

CONTENTS

VETERINARY MEDICINE

AMINO ACID SUBSTITUTIONS FOR POLYMORPHIC LOCI OF HAEMAGGLUTININ, NEURAMINIDASE AND NUCLEOPROTEIN GENES OF H1N1 AND H7N9 STRAINS OF AVIAN INFLUENZA TYPE A (Buriachenko S. V., Stegnyy B. T.).....	10
1. Materials and methods	12
2. Results and discussion	15
3. Discussion.....	18
PEGYLATED ANTIMICROBIALS	
(Vlizlo V. V., Zelenina O. M., Kozak M. R.).....	24
1. PEGylation of drugs.....	25
2. Creation of PEGylated antibacterial preparations.....	28
3. Antimicrobial properties of PEGylated antibiotic enrofloxacin.....	31
APPLICATION OF PROBIOTICS TO INCREASE THE VITALITY OF BEES (Kovalchuk I. I., Androshulik R. L.)	41
1. Current achievements and challenges in the use of probiotics.....	42
2. Use of probiotics in feeding bee colonies.....	44
3. Features of the digestive system of bees and composition of microbiota.....	47
4. Effect of different doses of probiotic <i>Lactobacillus casei</i> B-7280 on bee viability	51
EFFICACY OF PROBIOTICS IN LIVESTOCK (Lemishevskiy V. M.)	60
1. Theoretical and practical rationale for the use of probiotics.....	62
2. The effect of probiotic feed additives on the morphofunctional state of pigs	66
CHRONIC KIDNEY DISEASE IN CATS: MORPHOLOGICAL CHARACTERISTICS AND CLINICAL-PATHOGENETIC MECHANISMS (Morozenko D. V., Vashchyk Ye. V., Zakhariyev A. V.).....	78
1. Materials, methods and purpose of research	79
2. Morphological characteristics of kidneys of cats with chronic kidney disease.....	80
3. Clinical and pathogenetic mechanisms of chronic kidney disease in cats.....	88

THE TOXIC EFFECT OF CADMIUM ON THE ANIMAL BODY
AND ITS PREVENTION

(Ostapyuk A. Yu., Gutyj B. V., Leskiv Kh. Ya., Shcherbatyi A. R.) 93

1. Man-made pollution of the environment with Cadmium..... 94
2. Negative effects of Cadmium on the body of animals and birds 100
3. Use of drugs and feed additives to prevent the harmful effects
of heavy metals..... 109

EPIDURAL ANESTHESIA IN RABBITS (*ORYCTOLAGUS CUNICULUS*)
AS A COMPONENT OF A MULTIMODAL APPROACH
FOR LAPAROTOMY INTERVENTIONS

(Siehdin O. B., Tymoshenko O. P., Stepanenko H. O.) 125

1. Anatomical and physiological features of anesthetic support
in hare-like animals 127
2. Features and disadvantages of epidural administration
of drugs in rabbits 128
3. Body parameters of rabbits under lidocaine epidural blockade
during ovariectomy (n=12)..... 129
4. Body parameters of rabbits under bupivacaine epidural blockade
during ovariectomy (n=12)..... 131

EFFECTIVENESS OF INORGANIC AND CHELATE COMPOUNDS
OF MICROELEMENTS FOR OSTEODYSTROPHY OF COWS

(Slivinska L. G., Fedorovych V. L., Shcherbatyi A. R.) 136

1. Clinical status for cows' osteodystrophy when administering
inorganic and chelated compounds of microelements 137
2. The content of macroelements in the blood serum of cows
suffering from osteodystrophy administering inorganic
and chelated compounds of microelements..... 139
3. The content of microelements in the blood of cows
with osteodystrophy in the case of using mineral compounds 143
4. Changes in the indicators of connective tissue metabolites
in the blood serum of cows with osteodystrophy during
the application of trace elements 149
5. The concentration of citric acid in the blood serum of cows
when using trace elements 155
6. The vitamins A, E, and 25OHD₃ content in blood serum
for osteodystrophy of cows in the case of the use of trace elements
and vitamins..... 156

MORPHOMETRIC FEATURES OF THE CHICKENS

INTESTINAL MUCOSA (Tybinka A. M.).....	165
1. The number of the intestinal mucosa villi	166
2. The height of the intestinal mucosa villi	172
3. The depth of the intestinal mucosa crypts.....	174
4. The thickness of the intestinal mucosa epithelium.....	178
5. The thickness of the muscular plate of the intestinal mucosa	180
6. The number of goblet cells of the intestinal mucosa.....	181

PROSPECTS FOR THE USE OF MINERALS IN RABBIT

NUTRITION (Yuzviak M. O., Lesyk Ya. V., Salyha Yu.T.).....	190
1. Biological significance of minerals for the body of rabbits.....	191
2. Physiological features of the development of the digestive system of rabbits.....	195
3. Changes in the body of rabbits under the influence of heat stress	199
4. Features of the influence of mineral nanocompounds on the body of rabbits under the influence of heat stress.....	203

TECHNOLOGY OF PRODUCTION AND PROCESSING OF LIVESTOCK PRODUCTS

INNOVATIVE DIRECTIONS OF THE BIOTECHNOLOGY OF GROWING *CHERAX QUADRICARINATUS* IN THE AQUACULTURE OF UKRAINE

(Hrynevych N. Ye., Zharchynska V. S.).....	221
1. Australian red-clawed crayfish is a new object of freshwater crustacean aquaculture in Ukraine	222
2. Peculiarities of the external structure and biological characteristics of the Australian red-clawed crayfish	224
3. Ontogeny and critical periods of development of <i>Cherax quadricarinatus</i>	226
4. Analysis of innovative directions of <i>Cherax quadricarinatus</i> cultivation biotechnology.....	228

TECHNOLOGY OF PREPARATION OF HONEY BEES FOR THE PERIOD OF HYPOBIOSIS

(Kovalskyi Yu. V., Druzhyak A. Yo., Kovalska L. M.).....	236
1. Changes in the body of honey bees during preparation for hypobiosis.....	236
2. Characterization of factors affecting the process of hypobiosis in honey bees	241

PRODUCTIVE LONGEVITY OF DAIRY CATTLE	
(Mazur N. P., Fedorovych Ye. I.).....	253
1. The influence of paratypic factors on the productive longevity of dairy cattle	254
2. The influence of genetic factors on the productive longevity of dairy cattle	262
ECONOMIC EFFICIENCY OF PRODUCTION OF MEAT LIVESTOCK PRODUCTION	
(Mylostyva D. F., Farafonov S. Zh., Ryvak R. O.).....	277
1. Target and economic efficiency of the development of the beef cattle breeding industry	278
2. Analysis of the development of the beef cattle breeding industry in Ukraine	279
3. Analysis and solution of the problem of beef cattle breeding in other countries	283
THE INFLUENCE OF THE TYPE OF FEEDING ON MEAT PRODUCTIVITY OF YOUNG CATTLE AND MEAT QUALITY	
(Razanova O. P., Farionik T. V., Skoromna O. I.).....	292
1. The problem's prerequisites emergence and the problem's formulation	293
2. The influence of the concentrated type of feed and salts of microelements on the production of beef from young cattle of different breeds.....	298
3. The effectiveness of the use of complex mineralized premixes to improve the intensity of growth and development of young cattle	306
4. Post-slaughter indicators of meat productivity and chemical composition of muscle tissue of cattle fed protein-vitamin premix.....	316
MINERAL ELEMENTS IN SHEEP NUTRITION AND WOOL PROCESSES	
(Stapay P. V., Stakhiv N. P., Salyha Yu. T.)	327
1. Biological role of mineral elements in metabolic processes and nutrition of sheep.....	330
2. The role of mineral elements in the processes of wool formation in sheep	332
MILK PRODUCTIVITY OF PODIL FACTORY-TYPE COWS OF THE UKRAINIAN BLACK AND SPOTTED DAIRY BREED	
(Shuplyk V. V., Shcherbatiuk N. V.).....	350
1. Emergence of the prerequisites of the problem and formulation of the problem.....	350
2. Milk productivity of cows of different lines.....	351
3. Live weight of cows of different lines	355
4. The influence of linear belonging on the level of milk productivity	358
5. The influence of cultivation on further milk productivity	359

ECOLOGY AND ENVIRONMENTAL PROTECTION

PECULIARITIES OF GENETIC VARIABILITY OF VALUABLE FISH SPECIES (Mariutsa A. E., Nahorniuk T. A., Hlushko Yu. M.)	364
1. Peculiarities of genetic structure of paddlefish (<i>Polyodon spathula</i>) using three inter-microsatellite loci (ISSR).	365
2. Analysis of genetic structure of rainbow trout (<i>Oncorhynchus mykiss</i> (Walbaum, 1792)) by the biochemical systems	369
3. Cytogenetic characteristics of valuable fish species	371

PROBLEMS OF ENVIRONMENTAL PROTECTION

AS AN ASPECT OF MILITARY CONFLICT

(Paraniak R. P., Lytvyn N. A., Matsuska O. V.)	380
1. Features of the classification of environmental consequences of military actions	380
2. Indirect consequences of military conflict	382
3. Environmental risks related to infrastructure destruction during war	384
4. Features of the functioning of the natural-reserve fund system in the conditions of war	386
5. Systems and methods of documenting environmental crimes of wartime ..	388
6. Separate and general types of environmental violation	390

PECULIARITIES OF THE PATHOGENESIS OF EUSTRONGELIDOSIS IN *PERCA FLUVIATILIS* LINNAEUS, 1758, *SANDER LUCIOPERCA* (LINNAEUS, 1758) AND *ESOX LUCIUS* LINNAEUS, 1758 OF THE DNIPRO (ZAPORIZKA) RESERVOIR

(Sydorenko V. S., Marenkov O. M., Yerukh M. M.)	396
1. Analysis of studies and publications related to the infection of fish with the nematode <i>Eustrongylides excisys</i>	397
2. Research methods and analysis of the obtained results	400

LITHIUM IN THE NATURAL ENVIRONMENT AND TROPHIC CHAIN

(Sobolev O. I., Petryshak R. A., Naumyuk O. S.)	407
1. The history of the lithium discovery	407
2. Physical and chemical properties of lithium	408
3. The distribution of lithium in the natural environment	409
4. Lithium in soils	411
5. Lithium in natural waters	412
6. Lithium in plants and food products of plant origin	415
7. Lithium in food products of animal origin	418
8. The levels consumption of lithium with food and human demand for it	420
9. Lithium and human health	422

ECOLOGICAL STATEMENT OF THE WEST PART OF UKRAINE AND SPREADING OF INTERNAL PATHOLOGY OF SHEEP (Sharandak P. V., Grushanska N. G., Sharandak V. V.)	433
1. Trace minerals content in the Luhansk Region soil.....	434
2. Content of Lead and Cadmium in soil of Luhansk Region.....	440
3. Water quality in Luhansk Region	445
4. Sheep internal pathology distribution	447

**EUROPEAN INTEGRATION PROSPECTS FOR THE
DEVELOPMENT OF UKRAINE’S AGRARIAN ECONOMY**

CONCEPTUAL BASES OF FORMATION AND MANAGEMENT OF LOGISTICS SYSTEMS IN THE FIELD OF ANIMAL HUSBANDRY (Kolodiichuk V. A., Hrymak O. Ya., Kolodiichuk I. A.)	454
1. Definitions of systems theory in material flow logistics	455
2. Main provisions of the concept of meat and dairy products logistics.....	460
3. Principles of design and management of logistics systems in the livestock industry	467