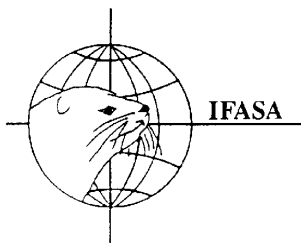
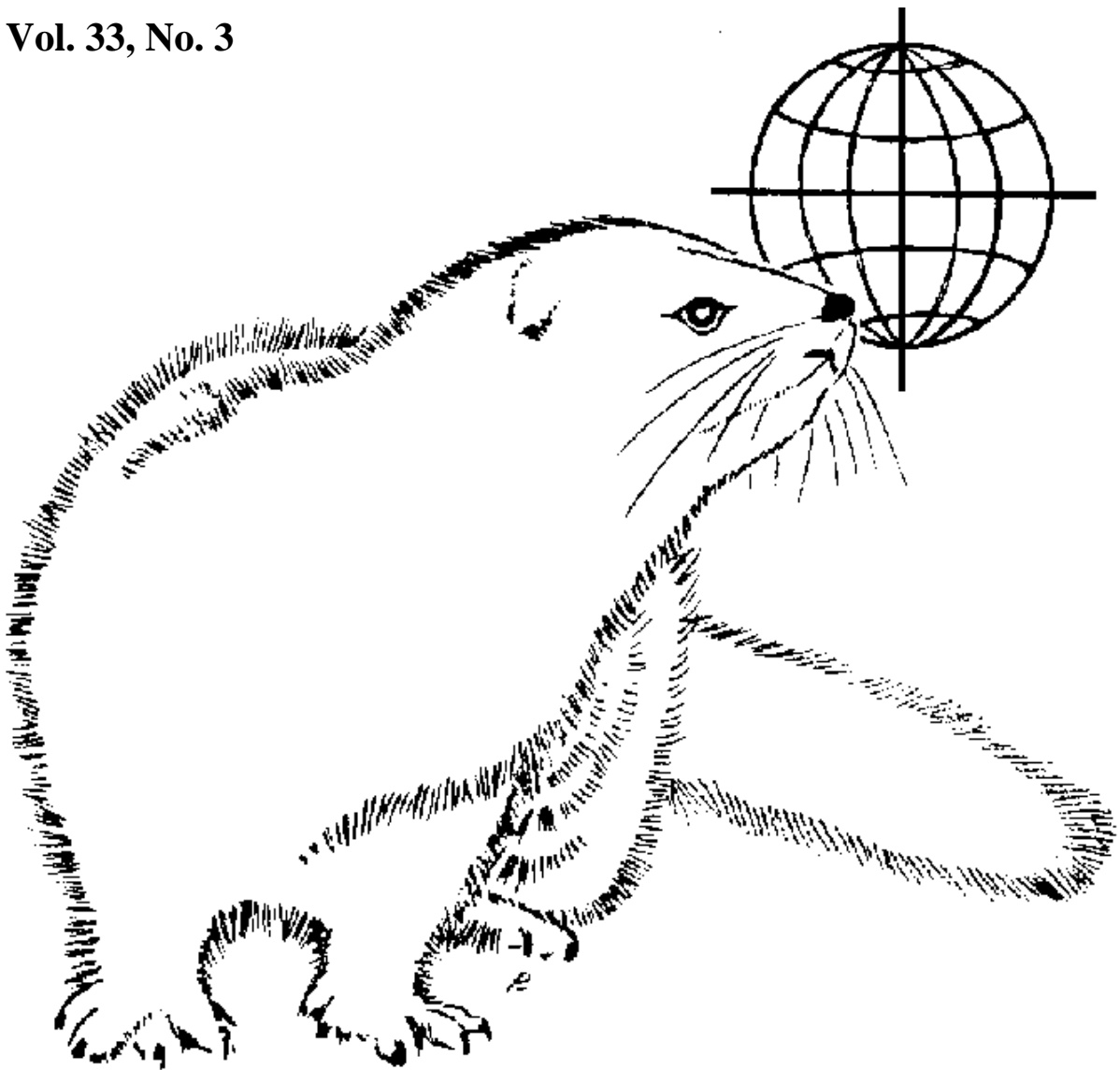


SCIENTIFUR

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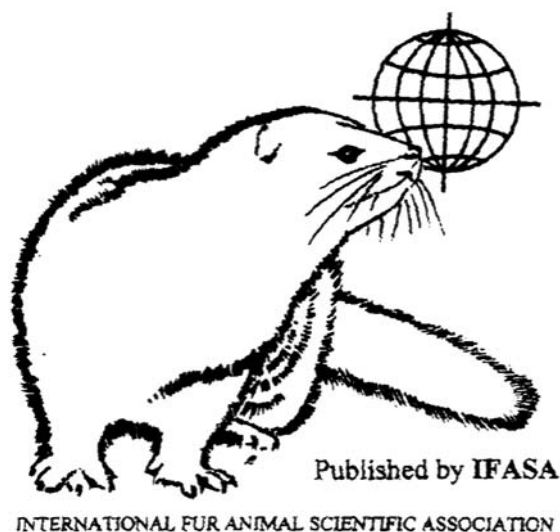
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Notes from the Editor

Late summer and autumn are traditionally the time for gathering together at meetings, seminars and congresses.

The yearly summer school, organized by the Fur Breeders Agricultural Coop (FBAC) was held 1st August in Park City, Utah. It is the aim of the meeting to inform the members in Utah and Idaho about the latest developments related to marketing, ranch management, equipment, disease control, genetics and nutrition.

The yearly meeting at the Faculty of Agricultural Sciences, Aarhus University is aimed at advisers

and the fur animal industry. This year the meeting was arranged at 15 September. The subject was "Actual Fur Research".

The IVth International Symposium "Modern problems and methods of ecological physiology and pathology of the mammals introduced in zooculture" was held 23-25 September in Petrozavodsk, Republic of Karelia, Russia.

This issue of *Scientifur* contains abstracts from the symposium in Petrozavodsk and from the meeting at Aarhus University.

Vivi Hunnicke Nielsen
Editor *Scientifur*

Actual Fur Research
Meeting at the Faculty of Agricultural Sciences
Aarhus University, Denmark
15 September 2009

Litter size in mink is not affected by less than *ad libitum* feeding during flushing

S.H. Møller

During *ad libitum* feeding at flushing and mating many female mink will regain their body weight from the time of live animal grading. If their energy requirements during implantation and gestation are also met they are at risk of dystocia due to obesity. We therefore tested whether a somewhat reduced feed allowance during flushing and mating can make room for a sufficient energy allowance during implantation and gestation, without hampering the positive effect of flushing on litter size. The test showed that an 11 % reduction in feed allowance during flushing and mating did not affect the litter size while litter size depended on the feed allowance in the whole period until delivery. We conclude that the full effect of flushing on litter size in mink can be achieved with less than *ad libitum* feeding. This makes it easier to meet the energy requirements of female mink during implantation and gestation without the females gets obese.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 11. Authors' abstract.

Requirement and need for supplements of vitamins to mink miner

S.K. Jensen

Vitamins are organic molecules that are necessary in the feed in small amounts. The solubility of vitamins in water or lipid are determinant for their

physical, chemical and biological properties. Bioavailability determines the proportion of the vitamins to be utilized by the animals. Quantitative determination of vitamins in biological samples is traditionally a difficult and costly task. Especially the water soluble vitamins are difficult to determine in feed mixtures. The recommended supplementation of vitamins to mink feed has to take into account the big variations in the natural content in the different feed items used. In conclusion based on the supplementations used today, the vitamin requirement of the mink is most often met. However, the big variation in feed items, preservation and storage methods and the high water content, with the following risk of biological and chemical activity in the feed, accounts for a high security margin in the supplementation.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 21. Authors' abstract.

Nutrition during gestation affects subsequent generations in mink

C.F. Matthiesen, N.E. Hansen, A-H. Tauson

The knowledge of nutrient requirements for gestation and foetal development is fairly limited in mink (*Mustela vison*), but the importance of gestational nutrition, particularly protein supply, has long been recognized. The objective of the present investigation was to study the effects of late-gestational low protein supply to mink on the reproductive performance, metabolism and kit birth weight. Further, it was the aim to study if yearling offspring of protein restricted mothers were affected

by foetal protein restriction in their own first gestation and lactation, and if changes in gene expression of key hepatic enzymes caused by maternal low protein supply were transmitted to subsequent generations despite adequate protein supply from birth.

Mink dams were fed either a low-protein diet, i.e., with a protein:fat:carbohydrate ratio of 14:51:35% of metabolizable energy (ME), or an adequate-protein diet (29:56:15% of ME, control) from when implantation was completed until parturition (17.9 ± 3.6 days). It can be concluded that low protein supply in late-gestation led to poorer reproductive performance among the dams but also among their female offspring exposed to low protein supply during foetal life in their first reproductive period. The protein restriction in the late-gestation resulted in lower kit birth weight than among controls, whereas dams (F_1 -generation) exposed to protein restriction during foetal life gave birth to kits (F_2 -generation) with higher birth weight than among controls. The gene expression of some key hepatic enzymes were significantly lower in both foetuses (F_1 -generation) of protein restricted dams (F_0 -generation) and among foetuses (F_2 -generation) of the F_1 -generation dams compared to controls. This confirms that changes obtained due to foetal life malnutrition also can be found in the subsequent generation.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 27. Authors' abstract.

Mink may balance their intake of protein versus lipid but not their intake of protein versus carbohydrate

D. Mayntz, V.H. Nielsen, C. Hejlesen, S.Toft

Many studies have investigated how non-predators balance their intake of nutrients, but nutrient balancing in predators is less studied. Here we test how young males of wildmink balance their intake of the macronutrients protein, lipid and carbohydrates. The method involves feeding the mink two feeds with variable macronutrient composition. In the first experiment, it was

investigated how mink balanced their intake of protein and lipid. The mink demonstrated a pronounced ability to balance these two nutrients towards a fixed composition. In a second experiment, we tested how the mink balanced the intake of protein versus carbohydrates. The results showed that the mink possess no pronounced ability or will to regulate these two nutrients towards a particular target composition.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 39. Authors' abstract.

Healthy mink kits with a well-functioning digestive tract

B.M. Damgaard, M.S.Hedemann

Mink kits are exposed to a lot of stress factors during the lactation period and the weaning period. These stress factors have large effects on their health status and performance. Mink kits are born with a relatively immature digestive tract and immune system. Therefore, mink kits are very vulnerable to stress factors during the lactation period and the weaning period. A challenge model for susceptibility of post weaning diarrhoea in mink kits has been established. Furthermore, the development of the intestine has been characterised. The challenge model has been used to measure the susceptibility of post weaning diarrhoea in mink kits born of females with high activity level and low activity level, respectively. Further the model has been used with mink kits fed different diets during the lactation period.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 51. Authors' abstract.

Feed control and environmental enrichment in relation to the Danish Fur Animal Directive

S.W. Hansen, S.H. Møller, B. M. Damgaard

The aim of this project was to illustrate the behaviour and welfare in mink from August till November during normal and slightly restrictive feed rations as well as the production consequences by using shelves or loose tubes as enrichment objects as requested in the Fur Animal Directive.

The examination resulted in the following main conclusions: (1) The idle time cannot be used as a management tool of the individual quantity of feed by a slightly restrictive feeding yet, as mink compensate by increasing the speed of consumption. (2) 6 hours of idle time increase the mink's activity prior to the expected feeding time but has no documented, negative welfare consequences. (3) 9-12 hours of idle time in the autumn months result in loss of weight in the male mink and a beginning of increase of stereotypy, which indicates an insufficient sense of satiety in mink. (4) Mink, which had been fed slightly restrictive, had a less occurrence of urine drips, which indicates a better health. (5) Mink use solid tubes (the shelves) more than the loose tubes and the solid tubes are primarily used in the feeding situation – most by female mink indicating that the solid tubes function as a place of refuge to female mink. (6) Mink with access to solid tubes had a lower level of activity than mink with loose tubes, however, the welfare consequences for this difference is ambiguous. (7) There was no difference in the occurrence of “lumps” or “wear” in the fur between mink with solid or loose tubes. (8) In relation to tail chewing the shelves and tubes had the same effect. However, the effect was limited compared to previous tested enrichment objects for the mink to tear, bite, and scratch.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 57. Authors' abstract.

Studies into maternal care and kit survival in farmed mink

J. Malmkvist, V. Lund

The early kit mortality is substantial in mink. We investigate factors affecting this mortality, for example maternal care and the early kit development. The aim is to generate new knowledge

about how to increase the survival of farmed mink kits. In the present study, we found that females with access to multiple types of nesting materials had a marked lower kit loss than females with access to straw only.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 71. Authors' abstract.

Large “Large mink” – advantages and challenges

V.H. Nielsen, S.H. Møller, B.K Hansen, P.Berg

Mink were selected for high November weight on *ad libitum* (AL) and restrictive feeding (RF). A farm fed line (FF) was kept as a control line. Large responses to selection were obtained in both selection lines in agreement with large estimated heritabilities for November weight. After three generations of selection in generation 4, both selection lines were tested for November weight, feed consumption and feed conversion ratio on both feeding regimes. A significant line-test feed interaction was found for November weight in males. This agrees with an estimated genetic correlation of 0.84 between November weight on *ad libitum* and restricted feeding. Weight and feed consumption was largest in the AL-line on *ad libitum* feeding. This was ascribed to an increased appetite in this line due to selection. Selection on restricted feeding was found to improve feed utilization. Average November weight was larger in the AL-line compared to the RF-line but the difference between November weight on *ad libitum* and restrictive feeding (sensitivity) was smallest in the RF-line. Feed conversion ratio was similar in both lines and under both feeding regimes but fertility was highest in the RF-line. Overall, selection on restricted feeding resulted in more robust mink.

Meeting at the Faculty of Agricultural Sciences, University of Aarhus, Denmark. Internal Report Husbandry no. 17, September 2009 (in Danish) p. 79. Authors' abstract.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture

IVth International Symposium

Russian Academy of Sciences, Department of Biological Science
Institute of Biology of Karelian Research Centre
Petrozavodsk State University

23-25 September 2009

Abstracts or introduction and conclusions present physiological and biochemical investigations of predatory fur animals and rodents introduced in zooculture. The main part of the investigations is devoted to studies of physiological and biochemical state of the organism and its regulation, influence of environmental factors and biologically active substances, reproductive function and development.

Coccidiosis of Polar Foxes (*Alopex Lagopus* L.)

V.S. Anikanova, L.V. Anikieva, V.V. Ostashkova

The effect of host infection dose in 1 000 eggs and developmental stages of coccidia *Isospora buriatica* on the biochemical indices of polar fox blood serum was studied experimentally.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 8. Author's abstract.

Non-Specific Factors of Immunity in Polar Foxes (*Alopex Lagopus* L.) with Toxascariidosis

L.V. Anikieva, N.N. Tyutyunnik, V.S. Anikanova

The effect of host infection dose in 10, 100 and 1 000 eggs and developmental stages of nematode *Toxascaris leonina* Leiper, 1907 on the non-specific factors of immunity of polar fox was studied experimentally.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 13. Author's abstract.

Influence of Vitamin E Supplementation on Distribution of Tocopherol and Retinol in Organism of Blue Foxes and Foxes

I.V. Baishnikova, T.N. Ilyina, N.N. Tyutyunnik

The effect of 14-days of 100 mg vitamin E supplementation on serum levels and tissue distribution of α -tocopherol and retinol of females of blue foxes and foxes was investigated. The study has shown that

additional vitamin E have effects on α -tocopherol content of muscle tissues (myocardium and skeletal muscle) and kidneys of both species. The α -tocopherol content in tissues of blue foxes was higher than that of foxes.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 18. Author's abstract.

Modern Problems of Fur Animal Farming in Russia and Way of their Decision

N.A. Balakirev

Modern problems and as in our opinion it is possible to solve them: low level of conducting selektsionno-breeding work, the out-of-date documentation and an unstable forage reserve; obsolete technologies and the equipment; non-observance of recommended technologies; absence of effective protective measures of the Russian market from delivery from abroad; the high cost price and low the price; weak security of animals from infectious diseases; personnel deficiency; absence of a uniform management of branch and others. For stabilisation, it is necessary: to improve the organisation of conducting selektsionno-breeding work; to raise competitiveness of a domestic production; to develop the standard documentation meeting the international requirements; to toughen performance of customs requirements of import of the pushno-fur goods and fur raw materials; to spend a complex of the actions directed on preventive maintenance of infectious diseases; to organise manufacture domestic and acquisition of import modern technics; to begin reconstruction and building of farms with application of modern technologies; effective scientific and personnel maintenance; to consolidate all forces on the decision of tasks in

view. It will allow to increase a livestock the next years to 1,0 million goals of the basic herd, reception of 5-6 million skins.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 22. Author's abstract.

Evrotioks Concentrate Dry in Diet of Young Growth Mink

N.A. Balakirev, A.M. Konovalov

The trials were made on determining the effect of the complex preparation Eurotiox Concentrate Dry on young minks growth and quality (2006-2008). The data of the trials were tested on mink farms.

It was established that the optimal dosage in the young minks diet was 15 mg/day per head (50 mg/1 kg feed mixture). The body weight of minks in the experimental group has been 2668 g in 3 years, which is 187 g higher as compared to the control ones (2480 g), the amount of skins of the 000 and 00 categories is 56,4% respectively or 32,9% higher than in the control group? And the skins passed the quality test by 133,6%, i.e., 12,1% higher than the control ones. Antioxidant blood activity in experimental animals receiving 15 mg was authentically higher, fur thickness exceeded by 1,4 ths \skin\ sd.cm. in the control group. Economic effectiveness amounts to 118 roubles per 1 skin.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 30. Author's abstract.

Estimation the Length of Inter-Oestrus Periods in Chinchilla

B. Barabasz, S. Łapiński

The chinchilla is being reared by cage housing for 85 years. During this time due to domestication process the changes has been observed in behaviour, the way of feeding and reproduction. Jarosz investigated their reproduction 40 years ago, observed occurrence of two distinct seasons during year: increased oestrus activity (from December to May) and the period of lowered oestrus activity, during which chinchilla did not reproduce. Also Weir at that time claimed, that in our climatic conditions, chinchilla maintained oestrus rhythm, which was characteristic for them in natural conditions in the Andes, but in Europe it is shifted by six months. As the years pass, many scientific papers pointed on clear changes observed in reproduction of these animals. The main reason of it was the fact, that farms run, are closed, with constant temperature, humidity and permanent light regime. The chinchilla considered earlier polyestrous, with the passing of years in the farm conditions acquired ability for reproduction all the year, with simultaneous shortening of the length of oestrus cycle. The aim of this paper was investigations of the length of interoestrus intervals in particular seasons of the year and comparison of results with those observed 40 years ago. Observed differences will be evidence of disappearance of seasonalness in chinchilla.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 31. Author's abstract.

Chelate Iron and Hematological Parameters of a Polar Fox and a Sable

S.V. Beketov, L.V. Toporova, I.V. Toporova, A.V. Shatilov

An article the results of the data on the application of chelate compounds in fur farming (polar fox and sable) is given. The effect of these chelate complexes on the hematological parameters of these kinds of fur bearing animals is controversy. However, there are no violations of homeostasis associated with the introduction of chelate iron in animals.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 41. Author's abstract.

The Influence of Season and Genotype on Activity and Isoenzymatic Spectrum Lactate Dehydrogenase in Organs of Minks, Foxes and Blue Foxes

L.A. Belicheva, A.R. Unzhakov, V.A. Ilukha, E.A. Khizhkin

The variance analysis of the results of our research has allowed to establish, in all three species mammals (minks, foxes and blue foxes), season, as the factor, has caused more essential, than genotype, changes both on value of total activity lactate dehydrogenase, and on the relative contents its isoenzymes.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 46. Author's abstract.

Applying the Temperature – Phenological Method to Forecast the Timing of Geohelminth Development

L. Bespyatova

Application of the temperature - phenological method in forecasting the timing of geohelminth development is demonstrated with the example of the nematode *Toxascaris leonina* (Von Linstow, 1902) Leiper, 1907 (*Nematoda, Ascarididae*), which parasitizes in farmed polar foxes and induces toxocariasis in animals.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 49. Author's abstract.

Change of the Immunobiochemical Picture of Blood of the Red Fox under Influence of the Amber Acid

O. Yu. Bespyatykh, I.A. Domskey, Yu.A. Berezina, Z.N. Beltyukova

Changes of a immunobiochemical picture of blood of the red fox under influence of an amber acid are established. The amber acid promotes optimization of a immunobiochemical picture of blood of the red fox, normalization of a homeostasis and productive health of animals.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 54. Author's abstract.

Dairy Cattle Mastitis as a Problem of Selection

A.E. Bolgov

Opportunities and methods of dairy cattle selection according to attributes of health are considered. The special place is given to methods of increase of resistance to dairy cattle mastitis. On the basis of our own researches and references the data on frequency of animal's diseases and genetic-selection traits of different parameters of health are submitted. The necessity of development of effective selection programs for dairy cattle perfection with the attributes of health is marked.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p 59. Author's abstract.

Problems of Domestic Ruminant Animals Reproduction: Ways of Their Solution

T. F. Vasilenko

Annual cycle of domestic ruminant female reproduction is dependent on their regular estrus cyclicity. Metabolites deficiency in intermediate metabolic processes is supposed to be the first stimulus of the inhibition of the estrous cyclicity resumption in cows after calving regardless of the content of blood hormonal regulators. Reliable increasing of serum cholesterol levels in cows during the first months of lactation determines good possibilities for the resumption of normal estrous cycles. The using of natural additives from animal tissue (placenta) and/or Asteraseae plants in females nutrition during first months of postpartum period can stimulate their estrous activity and increase the reproduction level.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 64. Author's abstract.

The Morphology of Neutrophilic and Eosinophilic Leukocytes of Blood and Bone Marrow in Different Genotype Minks

A.G. Golubeva, L.B. Uzenbaeva, V.A. Ilukha, N.N. Tutyunnik

The morphology of leukocytes in standard (+/+), silver-blue (*p/p*) and sapphire (*a/ap/p*) minks were investigated by light microscope. The leukocytes of sapphire minks include abnormal enlarged granules, these granules origin at early stages of maturation in bone marrow, and furthermore they keep safe in process of cell fission and maturation.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 69. Author's abstract.

Morphology and Aggregation of Mink Erythrocytes into Carbon Nanodispersions

A.S. Goryunov, A.G. Borisova, S.P. Rozhkov, G.A. Sukhanova, N.N. Rozhkova

The effect of shungite carbon nanostructures on morphology and cytoarchitectonics of mink erythrocytes in samples representing cells treated by glutaraldehyde and then sprayed by carbon, has been studied using scanning electron microscopy. Changes in the shape of erythrocytes on addition of shungite nanodispersion to the cell suspension and on

further washing off of carbon nanoparticles appeared to be irreversible, whereas alterations in aggregation of erythrocytes were observed only in presence of nanocarbon. The effect assumed to be caused by formation of complexes of nanoparticles with membrane proteins.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 74. Author's abstract.

Influence of a Season of Year on Changes of Mineral Structure of Cattle Blood Serum

A.I. Erukashvili

In article the data on studying seasonal dynamics of the contents of microcells at cows are submitted.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 76. Author's abstract.

Factors Affecting Reproductive Success in Eurasian Lynx (*Lynx Lynx*) after the Mating with Several Partners

M.N. Erofeeva

Lynx lives solitary as many other cats do. However, individual home ranges may overlap and two-three males may follow the same female during the estrus. The aim of this study was to investigate factors that affect reproductive success of lynx mating with several partners. We simulated natural situation

in captivity and tried to describe females' and males' pre-copulatory choice and to estimate their reproductive success. Multi-male mating resulted in increase of females' reproductive success, however, the number of copulations did not affect females' reproductive success per se. Females' to males' attitude varied significantly depending on their familiarity. The sperm quality (% intact sperm) affected males' reproductive success. Females showed more acts of aggressive behaviour towards the most successful male (which mainly sired the kittens). Such way, polyandrous mating strategy gave some benefits to females, but pre-copulatory mating choice did not affect much final males' reproductive success.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 80. Author's abstract.

To a Question about Indicators of the Physiological State of Marine Mammals: Haptoglobin

I.A. Yerokhina

The results of investigation of the haptoglobin in a blood plasma of two species of pinnipeds - harp (*Pagophilus groenlandicus* Erxleben, 1777) and grey (*Halichoerus grypus* Fabricius, 1791) seals are submitted. Fixed, that haptoglobin is a labile parameter whose content in blood of seals depends on physiological state of animals. Is concluded that the parameter of a haptoglobin level in the blood plasma of pinnipeds can be used for an evaluation of the population state in biomonitoring, and also for the characterization of the animal physiological state in captivity.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 86. Author's abstract.

Biochemical Aspects of the Adaptation of Marine Mammals in Captivity

I.A. Yerokhina

Results of investigation of amino acids and mineral levels in the harp seal pups blood serum in connection with adaptation to the captivity are presented. Findings of investigation testify to incorporation of proteins and free amino acids of a blood serum of seals in process of adaptation to conditions of life in a captivity. During the greatest expressiveness the stress-reaction (10 day) is noted amino acids disbalance. Thus, in the first days of seal's captivity the protein metabolism is characterized by intensifying of a catabolism. The contents of copper, zinc, iron, magnesium, cobalt, manganese, sodium, potassium, calcium and phosphorus on the first 18 day of animals keeping at the oceanarium were determined. The causes of the revealed differences in changes of the contents of single elements during the observation term, and also question on duration of fading stress alterations and stabilization of biochemical parameters of marine mammals blood are discussed.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 93. Author's abstract.

Peculiarities of Changes of Vitamins A and E Content in Tissues of Different Colour Mink under High Level of Vitamin C

T.N Ilyina, I.V. Baishnikova

The effect of the vitamin C high dose on vitamins A and E content in the mink tissues was studied. Two experimental groups of minks (sapphire and dark-brown colour) were fed diets containing 100 mg of vitamin C/d for 20 days. The study has shown that vitamins A and E content changed differently. The vitamin A concentration in the tissues experimental minks decreased compared with the control minks. The vitamin E content in the tissues of both experimental mink groups was higher than in the control groups but in the kidneys of experimental minks the vitamin E level was significantly decreased. Results indicate that in the sapphire minks the vitamins A and E level changed more intensive than in the dark-brown minks under vitamin C high dose.

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Role of Antioxidant System in Mammals Adaptations to Different Level of Oxygen: Diving, Hibernation and High Altitude Origin

V.A. Ilyukha, S.N. Kalinina, T.N. Ilyina, I.V. Baishnikova, V.V. Belkin, A.E. Yakimova, E.A. Khizkin, E.P. Antonova, B. Barabash

The activities of the key antioxidant enzymes, superoxide dismutase and catalase, and vitamin E were studied in the heart, lungs, liver, kidneys, spleen, and skeletal muscle of more than 20 mammalian species from different Orders – *Artiodactyla*, *Carnivora*, *Insectivora*,

Lagomorpha and *Rodentia*. In all studied animals the regularities of distribution of the enzymes were found to be, as a rule, the same like in other mammals: a high activity in the liver and a lower activity, in other organs. At the same time, certain species-specific differences were noticed: the activities of the enzymes in the same organ considerably differed even in the taxonomically close species, which appears to depend, first of all, on specificity of animal ecology. Meanwhile, in chinchillas, coypus, birch mice, beavers, bears, Eurasian water shrews and raccoon dogs, activities of the enzymes were significantly higher than in the above-mentioned ten species of animals, the degree of the differences and the ratio of enzyme activities and vitamin E being different. The chinchillas transferred from the high mountain regions to the plains where they are bred under conditions of captivity appear to be subjected to hyperoxia that activates the enzyme of the first line of the anti-radical defense. The specific profile of these enzymes in the organism of raccoon dogs, birch mouse and bear appears to be due to the fact that these animals start hibernating even under conditions of captivity. In the coypus, two beavers species and Eurasian water shrews that has the semi-aquatic type of life in nature, an increase of the catalase activity was noticed in several organs. Based on these data, the conclusion about an important role of catalase in mechanisms of maintenance of oxygen homeostasis in the aquatic and semi-aquatic mammals was made. Thus, the activities of SOD and catalase as well as level of tocopherol in the same organ differ significantly even in taxonomically related species of the studied mammals and are determined, first of all, by specificity of their ecology and probably, due mainly to adaptation of the animals to hypo- or hyperoxia.

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Blood Cell Composition of Cray Seal Pups

N.N. Kavtsevich, T.V. Minzyuk

The objective of present study was to assess changes in the cell composition of the blood of gray seals in different ontogenetic periods. The data indicate that in gray seal pups the development of cell immunity is the most intensive during the first 1.5 months of life. At an age of 3-4 months when the animals start feeding on fish independently, the processes of proliferation and differentiation of lymphoid cells involved in the reactions of specific immunity decelerate.

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Rometar's Influence on Calve's Electrical Heart Activity

A.A. Kazakova, I.M. Roshchevskaya, M.P. Roshchevsky

An electrical heart activity was investigated in standing immobilized calves by ECG method before and after infusion of rometar solution. It was shown that heart rate was 89 ± 12 bpm before and 71 ± 13 bpm after rometar solution. The durations of TP and RR intervals were increased ($p < 0,002$) and the durations of P – wave and QT an interval were decreased insignificantly after infusion of rometar solution. Heart rate decreasing is connected with an increase of the isoelectric interval duration. The application of rometar solution changes the durations of initial and terminal ventricular heart activity in calves, the forms and amplitudes of ECG waves.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 113. Author's abstract.

Ferret as a Pet

D.A. Kalinin, A.R. Unzhakov

Ferret is one out of a few members of Musstelidae family and the specie of *Mustela* genus, that can be easily tamed and suitable for domestication i.e. keeping as a domestic pet.

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Reaction of Antioxidant System in Silver Foxes (*Vulpes Vulpes* L.) and Blue Foxes (*Alopex Lagopus* L.) to Dietary Sodium Selenite

S.N. Kalinina, V.A. Ilyukha, L.G. Podlepina

The experiment was conducted to evaluate the influence of dietary sodium selenite on antioxidant system (AOS) of six organs (liver, kidney, heart, lung, spleen and skeletal muscle) in fur-breeding silver foxes (*Vulpes vulpes* L.) and blue foxes (*Alopex lagopus* L.). Activities of antioxidant enzymes (superoxidedismutase and catalase) and the level of glutathione were measured. It has been shown the tissue- and species-specificity of AOS reaction to selenite treatment. No significant changes in antioxidants were revealed in skeletal muscles. Blue fox AOS was insensitive to selenite treatment.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 123. Author's abstract.

Laboratory Criteria and their Estimation at Hyperfunction of Adrenal Glands at Polecats

L.J. Karpenko

Clinical symptoms and reasons hyperfunction of adrenal glands at polecats are revealed. Necessity of definition of a level of sexual hormones for statement of the diagnosis hyperfunction of adrenal glands at polecats of is shown

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 126. Author's abstract.

Biochemical Methods of Diagnostics of Illnesses of Joints at Cows

A.A. Karpenko

Content of plasma protein and aspirin test of healthy cows and cows with arthritis were investigate and determinate.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 130. Author's abstract.

Influence of Application of Preparation "Hemobalans" on Factors Nonspecific Stability of an Organism of Horses

L.J. Karpenko, A.B. Andreeva, A.A. Bahta

In article the data on studying influences of a complex preparation "Hemabalans" applications on parameters of nonspecific stability of horses are given.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 133. Author's abstract.

Comparative Characteristics of Folliculogenesis and Luteogenesis in European Mink (*Mustela Lutreola*) and American Mink (*Mustela Vision*)

D.V. Klotschkov, Yu.G. Ternovskaya, S.Ya. Amstislavsky

Ovaries of 22 pregnant females of European mink at different stages of pregnancy and of 10 females of American mink on day seven of pregnancy have been studied with a special emphasis on the processes of folliculogenesis and luteogenesis. Additionally ovaries of ten American mink females were studied two days after administration of hCG (20 ME, Profasi, Italy). Wave of folliculogenesis with duration about 8 days was registered in ovaries of the American mink during the early pregnancy. Similar wave of folliculogenesis was discovered in ovaries of pregnant females of the European mink, although these data are rather preliminary and more experiments need to confirm this conclusion.

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Raw Fibre Concentrate in the Nutrition of Mink and Blue Fox

N. Koskinen, J. Sepponen, T. Rekilä

Dietary fibre is an essential component for creating a healthy working gastrointestinal tract. Many of the fibre's components, like hemicelluloses, pectins and lignin, influence the digestive process. Different carbohydrate sources which contain both soluble and insoluble fibres are used in fur animal feed in Finland. Raw fibre is essential for normal digestion and it has many benefits for the animal. Also the potential for binding extra water in the feed is relevant. Raw fibre concentrate ARBOCEL® was studied in these experiments in blue fox and mink feed. ARBOCEL® is a pure raw fibre concentrate (lignocellulose) with a crude fibre content of approx. 65%. In addition, ARBOCEL lignocellulose is free of mycotoxins. It contains only insoluble fibers which are known not to bind any nutrients. The physical appearance of the crude fibre concentrate particles are significantly different to standard crude fibre sources. The fibres swell and generate a threedimensional, insoluble fibre network in the digestive tract. By creating a sponge-like (or capillary) effect, this fibre network enables ideal penetration of the digesta by enzymes and bile acids, resulting in enhanced nutrient digestibility and intestinal health. ARBOCEL® binds water in a ratio to 1:6 to 1:8. (Data sheet Rettenmaier & Söhne 2008). The objective of the first experiment was to find out how well the ARBOCEL® added to fur animal feed releases its absorbed water to the animal. The study involved determination of nitrogen and water balances for minks and blue foxes. In the second experiment the raw fibre concentrate

was studied during the production period on mink feed. The effect on health, growth, feed consumption and skin characteristics was evaluated during the experiment. It is recommended to use maximum 2% of ARBOCEL® in fur animal feed according to the period. The use of insoluble fibre in feed is recommended especially when a) feed consistency or energy content of the diet has to be modified, b) water intake should be ensured or c) if high doses of fat is used as an ingredient of the feed.

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Energy Metabolism of Growing Blue Foxes (*Alopex Lagopus*)

N. Koskinen, A-H. Tauson

The blue fox (*Alopex lagopus*) is presently the most important species in fur farming in Finland. In recent years selective breeding programmes have focused on producing large and heavy animals. Ten years ago the average weight at pelting of blue fox vixens varied between 7 and 10 kg. Nowadays individuals weighing over 20 kg can be found. At present blue foxes are fed ad libitum during the growing – furring period. The blue fox exhibits seasonal fluctuations in feed intake and accretion of body fat, feed intake and body fat retention being very high during autumn and early winter if given free access to feed. Unrestricted feeding hence often leads to animals being very fat or even obese at the time of pelting. The accumulation of body fat may have dual purposes, both of crucial importance for animals living in the wild: first to provide insulation of the body and protection from excessive heat loss when ambient temperature

is very low and second, to serve as an energy reserve in situations of scarcity. The main objective of this project was to establish baseline data on the energy requirement of growing blue foxes, by measuring feed intake, energy expenditure, and protein and fat retention. This project is based on the main hypothesis that the energy requirement of the blue fox is strongly regulated by photoperiod, and that voluntary feed intake and energy expenditure reflect seasonal changes.

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Seasonal Changes of Carbohydrate – Energy Metabolism in Wild Ruminants (Moose and Reindeer)

T.I. Kochan

In the experiments conducted on two moose and four reindeer with rumen fistulas, we established that metabolic adaptation of the wild ruminant to a cold season is achieved due to the increase of intensity of anaerobic way of oxidation of substances – glycolysis, that compensates inhibition of aerobic oxidation and the insufficient supply of energy of the animals' organism in this period of the year. The evolutionary developed adaptive mechanism of inhibition of aerobic oxidation of substances in the organism of moose and reindeer means a more economical utilization of reserve sources of the organism and lowering of water formation - the main end-product of aerobic oxidation that is conducive to the reduction of heat loss from the organism and to maintenance of its temperature homeostasis in the cold season.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 153. Author's abstract.

The Influence of Temperament Type of Finnraccoon (*Nyctereutes Procyonoides*) Females on Reproduction Parameters

S. Łapiński, B. Barabasz, P. Niedbala, J. Bzymek

Fur animals reared on farms, are exposed to a risk of number of stressful incidents such as restricted life space, environment monotony, large number of individuals located on a small area, human presence or limited to minimum possibilities of controlled events (Bakken et al., 1994). Long-lasting stress significantly lower welfare level, what deflect negatively on animal health and such production parameters as: growth rate, quality of hair cover or reproduction results and young rearing (Fortuńska, Barabasz 2003; Wierzbicki 1997). Many studies on temperament or fox and finnraccoon behaviour showed, that particularly susceptible to stress factors are animals with a low threshold of excitability – aggressive and fear individuals (Fortuńska, Gacek, 2001; Rekila et al. 1997). In stress conditions negative feedback undergoes deregulation, and positive feedback influence acts still long after stress intensifying it results. Excessive releasing of glycocorticosteroids is causing functional body impairment, reduction of immunological system efficiency, changes in reproductive organs, reproduction disorders, barrenness and lower productivity (Kania et al., 2001). The aim of this study was definition of dependence between female finnraccoon temperament and them reproduction parameters.

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Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 154. Author's abstract.

The Application of Thermograph Measurements in Veterinary and Animal Husbandry

M.W. Lis, J.W. Niedziolka

Infrared thermography (IRT) is a method of registration of infrared radiation emitted by biotic and abiotic objects. The basis and greatest advantage of this method is that the visualisation of superficial distribution of temperature is possible. In conclusion, infrared thermography is a useful and sensitive tool at the veterinary practice and animal science studies.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 167. Author's abstract.

Influence of the Extract of the Biomass of Mushroom *Fusarium Sambucinum* on Reproductive Function of Sables Females

N.N. Loenko, A.V. Puchkov, I.E. Chernova

It is established that use the fodder additive of the extract the biomass of mushroom *Fusarium sambucinum* in the diets of sables females positively influences on reproductive function, number of cubs per one female. The use of fodder additive in the rations females for a protracted period of time (for 12 months) was most effective than given for short time (for 3-4 months).

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 174. Author's abstract.

Oxidation Lactate in Animals Mitochondrium: Mechanism and Importance

O.V. Meserjakova, A.R. Unzhakov, E.A. Khizhkin, M.V. Churova, N.N. Nemova

The modern studies have defined lactate a new role in metabolism. In article are considered the mechanism of mitochondrial lactate oxidation.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 181. Author's abstract.

Large Granular Lymphocytes Content in Harp Seals of Different Ages

T.V. Minzyuk, N.N. Kavtsevich

The content of "large granular lymphocytes" (LGL) in peripheral blood smears of harp seals of different ages stained by Romanovsky was determined. LGL number in harp seals is considerably above, than in many land mammals. It is shown, that LGL in undernourished seal pups are most numerous (35-41%), and 2-15% are found out in "whitecoats" (on the average 7.1 ± 0.6).

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research

Centre Petrozavodsk State University, 23-25 September 2009, p. 186. Author's abstract.

The Main Epizootic Problems in Poland

J.W. Niedziolka, M.W. Lis

One of the most important goals of veterinary medicine is to study diversity's paths of infective diseases and monitoring of focuses and chain of infections. The veterinary services on the strength of the international agreements are obligated to register and overcome every case of diseases accounted to be particularly hazardous, *i.e.*: rabies domestic and wild animals, Bovine spongiform encephalopathy (BSE), Aujeszky Disease, Enzootic Bovine Leucosis (EBL), Brucellosis, Bovine tuberculosis, Highly Pathogenic Avian Influenza (HPAI) in poultry and in wild birds *etc.*

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 187. Author's abstract.

Influencies of Biologically Active Substances «Bronchodiol» on Mechanism of Calves Non-specific Resistance

V.V. Paiterova, V.I. Maksimov

In the article the formation of natural resistance of calves during dairy and transitional phases of early postnatal ontogenesis and influence of food supplement "Bronchodiol" to it are presented. It is noticed that the factor of nonspecific resistance of organism has features in(on) 14-, 30- and 60-days aged calves. It is going on lowering of bactericidal and lysozyme activity of a serum and growing of phagocytic

index and neutrophil number. Intensive formation of natural resistance is observed in the group of same aged animals which diet include the supplement "Bronchodiol". Consequently, a fast adaptation of a growing organism is arose for the new conditions of environment.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 195. Author's abstract.

Morphometric Indicators of a Gray Seal Body

M.V. Pachomov

In article results of measurements of four grey seals, at the age of three years which are on aquapolygon in Kola bay are described. The body weight, length, a circle of a thorax and a abdomen circle were measured. The basic proportions of a body of each seal, and also influence of conditions of the maintenance on physical indicators of an animal are revealed.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 198. Author's abstract.

Biochemical and Morphological Parameters of Blood of Marmots Depending on Factors of Environment and the Physiological Condition

I.A. Plotnikov

Morpho-biochemical parameters of blood two-year-old marmots who in the age of three months are caught in the nature are investigated. Research problems included studying parameters of blood in different conditions, at a various physiological condition of an organism before hibernation and on its extent.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 203. Author's abstract.

Content of Individual Groups of Leukocytes under Conditions of Acute Intoxication of Organophosphorus Compounds in Male Rats

A.G. Povarenkova

Organophosphorus soedineniya have diverse effects on the body, which covers many of the organs and tissues. To address the use of intoxication as a specific event (atropinizatsiya, reaktivatory cholinesterase) and nonspecific (use of local negative pressure - LOD). We conducted toxicological expertise to analyze leukocyte formula before and after the LOD in rats exposed to poisoning FOV. For this experience was formed besporodnyh 4 groups of rats (males), aged 1 goda, weighing 200-220g. In each group there were 3 rats. As organophosphorus soedineniya use fosfakol. LOD treatment - depression 3kPa, 3 cycles of 2 min, a break 30 s.

1 gruppa rats - physiological control.

2 group rats - subject only to the effects of LOD without poisoning

3 group rats - poisoning fosfakol (0.1 ml per 10g body weight intraperitoneally)

4 gruppa rats - poisoning fosfakol + LOD.

Application of LOD ensures the removal of peripheral vascular spasm, filtering and removal

from the blood of deformed red blood cells, reduction of hypoxic events. Develops parallel to the intoxication effects degranulyatsii fat cells and bazofilov to the allocation of histamine decreased from LOD.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 207. Author's abstract.

Some Aspects of Arctic Foxes Adaptations to Winter Conditions

N.L. Rendakov, A.R. Unzhakov

Some adaptations of arctic fox to seasonally changing environmental conditions are listed. As the most influencing ecological factors in nature during winter are considered the low temperature and feed abundance. The role of thyroid state is quite big in adaptation to these conditions. Thyroid hormones content in foxes decreases in autumn and can rapidly change in winter.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 213. Author's abstract.

Activity of Digestive Enzymes in Blood and Organs on Polar Fox in Conditions of High Dozes of Vitamins A and E

E.B. Svetchkina, N.N. Tyutyunnik

Activity trypsine and amylase in blood, proteolytic, amylolytic and lipolytic activity in pancreas, a mucous thin gut and activity

pepsine in a stomach at polar (blue) fox in conditions of high doses in a diet of vitamins A and E. It is revealed, that at excess of vitamins A and E at polar fox females there is a breakdown of processes hydrolyse and membrane digestion, and, accordingly, and transport of fibers and carbohydrates.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 218. Author's abstract.

The Vaccine Against Streptococcosis and Pseudomonosis Polar Foxes

A. Semikrasova, V. Geller, I. Vasina

The vaccine against streptococcosis and pseudomonosis polar foxes is developed new polyvalent association. As components into a vaccine have entered a polyvalent vaccine against pseudomonosis the polar foxes, prepared of strains *Ps.aeruginosa*, optimum under factors of pathogenicity №5922 (eksotoxin) and 5211, 4762 (protease, elastase) and a polyvalent vaccine against streptococcosis the polar foxes, prepared taking into account properties of M and C factors of pathogenicity of three strain streptococcus *Str.pyogenes* №289, *Str.agalactiae* №71, *Str.faecalis* №1. The vaccine is harmless, possesses protective activity and immunogenicity for laboratory animals and polar foxes.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 222. Author's abstract.

The Diagnostic Meaning of Echinocytosis at Endogenous and Exogenous Intoxications

O.O. Smirnova, V.G. Skopichev

The appearance of high deformed erythrocytes when organophosphorous compound poisonings and endogenous intoxications take place depends on intoxication stages. As the result the cell loses its volume and gets sharp outgrowths of its surface that is characteristic of echinocytes. The percentage of echinocytes during the endogenous and exogenous intoxication correlates with its grade.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 226. Author's abstract.

Mineral Composition of Polar Foxes' Hair of Healthy and Fur-Defected Animals

I.N. Staroverova

It was studied the alteration of mineral composition in caged polar foxes' hair from 1 to 12 month. It was determined the containment of 18 chemical elements in hair of healthy and fur-defected animals have different morfolbiochemical blood properties and mineral composition of hair.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 231. Author's abstract.

Biosimmetry of Males and Females Lymph Nodes in Polecats

N.A. Suntsova, V.Z. Gazizov, D.A. Vantsurov, J.A. Churina

Polecats have developed in right and left side of the body. In general average morphometric parameters have no statistics difference in lymph nodes of right and left body side.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 236. Author's abstract.

Mineral Composition of Lymph Nodes in Some Canidae

N.A. Suntsova, O.E. Evenko, V.Z. Gazizov

Investigated of mineral composition in mesenteric of lymph nodes, lymphoid plaque, and gut of the raccoon dogs and the arctic foxes. More microelements (Fe, Se, Co, Zn, I, Cu) in the organs raccoon dogs have, then the arctic foxes.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 241. Author's abstract.

Influence of Producers Sulphorcontaining Amino Acids on Quality of Polar Foxes Skins

N.N. Tinaev, U.E. Kozlovsky, N.I. Tinaev, E.A. Tinaeva

Influence of producers sulphorcontaining amino acids cystine and methionine on live weight, density of a fur and consumer properties of skins of young growth of polar foxes is studied. It is established that introduction to young growth of polar foxes with food *B. subtilis*, producing sulphorcontaining amino acids cystine and methionine, in maturing and functioning of hair follicles and growth of a winter fur it was positively reflected in their live weight, density of a fur, length, the area and quality of skins.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 246. Author's abstract.

The Estimation of Genetic Polymorphism and Marmots Productivity

E.A. Tinaeva, L.G. Markovich, G.A. Fedoseeva, N.I. Kulikova

The peculiarities of marmot reproduction were studied on animal of the different age bred in cages.

Based on spectrum and frequency of alleles and genotypes of blood polymorphic proteins new scientific results about Marmots population genetic structure and relationship between them and performance of marmot reproduction.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 251. Author's abstract.

The Consequences of the Stress Starvation on the Progeny Behavior in Different Genotypes of Farm Bred Mink

O.V. Trapezov, L.I. Trapezova

Stress as a selection factor for stress sensitive genotypes in population is well known postulated. Prenatal stress (starvation) in pregnant females of farm bred mink can produce offspring characterized with tame behavior. Such stress induced results was more effective in homozygote animals than in standard and heterozygote ones.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 256. Author's abstract.

The Recovery of Color Variability in "Karjala Spotted Mink"

O.V. Trapezov, L.I. Trapezova

At the Institute of Cytology and Genetics a method has been developed for evaluation how the degree of domestic behavior may affect coat color pattern in Karelian spotted mink (SK/+). Domestication has uncovered in domestic mink populations hidden genetic variability in coat color. This in turn gave clues for search and selection of new versions of coat color in mink.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 259. Author's abstract.

Morfometric Indicators of Hair of Chinchillas of Different Colourings

N.U. Tugova

Shinshillovodstvo in Russia exists about 40 years. Early studies on studying of biological features of standard chinchillas have been spent to 1968 in Kirovsk. For 40 years of serious researches on studying of chinchillas to Russia it was not spent. Now Shinshillovodstvo is at a new stage of development. There were many private enterprises in the south of our country, in a midland and in Moscow suburbs. New colourings of chinchillas which as breeds are confirmed abroad, such as B.Wilson, Eboni, Beige are received many. From references follows that studying of chinchillas of the given colourings in our country was not spent. In given article the data on morphological is presented indicators of hair of chinchillas of different colourings.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 265. Author's abstract.

Actual Problems of Ecological Physiology and Biochemistry of the Animals Introduced in Zooculture

N.N. Tyutyunnik

In article the most important methodical and experimental approaches to studying adaptive opportunities of an organism to influence of adverse factors of environment at various levels of the organization alive system are presented. In laboratory of ecological animal physiology of Institute of biology Karelian Research Centre the Russian Academy of Science proceeds development of methods of an estimation of a physiological condition of animals, intensity of

various functional systems and reserve opportunities of an organism, and also influence of features of ecology on preservation of a homeostasis during interaction with an environment. Study of adaptive opportunities of an organism will allow to reveal features of adaptation of animals various ecogenesis to conditions of an environment, to determine possibilities a metabolism correction and to solve such important practical problem as selection of farmer fur animals stable against influence of adverse factors of an environment.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 270. Author's abstract.

Influence of Shungite Carbon Nanoparticles on the Physiological Condition of Dark Brown Mink (*Neovison Vision* SCHR. 1777)

N.N. Tyutyunnik, A.R. Unzhakov, L.B. Uzenbaeva, A.G. Golubeva, V.A. Ilykha, S.N. Kalinina, T.N. Ilyina, I.V. Baishnikova, E.B. Svechkina, N.N. Rozhkova

The results of study of shungite carbon (ShC) nanoparticles influence on morphological and biochemical indices of blood and organs of mink (*Mustela vison* Schr.) are considered in the paper. It is shown, that the injection of (ShC) nanoparticles aqueous dispersion has no negative effect on physiological conditions of experimental animals. Essential deviations from norm in morphological and biochemical structure of blood and organs have not been established, except of the parameters of systems generation and suppression of the active forms of oxygen. To prove biocompatibility of ShC nanoparticles with animals organism, further study directed to the mechanism of physicochemical interaction and searching for

the optimal dozes and ways of the injection preparation is required.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 276. Author's abstract.

Beaver Breeding in Russia: History and Prospects

A.R. Unzhakov, V.Ya. Kanshiev

In article the questions of a history of beaver's breeding and prospects beaver-farming in Russia are considered.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 282. Author's abstract.

Vermitechnology in Fur Animals Breeding: Fodder Adding, Biohumus and Processing of Wastes

A.R. Unzhakov, A.B. Ruchin

Vermitechnology – a system of the technological measures for the cultivation of compost earthworms on organic substrate, for the treatment and application of coprolite and a biomass of worms – is being developed at the least in two directions: 1) vermicomposting, which main purpose is the processing of organic wastes and the obtaining of excrement mass of compost earthworms – the biohumus – valuable organic fertilizer; 2) vermiculture, when compost worms are bred or their biomass is obtained. Vermicomposting of organic wastes

became a large-scale industry. The perspectives of use of vermitechnology in fur animal breeding are considered.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 286. Author's abstract.

The Influence of Sodium Selenite on Isoenzymatic Spectrum of Lactate Dehydrogenase in Fur Animals

A.N. Filimonkova, A.R. Unzhakov, S.N. Kalinina

The interspecific differences in isoenzymatic spectra LDH in the animals fed sodium selenite are established. It is marked species-specificity of effect sodium selenite on isoenzymes LDH of kidneys and heart. The preparation has not caused changes in isoenzymatic profile LDH of kidneys both myocardium in minks and foxes, but has affected on isoenzymatic spectrum LDH of these organs in blue foxes.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 291. Author's abstract.

Reproductive Function of Sables Females under Effect of Probiotic "Bifidum-SKHZH"

I.E. Chernova, N.N. Loenko

The effect of probiotic "Bifidum-SKHZH" on reproductive function sables females was studied. It is established, that addition of probiotic "Bifidum-SKHZH" into the rations of

sables females positively influences on their reproductive function in the mating season, pregnancy and lactation.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 296. Author's abstract.

Results of Investigation of Ovulation in Cage Breeding Sable (*Martes zibellina* Linnaeus, 1758).

N.K. Shulgina, M.V. Donskova

In this study descriptions of sable female ovulation are presented. The dynamics of morphological changes and chronology of the sable's ovulatory process are not determined exactly. The exact morphofunctional description of this process will allow to optimize the present system of the couple. In the work statistics is presented, that was collected during the exploration of adult females in the fur farm "Pushkinsky". In the period of the reproduction (July) animals blood samples were drawn before ovariectomy, in a given time after covering (24, 48, 60, 72, 90, 130) and after the injection of the preparations with gonadotrophic effect. The content of sex steroids in the plasma of the peripheral blood of females was determined by radioimmunological assay. Parallel ultrastructural and microscopical explorations of gonads in the different stages of the ovulatory cycle were made. Two periods in the studied effect were discovered. The first (before 48 hours) – transovulatory, characteristic feature of development of the atretic process and pronounced vascular reaction. The second – proper ovulatory, when specific rebuilding of a follicle wall, formation of the stigma and the elimination of ovule were marked. The level of sex steroids in the blood of animals showed the degree of the endocrine

activity of the ovaries and correlated with the results of histological investigation.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 301. Author's abstract.

Productive Qualities of Foxes of the Finnish, Domestic Selection and Their Hybrids

N.N. Shumilina

The basis for performance of work is necessity of studying of parameters of the Ognjovka vyatskaya, the Finnish red fox, hybrids skins quality and their comparative characteristic.

The practical importance of work consists that by results of researches is established that Ognjovka vyatskaya is better than Finnish red on painting, but concedes on the size and quality fur. Hybrids demand the further selection work on fastening the positive qualities received from the red Finnish fox.

Modern Problems and Methods of Ecological Physiology and Pathology of the Mammals Introduced in Zooculture. Symposium at Institute of Biology of Karelian Research Centre Petrozavodsk State University, 23-25 September 2009, p. 307. Author's abstract.

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