 14, 15
 Kalinowski M. 92
 Kankofer M. 58, 61, 62, 62
 Kapica M. 32, 37, 38, 40, 42, 44, 45,
 47, 55, 56, 57
 Kato I. 38, 57
 Kazimierczak W. 46, 47, 56
 Kędzierski W. 59, 60, 61
 Kierska M. 94
 Klockiewicz M. 14, 15
 Klotz K. 94
 Kolasa A. 17, 18, 26
 Komsta R. 73, 77, 77
 Kosior-Korzecka U. 92
 Kostro K. 70, 80, 81, 82, 83
 Kotunia A. 37
 Koutsou S. 26
 Kowalik S. 43, 55, 56, 59, 60
 Kowalska M. 98
 Kowalska-Pyłka H. 26
 Kowalski C. 95, 96, 97, 98, 99, 99
 Krakowska I. 32, 34
 Krakowski L. 34, 68, 69, 70
 Krawczyk T. 33
 Krupski W. 39, 50, 51, 52, 56, 57
 Kruszewska D. 37, 43
 Kulasek G. 44, 54
 Kulig A. 33, 34
 Kurek L. 65, 65, 66
 Kusy R. 71, 71
 Kutrzuba J. 77, 79, 80, 89
 Kuwahara A. 38, 57
 Kwiecień M. 40
 Larsson L. 64
 Laubitz D. 37, 54
 Lipiec A. 101
 Lipiński P. 45
 Lisiecka K. 83
 Listos P. 90
 Lonc G. 32, 32
 Lutnicka H. 13
 Łebkowska B. 95, 98, 99, 99
 Łojarczyk A. 77
 Łopucka D. 66
 Łopuszyński W. 21, 65, 69, 79, 89, 89,
 90, 77
 Łuszczewska-Sierakowska I. 32, 32, 40, 56
 Maciejewski R. 32, 40, 50
 Madany J. 66
 Madej B. 32
 Madej J.A. 90
 Majcher P. 51
 Majer-Dziedzic B. 24, 25, 80, 82
 Malbert C.H. 26
 Malec H. 86
 Małecki-Tepicht J. 14, 15
 Mandziuk S. 32
 Marczuk J. 65
 Marin D.J. 26
 Martelli F. 91
 Matysek M. 32
 Mikołajczak M. 80
 Milczak J. 65
 Mochol J. 65, 65, 66
 Monbureau F. 26
 Mosentin R. 43
 Nastaj B. 86
 Negri V. 26
 Nestor E. 26
 Nowaczyk P. 25
 Nowak M. 89
 Nowakiewicz A. 19, 20, 22, 24
 Nozdryn-Płotnicki Z. 21, 89, 90
 Olszewska M. 94
 Orzelski M. 66, 72
 Pankowski P. 32, 56
 Paszkiewicz W. 84, 86, 87
 Patel J. 40
 Pawłowska M. 32, 41, 42, 43, 47, 48,
 55, 56
 Pedrycz A. 31

Pełczyńska E. **84**
 Pet'ko B. 83
 Piech T. 71, 80
 Pierzynowski S.G. 32, 36, 37, 42, **43**,
 48, 49, 53, 55, 56
 Piersiak T. 55, 56
 Pijarska I. 86
 Pisarski R.K. **85**, 86, **87**, **88**
 Podgurniak M. 36
 Podgurniak P. 36
 Polkowska I. **72**, **75**, **76**
 Pomorska D. **64**, **66**, 66, 67
 Pomorska M. 95, 98, 99, **99**
 Popiel J. 66
 Przybylska J. **61**
 Puchalski A. 15, **26**, 83
 Puzio I. 32, 38, 42, 43, **44**, **45**, 55, 56, 57
 Pyzik E. **18**
 Pysz-Lukasik R. **86**
 Radko L. **100**, **101**, **102**
 Radziejewski K. 76
 Radzikowska E. **32**, 32
 Radzki R.P. 37, **45**, 55
 Ristoni S. 26
 Roman G.V. 26
 Rotkiewicz T. 90
 Różańska D. 74
 Rymuszka A. 96
 Rypuła K. 14, 15
 Rząsa A. 43
 Rzedzicki J. 17, 18
 Rzeski W. 100, 101, 102
 Sadzikowski A.B. 14, 15, **16**
 Sałacińska B. 34
 Sawa-Wojtanowicz B. 51
 Sebastiano L.M. 26
 Siemienuk M. 24
 Sierosławska A. **96**
 Sileikiene V. 43
 Silmanowicz P. 74
 Sitkowska J. 64
 Siwicki K. 49, 96
 Skorupska A. 102
 Skowron M. 17, **18**, 18
 Skórska Cz. 64
 Skrzypek H. 42, 46, 47, 48, 56, **57**
 Skrzypek T. 43, **46**, **47**, 48, **56**, 57
 Sławik T. 95
 Solecki M. 40
 Sopińska A. 12
 Standardi A. 26
 Starzyński R. 45
 Stec A. 65, 66
 Stec J. 55
 Štefančíkova A. 83
 Stefaniak T. 81
 Sterckx S. 26
 Struzik A. 89
 Studzińska M. 14, 15, 16
 Studziński T. 37, 42, 43, 55, 56, 57
 Sulejczuk D. 32
 Surma-Kurusiewicz K. 80
 Szaflik K. 34
 Szalak R. **32**, 32
 Szczepaniak K. 15
 Szczepanik M. 65, **66**, 66, 67
 Szczubiał M. **62**, 71
 Szkucik K. 85, **86**, 87, 88
 Szponder T. 74
 Szymańczyk S.E. 32, 36, 37, 42, 43, **47**,
 47, **48**, 55, 56
 Szymańska-Czerwińska M. 26, **97**
 Śliwa E. 40, **49**, 50, 52, 55, **56**, 56, 57
 Śmiech A. 66, 67, 76, 77, 79
 Taszkun I. 65, 66, **67**, 67
 Tataro M.R. 39, 40, 49, **50**, **51**, **52**, **56**,
 56, **57**, 75
 Terech-Majewska E. 96
 Toczek W. 67
 Tokarzewski S. **21**, 23, **24**, 24
 Tomczuk K. 14, **15**, 15, 16
 Torres K. 40
 Trbolova A. 76
 Tygesen M.P. 51
 Tylicki A. **24**
 Urban-Chmiel R. 26

Valvedre Piedra J.L. 32, 36, 37, 42, 43,
44, 45, 46, 47, 48, **53**, 54, 55, 56, 57
Vermersch D. 26
Wallner G. 32
Wąkuska G. 61
Warzecha Z. 57
Waśko A. 12
Wawron W. 62, 70
Wawrzyniak-Gacek A. 55, 56
Wąsowicz K. 28, 29
Wernicki A. **26**
Werpachowska E. 36
Wessely-Szponder J. 91, **93, 94**
Weström B.R. 32, 43, 55, 56
Wieczorski M. 31
Wiercińska K. 101
Wilczak J. 44, 54
Wilczyński J. 34
Wilkołek P. 66, **67**

Winiarczyk S. 78, 79, 80, **83**, 83
Winiarska-Mieczan A. 40
Witkowska A. 15
Wojcicka-Lorenowicz K. 80, 82
Wojtasz-Pajak A. 36
Wójcik M. 91
Wrona Z. 68, 69
Zabielska M. 38, **57**
Zabielski R. 37, 38, 43, 44, 45, 46, 47,
48, **54**, 56, 57
Zacharko-Siembida A. 29, 30, **32**
Zań R. 98, 99
Zdzisińska B. 70
Zielińska-Czerwiec A. 57
Zięba M. 85, 87, 88
Ziółkowska G. 19, 20, 21, **22, 23, 24**,
24, 76
Zoń A. 81