



Original Contribution

PREDICTION OF THE BEHAVIOUR OF PUPPIES USING TESTS WITH REGARD TO THEIR HUMANE TREATMENT AND WELFARE

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ABSTRACT

Eight puppies were submitted to the Open-Field test, with regard to typization of their nervous system type and formation of their future behaviour. The purpose of the study was to avoid unexpected and stressful situations during their education that is a demonstration of humane attitude towards this animal species. It is shown that the tests with dogs during the period of their socialization are absolutely necessary in order to save needless stress during the education and also evidence attempts to observe welfare requirements.

Key words: nervous system, behaviour, humane attitude, dogs.

INTRODUCTION

The humane attitude to animals, particularly dogs, has always been an important issue in veterinary science. It highly determines whether the animal will be able to become accustomed to its environment (1, 2). The British Federation of Animal Protection and Welfare gives a precise definition with this regard. If five elements: lack of thirst and hunger, lack of discomfort, lack of pain, injury or disease, possibility of expressing a normal behaviour and lack of fear, anxiety and depression are present throughout the rearing of animals, therefore there is a humane attitude towards them (3).

Many factors influence the adaptation, the behaviour and welfare, including the humane attitude, of dogs. If these factors lead to impaired relationship between adaptation, behaviour and welfare depending on their nature, strength and duration, the ethologists call them stressors (3, 4, 5).

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The role of man here is very important. It is known that the different dog breeds are used for different purposes (6). In order to understand and predict the behaviour of the adult dog, it is necessary to test it between the 3rd week and the 3rd month of life with regard to its successful acclimatization. This is what is called period of socialization and its mostly depends on the nervous system type of the puppy (7). According to this author, the role of nervous system in the relationship between nervous system type-socialization-behavioural type is primary, regardless of the environmental effects (4, 5, 7). That is why each dog should be tested for its nervous system type in order to predict its future behaviour. This way, the man should be aware of the necessary approach to the respective animal, providing a proper and adequate education, avoiding stressful situations, thus exhibiting a humane attitude and ensuring the welfare of the animal (9). When the investigator determines the nervous system type of the dog, he could easily guide its development to a specific type of behaviour with the aim of using the animal for various social purposes (8, 9).

In the cynological practice, various tests are used (test of Toman, Queinnec, bait test etc.) In the available literature however, we did not

ВЛИЯНИЕ НА КАЛЦИЕВИЯ МЕТАБОЛИЗЪМ ВЪРХУ ЗДРАВΟΣЛОВНОТО СЪСТОЯНИЕ НА КУЧЕТО

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Калцият е основният градивен елемент на костната тъкан. Деветдесет процента от него се съдържат в костния апарат. Известни количества калций се откриват и във всички телесни течности. Калциевите йони участват в поддържането на нормалната възбудимост на нервната система и на тонуса на мускулите, в регулирането на сърдечната дейност и в процесите, свързани със съсирването на кръвта. Калцият е значим и за протичането на редица хомеостатични и обменни процеси в организма. Той е важна съставка на млякото, секретирано от животните, като за тази цел се изразходват големи количества от този елемент. Специално в млякото на кучето е установено съдържане на калций, което варира от 2,3 до 2,6 g/L [1]. Всъщност концентрацията на калция в различните тъкани силно се различава: от 11 000 mgol/kg в костите до 0,001 mgol/L в цитоплазмената течност на повечето клетки [2].

Съществува постоянна връзка между обменните процеси в организма чрез кръвта, а костите в случая играят ролята на регулатор в калциевия метаболизъм в смисъл, че този макроелемент се отлага най-много в костния апарат, в зависимост от количеството му в приеманата от кучето храна [1, 3, 4].

РЕГУЛИРАНЕ НА КАЛЦИЕВИЯ МЕТАБОЛИЗЪМ

Паратиреоидният хормон стимулира изграждането на костното вещество чрез остеобластите, хондробластите, клетките на вътрешния слой на надкостницата и включените в тях ензимни системи-фосфатази и др. [5]. Костите са изградени от колагенови фибри, свързани с мукополизахаридно вещество, върху което

се намират минерални елементи под формата най-вече на микрокристали от арапити и трикалциев фосфат, около и върху които са фиксирани други елементи - магнезий, натрий, калий, цинк, най-често като фосфати или карбонати и цитрати [1]. Процесът е особено интензивен и има голямо значение при младите и бременни животни.

Според някои автори паратиреоидният хормон влияе върху обмяната на калция коевено, намалявайки реабсорбцията на фосфора в бъбречните каналчета увеличавайки отделянето му с урината [5, 6]. Съдържането на фосфора в кръвта се понижава. В резултат на това се мобилизира костното вещество и се увеличава съдържането на калций в кръвта. При недостиг на паратиреоидния хормон реабсорбцията на фосфор в бъбречните каналчета се усилва. Съдържането на фосфор в кръвта се увеличава. Фосфорните йони увличат калция и под формата на калциев фосфат се отлагат в костите. Съдържането на кръвния калций, поради това се намалява.

Само 60% от съдържането на калция в кръвта е в активна форма и 99% от него се реабсорбира в бъбреците [7]. При кучето калциевото съдържание в урината винаги е много ниско, а отделянето му чрез нея никога не превишава 7mg/kg [8]. Производните на витамин D увеличават резорбирането на калций в бъбреците [9]. Паратиреоидният хормон пък води до намалено отделяне на калций чрез урината, а увеличава отделянето на фосфор. Калцитонинът не играе никаква роля относно калциевата обмяна на бъбречно равнище при кучето [10].

Костният апарат има важна роля в калциевия метаболизъм чрез посредничеството на паратиреоидния хормон, калцитонина и витамин D, а също и чрез клетъчните елементи-осте-

ПОРОДНИ, ВЪЗРАСТОВИ И ПОЛОВИ ОСОБЕНОСТИ НА АКТИВНОСТТА НА ЛИЗОЦИМА ПРИ ОВЦЕ ПРЕЗ ПРОЛЕТНИЯ СЕЗОН

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BREED-, AGE- AND GENDER-RELATED FEATURES OF LYSOZYME ACTIVITY OF SHEEP DURING THE SPRING

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ABSTRACT

The studies were performed in the spring of 2008 on 66 sheep, 54 rams and 42 female and 42 male lambs. Investigations were carried out on 6 sheep, 6 rams at the age of 2-4 years, 6 female and 6 male lambs at the age of 3-5 months from the following breeds: Karakachan, Tsigay, Replyan, Panagyurishte, Copper-red Shoumen, Karnobat, Pleven Blackhead, White Maritsa and Patch-faced Maritsa, Stara Zagora and Romanov. The animals were owned by the Institute of Mountain Animal Stockbreeding and Agriculture– Troyan, the Agricultural Institute in Karnobat, The Kabiyuk State Enterprise - Shoumen, the Experimental Farm of the Trakia University – Stara Zagora and by private farmers from Chirpan, Saedinenie, Vidin, Panagyurishte, Veliko Tarnovo.

The highest lysozyme activity was established in Replyan (0.971 ± 0.328) and Karnobat sheep (0.863 ± 0.270), and the lowest – in Pleven Blackhead sheep 0.106 ± 0.022 ($p < 0.01$).

In rams, the highest lysozyme concentrations were observed in the Karnobat breed with 0.537 ± 0.131 , followed by the Stara Zagora (0.463 ± 0.086), Karakachan (0.432 ± 0.225) and Tsigay with 0.381 ± 0.238 .

Among female lambs, Karnobat and Tsigay breeds showed a lysozyme activity that was many times higher as compared to other breeds (4.549 ± 4.085 and 1.603 ± 1.445 respectively), whereas the lowest activity was established in Copper-red Shoumen lambs with 0.172 ± 0.077 ($p < 0.01$).

Romanov ram lambs showed highest lysozyme concentrations (0.772 ± 0.480), followed by Tsigay (0.602 ± 0.504), Karnobat (0.430 ± 0.106) and Pleven Blackhead (0.246 ± 0.050) breeds. The lowest activities were demonstrated in Stara Zagora (0.162 ± 0.020), Copper-red Shoumen (0.137 ± 0.019) and Karakachan (0.106 ± 0.023) male lambs.

Key words: lysozyme, sheep, rams, male and female lambs

Нивото на естествения и специфичен имуноен отговор на организма се определя от фагоцитната активност, активността на комплемента, бета-лизините и концентрацията на лизоцима, интерферона и имуноглобулините му (Арсов и кол., 1979; Zyczko and Zyczko, 1998; Андонова и Гундашева, 2007). Те могат да се използват и като биологични тестове за определяне имунологичното състояние на организмите.

Бактерицидно действие на лизоцима срещу грам-положителните и някои грам-отрицателни микроорганизми и вируси се дължи на литичните, катионните и хидрофобните му свойства (Buharin and Vasilev, 1974; Blotsky et al., 1976, Lee Huang et al., 1999; Танчев, 2006).

Original Article

INVESTIGATION OF ANIMAL BONE MATERIALS DISCOVERED IN NEOLITHIC SETTLEMENT NEAR THE DISTRICT HOSPITAL IN STARA ZAGORA

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Summary

The bone material was studied and the species of origin were identified. The following methods of analysis were used: osteometric method, method for determining the minimum number of individuals, method for identifying the species of sheep and goat bones. A total number of 3237 bone fragments of wild and domestic animals were analyzed and identified. They belonged to at least of 1994 individuals. In this investigation, the bones of wild mammals make up 317 or 9.79% of the total number of bones, and these of domestic animals 2917 or 90.11%.

Keywords: archaeosteology, paleontology

Introduction

The Neolithic age on the Balkans includes the period from 6200 to 4900 BC. The earliest evidence of life in the Kazanlak valley is from the Neolithic period, as exemplified by the excavations of the Kazanlak village mound [1].

The second most common archeological finds (after pottery fragments) are bones, as well as weapons and tools made from them, as confirmed by the archeosteological studies of the Azdashka settlement mound near the town of Stara Zagora [2]. The needles, stiletos, chisels, and picks were primarily made from the ribs and tubular bones of smaller ruminants. Traces of processing were found on other bones in a number of other archeological sites [3, 4, 5, 6].

Judging by the osteological material, we can assess the species and age variety, since bones of domesticated and wild animals were found in nearly all prehistoric sites [1, 7, 8, 9, 10, 11]. Examining the bones revealed that the predominant animal remains were from cattle, pigs, smaller ruminants, and wild animals wild pigs, does, deer [3, 4, 5, 6].

The aim of this study was to perform a species differentiation of the discovered bone material. The research data can be compared with data from other geographic locations, related to the Neolithic period. This would allow us to determine the influence of the various climatic conditions on domesticated and wild animal phenotypes.

Materials and Methods

Materials

The osteological material included 2915 species-differentiated bones and bone fragments of mammals and birds (Table 1), discovered in the Neolithic dwelling in the area of District Hospital of Stara Zagora.



Original Contribution

**SOCIALIZATION OF PUPPIES – A MARKER OF THEIR FUTURE
BEHAVIOUR**

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ABSTRACT

An investigation on the relationship between temperament and socialization upon the development of the behaviour of the dog was carried out. The test of Queinnek was applied on 10 puppies from the Dobermann and German Shepherd breeds. The temperament type of each puppy was determined with regard to characterize its future behaviour and the adequate relationships between dog and men. It is shown that socialization in puppies with temperament types L and F occurred easier and rapidly, thus presuming a problemless education and behaviour subordinated to human goals.

Key words: behaviour, dog, socialization, nervous system

INTRODUCTION

The animal behaviour is described as an entity of their reaction to the environment where the relationship among animals and between animals and men are realized /1/. The motivation of an animal, the dog in particular, to realize a given type of behaviour, depends on environmental factors, both external and internal /2/. Internal factors are two types. The first type is related to psychophysiology of animals, and the second – to the impairment of a specific endogenous energy that motivates the individual to act /3/. When the living organism is influenced by various environmental deviations compared to that is it accustomed to, its motivation for realization of a specific behavioural type is blocked. Therefore, the

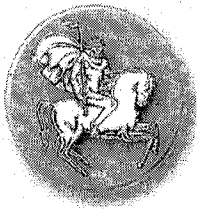
environmental factors are essential with regard to positive or negative behavioural patterns in animals as well as for the extent of their adaptation /4/. The existing relationship between temperament type and socialization is not less important for the adequate development of relationships between man and dog and between dogs, i.e. for formation of a behavior, subordinated to the intentions of men /5/.

Socialization has always interested ethologists /2, 3, 4, 5/, as in their opinion the successful socialization of puppies through proper education (depending on the individual temperament type) was the factor that predetermined the formation of behaviour.

The behaviour of the adult dog indicates whether the process of socialization is successful or not in a given animal /6/. In general, the adaptation of the puppy to its environment occurs between the 3rd week and the 3rd month of life.

It is emphasized /2, 3, 4/ that in many instances, this process is not successful

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Original Contribution

**DETERMINING THE TYPE OF NERVOUS SYSTEM IN YOUNG PUPPIES,
REGARDING THEIR PROPER EDUCATION, SOCIALIZING, AND FUTURE
BEHAVIOR FORMATION**

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ABSTRACT

We studied the behaviour of 24 young puppies of the Labrador, Boxer and German Shepherd breeds, by using a bait test, in order to determine the type of nervous system, and depending on that to apply the most appropriate training, socializing, and behaviour formation. We proved that the used test was quick, easy to perform, convenient to set up, and not stressful for the subjects as it complied with the requirements for humane treatment of animals. According to our results, Labradors were most courageous and stable, followed by the Boxers and the German Shepherds.

Key words: dog, behaviour, neural system, training, socialization

INTRODUCTION

The dog is perhaps the first animal species to be domesticated by man. Even today dogs are actively used for many social purposes and that is why they are so popular. Dogs have various jobs nowadays: border guards, messengers, hunters, crime investigators, customs inspectors, ore seekers, child caretakers, disabled people assistants, healers (dogs can accurately detect a person's emotions), odorologists, etc. (1, 2, 3).

The issue of determining the type of nervous system in puppies, as a part of their socialization (adaptation to the environment between the 3rd week and 3rd month of life), with regard to the formation of their future behavior, has been examined by many researchers (4, 5). The way a dog adapts to its environment is of great significance, as it reflects on its overall behaviour later (6).

Research performed so far proves that in many cases animal-human contacts are unsuccessful (7, 8). This is one of the many reasons there are stray dogs, which are often abandoned by their owners, who could not use the dogs for

the purpose they intended (9). In this relation, the influence of the dog's nervous system has an important role on the animal's socializing and the following appropriate training, which undoubtedly affects its overall behavior formation (10, 11, 12, 13, 14). For humans, Hippocrates established four primary nervous system types: sanguine, choleric, phlegmatic, and melancholic. Similarly (15) determines four basic types of nervous systems in dogs:

- L- strong, balanced, leader type, corresponding to the human sanguine type;
- F- strong, quickly learning, yet easily irritable and more unstable, corresponding to the human choleric type;
- G- weak, insensitive, slower, and passive nervous system, corresponding to the human phlegmatic type;
- A- weak, unbalanced, indifferent, passive, yet prone to having a bad temper nervous system, corresponding to the human melancholic type.

A number of authors (16, 17) have performed studies, according to which socialization is fastest and easiest in dogs with the L and F nervous systems.

The question arises, which of the available tests of determining the nervous system type is the most useful with regard to the dogs' proper socialization, training, and future behaviour formation. By correctly establishing the nervous system type of young dogs, they can

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INTEGRATED HYGIENE ASSESMENT OF DAIRY FARMS OF DIFFERENT CAPACITY

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ABSTRACT

The purpose of this study was to evaluate the hygiene parameters in dairy farms of different capacities and technological solutions and to find out to what extent the established values corresponded to those set out in regulations. Subjects of estimation were 6 dairy farms divided into three groups depending on their capacity – 1st group: over 50 dairy cows; 2nd group: from 10 to 50 dairy cows and 3rd group: up to 10 dairy cows. The farms were situated in the village Yastrebovo, region of Stara Zagora. The main problems in assessing the overall condition of the farms included a lack of disinfection sites, lack of sanitary facilities, lack of manure depots, lack of isolation and quarantine facility, and non-systematized, incomplete or missing documentation and reporting, lack of an action plan in extreme situations. The existing practices in the investigated farms were risky and a prerequisite for environmental pollution. There was no action to limit the odour of manure, to reduce exhaust emissions of greenhouse gases in the atmosphere and to monitor the uncontrolled leakage of slurry and sewage in the soil. After completing all control charts and analyzing responses to questions, the final result of the integrated hygiene assessment of the farm was negative.

Keywords: integrated hygiene estimation, dairy farms, check lists

INTRODUCTION

The state of family cattle farms is of particular importance for both the welfare and comfort of animals, as well as for their productivity, which determines the economic profitability of a farm. Most of now existing small cattle farms are not compliant to the requirements set in Ordinance 7/1992 for the hygiene safety zones between animal rearing facilities and residential areas, which is part of the integrated ecological assessment of livestock farms (Kostadinova et al., 2001; Petkov et al., 2002; Petkov, 2004).

The numerous small family dairy farms in the country complicated their detailed investigation and integrated hygiene assessment. Nevertheless, the evaluation of their present status and potential would help the accurate assessment of their compliance to hygiene sanitary requirements set in regulations (Ordinance 44/2008) and the animal welfare standards (Ordinance 30/1999; Ordinance 14/2000).

The purpose of this study was to evaluate the hygiene parameters in small dairy farms in order to establish the extent of their regulatory compliance.

MATERIAL AND METHODS

The survey was conducted in Yastrebovo, region of Stara Zagora, in 2009-2010 on 6 dairy cattle farms for milk production with total of 133 cows, distributed as followed:

- **I group** – farm No 1 (farms were numbered from 1 to 6 for confidentiality reasons) with 86 cattle (32 lactating cows, 18 dry cows, 12 heifers, 8 bull sires, 16 calves >6 months of age by the time of the survey).

- **II group** – farm No 2 with 22 cattle (8 lactating cows, 2 bulls, 7 calves >6 months of age and 5 calves < 6 months of age by the time of the survey).

- **III group** – farm No 3 (3 lactating cows, and 2 calves >6 months of age); farm No 4 (3 lactating and 3 dry cows); farm No 5 (8 lactating cows and 1 heifer) and farm No 6 (8 lactating cows and 2 calves >6 months of age).

Studies on Socialization Characteristics Using Two Temperament Tests in German Dogue, Doberman and Riesenschnautzer Puppies

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ABSTRACT

The object of study was the influence of the nervous system type (temperament) of dogs from the German Dogue, Doberman, and Riesenschnautzer breeds on the extent of their socialization (adaptation to the environment). Two tests were used to examine the animals' behavior: the mirror test and the Queinsec test. It was established that puppies of the German Dogue breed possessed the highest socializing capabilities, followed by the Riesenschnautzer and Doberman breeds. This means that the representatives of the German Dogue breed would require the least amount of training time in order to form specific behavior. The Riesenschnautzer exhibited average ability to socialize, and will adapt to the environment more easily than the Doberman breed and with more hardship than the German Dogue. The puppies that would be hardest to train were the ones from the Doberman breed, as they are most prone to aggression and ill temper.

Key words: Puppies, socialization, temperament type, behavior, test

LAMENESS IN DAIRY CATTLE BREEDING: PREVALENCE AND ETIOLOGICAL FACTORS – A REVIEW

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ABSTRACT

Lameness in dairy cows is among the most serious problems of modern cattle breeding. The prevalence of lameness among dairy cows varies on a worldwide scale. The factors important for lameness occurrence are: feeding regimen, genetic selection, the social hierarchy, overcrowding and herd size, the free walking space, environmental factors and climate, behaviour of cows in conditions of heat stress, the design of the pen and type of restraint device, the litter and hoof care practices.

The present review makes clear that lameness in dairy cows is widely distributed in various production systems. The incidence of lameness, according to literature data, ranges from 0 to 59%. The etiology of lameness in cows is multifactorial. Numerous factors have been investigated, as the nutrition and diet type, the social hierarchy in the herd, the walking area and overcrowding. Other important factors for lameness are the climate and behaviour of cows in conditions of heat stress related to rations and feeding habits. The type and comfort of bedding and neck rails also play a role with this regard. Regular hoof care and trimming are indisputable for prevention of lameness. The literature review confirmed that lameness is important and controversial issue. It could be concluded that more research is needed to outline their impact of production technologies on the prevalence and consequences of lameness in dairy cows.

Key words: lameness, dairy cattle, lameness prevalence, etiological factors

INTRODUCTION

Lameness in dairy cows is among the most serious problems of modern cattle breeding. It has been studied over many decades but still, there is not a uniform statement acknowledging all causes and means of control of this pathology in various production systems. Evidences regarding economical losses are indisputable and they are related to culling, production losses, weight loss, infertility, increased incidence of mastitis among cows with lameness and hoof problems.

The prevalence of lameness among dairy cows varies on a worldwide scale. According to Faye and Lescourret (1989) it is about 29.5%, whereas Greenough and Vermunt (1991) report an incidence of 15-37% that increases considerably in the immediate postparturient period. Arkins (1981) reports that the prevalence of cattle lameness in Ireland was between 6 and 44%. In Europe it varies mainly between 25 and 30%, and in Bulgaria – from 4.55% to 49.68% (Neichev et al., 1981; Dijkhuizen, 1987). In free-ranging cows in Australia, Harris et al. (1988) reported an average incidence of 7.5%, whereas in the USA according to Cook (2003), lameness ranged between 21.1% in summer and 23.9% in winter depending on the rearing technology and the litter. Lameness among cows, as reported by Broom (2001), varies from 35 to 56% in the USA and 59.5% in Great Britain. Todorov (2009) affirmed an incidence between 2 and 55%, most frequently between 6 and 10%. The lameness is a result of multiple factors influencing the health of cattle (Cook, 2003). It leads to disturbance in the normal life of cows, reduced appetite and ingested dietary dry matter,

ВЛИЯНИЕ НА ZN ДОБАВКА ВЪВ ФУРАЖА ПРЕЗ ГОРЕЩИ ЛЕТЕН ПЕРИОД ВЪРХУ НЯКОИ ПРОДУКТИВНИ ПОКАЗАТЕЛИ НА ПУЙКИ РОДИТЕЛИ

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Summary

Bozakova, N. A., A. P. Atanassov, L. K. Sotirov, K. T. Stoyanchev, I. T. Yotova, K. Uzunova & V. T. Gerzilov, 2011. Effect of dietary Zn supplement during the hot summer period on some productive traits of turkey breeders. *Bulg. J. Vet. Med.*, 14, Suppl. 1, 9-17.

The use of dietary supplement in subtropical and moderate continental regions during the hot months of the year is important. The aim of the present study was to monitor the effect of supplementation of 35 mg/kg zinc (*Zineral 35*, containing 35% zinc) on some productive traits in turkey breeders during the hot summer period. For this purpose, plasma corticosterone concentrations, egg production and live body weight of birds were determined during a thermoneutral and hot summer period (32.63 °C). High ambient temperatures together with low relative air humidity caused a significant stress to turkey breeders, manifested by increased plasma corticosterone in control and experimental groups: 366.70±10.54 and 228.33±22.75 nmol/L, respectively, as compared to the thermoneutral period (90.67±12.65 and 68.17±7.98 nmol/L; P<0.01). Heat stress influenced negatively the daily egg production: 40.95±1.74% in controls and 45.71±1.74 % in experimental birds vs the thermoneutral period (69.52±2.86 and 68.57±1.91 %; P<0.01), as well as the live body weight of control turkeys (P<0.05). The dietary supplementation of 35 mg/kg zinc (*Zineral 35*) to experimental group contributed to statistically significantly lower plasma corticosterone concentrations (P<0.01), higher egg production (P<0.05) and preservation of the live body weight of turkey breeders during the hot summer period.

Key words: corticosterone, heat stress, productivity, turkey breeders, zinc

УВОД

През горещите летни месеци при промишленото отглеждане на птици се създават условия за топлинен стрес, който се отразява силно негативно върху тяхната продуктивност. Според Puvadolpirod & Thaxton (2000a,b,c); Popova-Ralcheva *et al.* (2002); Lin *et al.* (2006a); Томов *и др.* (2007) и др. стрес-отговорът при птиците се изразява чрез активиране на хипоталамо-хипофизо-надбъбречната система и от симпатиковата вегетативна система. При това

се причиняват серии от физиологични и метаболитни промени като повишаване плазмената концентрация на кортикостерон, телесната температура и промени в метаболитния статус, в резултат на което значително се понижава тяхната продуктивността.

Високата температура на околната среда, се отразява негативно върху носливостта при различни птици (Smith, 1981; Emery *et al.*, 1984; Wolfenson *et al.*, 2001; Kucuk *et al.*, 2008). Отрица-

FEAR AND AGGRESSION IN DOGS

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ABSTRACT

In this review, the concepts of fear, phobia and aggression in dogs were precisely defined, as well as their underlying causes. The behavioural activities specific for these conditions were indicated. The accompanying symptoms were consistently explained. The causes that the development of pathological fear leads to aggression in dogs as well as the various therapy options depending on the clinical signs were presented.

Key words: *fear, aggression, behaviour, treatment, symptoms.*

INTRODUCTION

Dog breeding, after being an entertaining activity and the hobby of amateurs for a long time has now brought to a professional level. This requires knowledge and experience in order to meet the biological and hygienic norms. According to many authors (1-3), the dog can have many occupations thanks to its six senses. Today these popular animals are used as hunters, lifeguards, shepherds, messengers, border guards, criminal investigators, customs officers, ore finders, child caretakers, disabled person assistants, odorologists and healers.

Dogs are perfect detectors of human emotional conditions and can successfully recognize psychoses. Currently, dogs are mostly used as companions and kept as apartment pets in Bulgaria.

Even though the first private kennels have already appeared in Bulgaria, the development of animals at such sites is still limited. The number of dogs in Bulgaria is between 350,000 and 380,000.

In the city of Sofia the number of stray dogs is between 150,000 and 200,000. Many of these dogs were abandoned by their owners.

They often exhibit aggression and it is not surprising that reports of severely bitten people have increased lately. The dog is a generally peaceful animal, but in order for it to socialise successfully, quickly and correctly, considerable knowledge regarding its behavioural potential is required, as well as of the peculiarities of its nervous system (3). Behavioural abnormalities most often occur due to lack of knowledge of dog temperament classification. From this stems the incorrect approach towards it, as a result of which develops behavioural pathology, with fear and aggression being among the most commonly exhibited and most dangerous pathological conditions, certainly being the most common conditions (4).

In the early 1990's in Canada, the characteristic trait of 3-4% of cases concerning dog behaviour was that the vet would spend 20% of the time giving

AMINO ACID CONTENT AND BIOLOGICAL VALUE OF RABBIT MEAT PROTEINS, DEPENDING ON WEANING AGE

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Summary

Bivolarski, B., E. Vachkova, S. Ribarski, K. Uzunova & D. Pavlov, 2011. Amino acid content and biological value of rabbit meat proteins, depending on weaning age. *Bulg. J. Vet. Med.*, 14, No 2, 94–102.

The amino acid content and biological value of rabbit meat proteins, expressed as essential amino acid index (EAAI) depending on weaning period were studied. For this purpose, 15 White New Zealand rabbits were divided into two groups: group A (n=7) – weaned at the age of 21 days, and group B (n=8) – weaned at the age of 35 days. The rabbits were slaughtered at the age of 90 days, in accordance with the requirements of humane treatment of animals. It was established that the weaning age of rabbits had an influence on the amino acid content and biological value of meat proteins. In rabbits weaned at the age of 35 days, the biological value of the proteins was higher due to the higher content of basic amino acids (lysine, histidine, arginine), leucines (leucine and isoleucine), and monoamino carboxylic acids (valine). Along with that, the biological value of m. Longissimus Lumborum meat proteins was higher than that of m. Semimembranosus meat. With regard to the amino acid content and biological value of proteins in meat, weaning of rabbits at the age of 35 days is recommended.

Key words: biological value of proteins, essential and non-essential amino acids, rabbit meat

INTRODUCTION

Rabbit meat is, to a great extent, compliant with the requirements for a complete protein diet and a reduction of fatty content of foods. According to Marinov *et al.* (2009), 100 g of rabbit meat contain 25 mg cholesterol, which is very close to its content in the meat of wild animals. Its energy content is low (160–170 kcal/100 g) compared to that of beef (195–380 kcal/100 g) and pork (260–330 kcal/100 g). Moreover, the high content of essential amino acids in rabbit meat emphasizes its dietetic properties.

Depending on the breeding technology, rabbits are weaned at different ages:

with intensive rearing technologies on the 28th–30th day, with semi-intensive ones on the 28th–30th day, and with extensive rearing – at the age of 45 days (Marinov *et al.*, 2009). The recommended slaughtering age is 90 days (Grigorov, 2008). A number of authors have found that early weaned rabbits had a lower body mass at the end of fattening compared to rabbits weaned at the age of 32–35 days (Ferguson *et al.*, 1997; Trocino *et al.*, 2001; Gallois *et al.*, 2004; Vachkova *et al.*, 2010). On the other hand, according to Groen (1999), Gidenne *et al.*, (2004), and Zita *et al.* (2007), early weaning does not affect



ОБСЕСИВНО-КОМПУЛСИВНИ НАРУШЕНИЯ ПРИ КУЧЕТА

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OBSESSIVE-COMPULSIVE DISORDER IN DOGS

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Abstract: *Clinical observations were conducted on dogs with OCD (obsessive-compulsive) disorders. Based on this we investigated the etiology, clinical signs, paraclinical changes, principles of diagnosis and methods of treatment and prophylaxis in patients with these disorders. From these observations it was found that the most common causes are stress, genetic predisposition, other accompanying diseases (dermatoses or endocrinical dysbalance) and conditioning (associative set of operations to produce the new behavior). Clinical symptoms can be grouped such as locomotory, oral, aggressive, vocalization, and hallucinatory behaviors. Our studies showed the highest efficiency in the use of tricyclic antidepressants.*

Key words: *Obsessive-compulsive disorder, dogs*

Въведение

Обсесивно-компулсивните (маниакално-натрапчивите) нарушения са често повтарящи се, трайни и необичайни поведенчески отклонения, осъществени извън приетите норми за различни видове животни. Наблюдават се най-често при домашните любимци (кучета и котки), коне, животни от зоологическите градини и по-рядко при селскостопанските животни. Приема се, че проявите на необичайно поведение възниква на базата на някакъв конфликт от момента на раждането и е в пряка връзка с конкретните условия на отглеждане и селекцията на животните [5, 17]. Единодушно е становището, че конфликтът обикновено възниква при наличие на две противоположни, но еднакво силни мотивации, например приближаване и оттегляне [2, 4]. Във ветеринарната психология се използва терминът фрустрация, чрез който се обозначава състояние, при което животното е мотивирано да извърши определено действие, но е възпрепятствано да го осъществи, в резултат на което възниква разочарование. Различните форми на конфликтно поведение са причинени от усещането за чувство на фрустрация или конфликт. Те са главните фактори за отклонения от нормалното поведение, резултат от действието на различни мотивационни системи. При честата повторемост и продължителното състояние на конфликт или фрустрация (разочарование), това поведение може да се превърне в "еманципирано" (освободено от зависимости, предразсъдъци и ограничения) спрямо обичайното поведение на животното и да бъде преувеличено, повтарящо се и устойчиво. Характерното за такова поведение е, че се проявява в различни ситуации, при все по-ниско ниво на възбуда [1, 10].

В нашата неврологична практика сме наблюдавали пациенти с основни или съпроводителни симптоми на поведенчески нарушения като "ловене на мухи", "гонене на опашка", "смучене на вълна" и др., които обикновено се разглеждат като психомоторни нарушения при парциалните (фокалните) прости форми на епилепсия, протичащи без загуба или с нарушение в съзнанието. Съществуващата практика за лекуване на тези форми с контролиращи припадъците средства, обикновено не дава задоволителен резултат. Нашето

ХИГИЕННОЕТОЛОГИЧНИ ИЗСЛЕДВАНИЯ ПРИ КУЧЕТА С МИКРОСПОРИЯ

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HYGIENE, TECHNOLOGY AND ETHOLOGICAL STUDIED IN DOGS WITH MIKROSPORIYA

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Abstract: Investigations were conducted in dogs with *Microsporium* infection reared in a kennel from hygienic, technological and ethological point of view. It was established that the causes for appearance of the persistent dermatomycosis were flaws in the rearing technology, and lack of timely vaccination of affected animals. Using check list for veterinary medical evaluation of all elements of the housing in the kennel and the behaviour of animals, it was concluded that the lack of compliance to the general animal hygiene principles was of major importance in the etiopathogenesis of the *Microsporium* infection.

Key words: prevention, dogs, *Microsporium* infection, hygiene, technology, ethology.

УВОД

Микроспорията е силно заразно, упорито дерматомикозно заболяване, което протича хронично и предизвиква опадване и пречупване на космите, с огнищно повърхностно възпаление на кожата и придатъците ѝ (Bourdeau, 1995; Бучинский и др. 2002; Tortorano et al., 2004). Заболяването се причинява от плесенните гъбички от групата Dermatophytes – род *Trichophyton*, *Microsporon* и др. Когато изолираният причинител е от род *Trichophyton*, заболяването се определя като Трихофития. Ако е от род *Microsporon*, диагнозата е Микроспория (Мокина и др., 2002; Дьяков, Сергеев 2003).

ПСИХОЛОГИЧНИ НАРУШЕНИЯ ПРИ ПРЕЖИВНИТЕ ЖИВОТНИ ОБЗОР

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PSYCHOLOGICAL DISORDERS IN RUMINANTS – A REVIEW

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РЕЗЮМЕ

Проучванията върху психологичните нарушения при продуктивните животни (в частност преживните) придобиват все по-голяма актуалност в национален и световен мащаб, във връзка с повишените нужди за изхранване на населението, както и с ефектите от променливите технологични режими върху психичното здраве на животните. Данните за тези нарушения са в тясна връзка с параметрите на благосъстоянието и хуманното отношение към животните.

Описани са видово-специфичните психични нарушения при преживните животни (говеда, овце и кози), причините за тяхното възникване, както и начините за отстраняване, контролиране и превенция.

Най-голямо значение за възникване на тези нарушения при животните има антропологичния фактор. Чрез положителното взаимодействие човек-животно се постига повишаване на продуктивността и подобряване на поведението на животните, а с това повишаване качеството на живота им и

SUMMARY

Studies on psychological disorders in productive animals (ruminants in particular) are becoming ever more relevant globally, in relation to the increased needs for feeding the population, as well as the effects of the various production systems on the animals' mental health.

The data on these disorders are closely related to the parameters of welfare and humane treatment of the animals.

The species-specific psychological disorders in ruminants (cattle, sheep and goats) are described, as well as the reasons for their occurrence and the methods of their treatment, control and prevention.

The anthropological factor has the greatest significance for the occurrence of these disorders. An increase in productivity can be achieved through positive human-animal interaction, as well as improvement in the animals' behaviour, thus leading to an increase in the quality of life of cattle and the quality of their

ПСИХОПАТОЛОГИЧНИ НАРУШЕНИЯ ПРИ КОНЕ. ОБЗОР

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PSYCHOPATHOLOGICAL DISORDERS IN HORSES. A REVIEW

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Abstract: *The most commonly observed psychopathological disorders in horses, the known and supposed etiological factors for their occurrence, as well as the options for control, treatment and protection of the animals against these psychoses are described.*

Studies on the psychological disorders in horses are markedly interesting, with relation to the multi-faceted and long-time significance of this animal species in human culture. The relation between people and horses determines the leading role of the anthropological factor in the occurrence of psychological disorders in these animals. Considering the extent to which horses have become a part of human life, as well as their temperament, high intelligence, sensitivity and emotionality, it is understandable that psychoses are observed most often in horses and pets, with a characteristic variety of symptoms.

Horses are a unique animal species not only because they are used for various purposes – for riding, transport, cargo hauling, companionship, etc. – but also because of their unique beneficial and psychotherapeutic effect on people. This fact determines the infinite positive options for animal therapy on humans, which is usually understood as the effect horses have on people, known as hippotherapy. That is why the knowledge from studies on the ways for preserving the psychological health of horses is with high relevance, and practical applicability and significance.

Key words: *horses, psychological disorders, treatment, prevention*

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Economic Efficacy of Manure Cleaning and Storage Systems at Dairy Cattle Farms

Abstract

An analysis of economic efficacy of two cattle rearing systems using different manure cleaning and storage approaches – solid manure cleaning with storage on a manure pad, and liquid manure cleaning with storage in a steel-reinforced concrete lagoon was performed.

The present study was performed in two semi-open cattle barns with capacity of 108 and 120 cows and respective number of calves and heifers. Two manure cleaning and storage systems were used: variant A (building for 108 cows, liquid manure cleaning system using an electric scrape, 4-month storage of previously diluted with water and homogenized manure into a lagoon-type manure tank) and variant B (building for 120 cows, solid manure cleaning system using a tractor with bulldozer shovel and storage on a pad with three walks for 6 months). The feed was dispensed using a mixer. The cows were milked in a 2 x 5 herring-bone type milking parlour. The animals were housed in free stalls. The rough and voluminous feeds are self-produced, whereas concentrate feed were purchased. The feeding was compliant to the productivity (average milk yield 6500 l, 90% fertility rate), the physiological state and age of cows. The replacement of the herd was performed with heifers from the same farm. Income and production costs were calculated using prices actual by the time the research was conducted.

It was established that the investment costs per cow related to building a cattle farm with liquid manure management system (variant A) were by 24.89% higher as compared to respective costs per cow at a farm with solid manure management system (variant B), and production costs per cow were by 10% higher at farm A compared to farm B. The economic efficacy of production at

farms with solid manure management system was 37% vs 24.18% at farms with liquid manure management.

Key words: cow, incomes, rate of profitability, slurry and solid manure

Introduction

Every industry should be economically justified to further develop. The efficacy of dairy cattle husbandry depends, in the view of Bobevska (1993), to the optimal balance among the different production factors – biological, technical, technological and management-related.

In Bulgaria, the premises and the way manure is stored on farms are subject of numerous regulations (Directive 96/61/EC; Ordinance No. 3 for animal health requirements in milk production holdings; Ordinance No. 44 on veterinary medical requirements of animal rearing facilities; Ordinance No. 2 of 16. 10. 2000 for protection of waters against pollution caused by nitrates from agricultural sources). By now, manure storage problems are especially important with regard to the requirements of the Nitrate Directive.

There are different practical alternatives for collection and storage of manure at dairy cattle farms, but not all of them are justified from economic point of view. In our country, there are no studies on the present state of farms in this connection.

Dimova et al. (2011) investigated two alternatives for manure cleaning and storage: solid manure cleaning with a tractor equipped with bulldozer shovel and storage on a pad with three side walls on a 108-cow farm, and liquid manure cleaning by a scraper installation and storage in steel-reinforced

A Case of *Pentastomum denticulatum* Infection in Goats

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ABSTRACT

A case of *Pentastomum denticulatum* infection in goats was described. In August 2007, in a herd of 30 goats, in the region of Rousse (North Bulgaria), there were observed non-specific clinical signs: reduced appetite, depression, emaciation, lying down, and decreased milk secretion. Despite antibiotic therapy 3 of the goats died. A necropsy was performed and small, yellow-white oval cysts with a white parasite inside were established in liver, lungs and mesenteric lymph nodes. The parasites (total number - 30) were examined microscopically and determined as *Pentastomum denticulatum* – larval stage of *Linguatula serrata*.

Key Words: *Pentastomum denticulatum*, *Linguatula serrata*, pentastomiasis

ÖZET

KEÇİLERDE *PENTASTOMUM DENTICULATUM* İNFEKSİYONU OLGUSU

Bu makalede, keçilerde *Pentastomum denticulatum* infeksiyonu olgusu tanımlanmıştır. 2007 yılının Ağustos ayında, Rusçuk bölgesinde (Kuzey Bulgaristan), 30 keçiden oluşan sürü içinde, iştah azalması, depresyon, aşırı zayıflama, yatma ve süt veriminin azalmasını içeren non-spesifik klinik belirtiler gözlemlendi. Antibiyotik tedavisi yapılmasına rağmen keçilerden üç tanesi öldü. Nekropsilerinde, karaciğer, akciğer ve mezenterik lenf düğümlerinin içinde beyaz parazitleri içeren küçük sarı-beyaz oval kistler görüldü. Parazitler (toplam sayı - 30) mikroskopik olarak incelenerek *Linguatula serrata*'nın larva evresindeki *Pentastomum denticulatum* olarak saptandı.

Anahtar Kelimeler: *Pentastomum denticulatum*, *Linguatula serrata*, pentastomiaz

Introduction

Pentastomiasis is an entomosis in ruminants, rodents and men, caused by *Pentastomum denticulatum* – the larva of *Linguatula serrata*.

Linguatula serrata [Fröhlich, 1789] is an arthropod of class Maxillopoda, family Linguatulidae, that parasitize in the nasal cavity and adjacent sinuses, the larynx and pharynx of domestic and wild canids, felids and humans, that are the final hosts (Lazo et

Preferences of Freestall Housed Dairy Cows to Different Bedding Materials

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ABSTRACT

The purpose of this study was to examine the behaviour of dairy cows during the rest periods and their preferences to different bedding materials with limited amount of straw as well as the hygienic score of dairy cows. Thirty-six Holstein dairy cows at the first to fourth lactation with live weight 610 ± 58 kg and milk yield of 7364 ± 1202 liter for 305 days of lactation were used for the experiment. Three types of bedding materials were used for the preference test – rubber mats, manure-straw bedding and sand. The hygienic score of the animal's body was made by 4 point system. The average values of the studied functional activity (FA) were determined by using a mathematical model adapted for this purpose. The installed soft rubber mats on concrete floor mitigated the adverse effects on animal behaviour at rest. The lying time (iFA-0.4133) on the rubber mats and the number of lying down (21.2) during the day showed that rubber mats are more comfortable for cows than manure-straw bedding and sand. When using a small amount of straw bedding, the cows preferred to lie longer on soft rubber mats. The hygienic score of the body of dairy cows was between 1.40 and 2.94, and depended on floor bedding and the regular cleaning of the stall.

Key Words: Cow comfort, freestall, dairy cows, behavior, bedding materials

ÖZET

SERBEST GEZİNME Lİ SİSTEMDE BARINDIRILAN SÜTÇÜ İNEKLERİN ALTLIK MATERYALİ TERCİHLERİ

Bu araştırma sütçü ineklerin dinlenme dönemindeki davranışlarının incelenmesi, sınırlı miktarda saman kullanıldığında altlık tercihlerinin ortaya konulması ve hijyenik skorlarının belirlenmesi amacı ile yürütülmüştür. Araştırmanın hayvan materyalini 610 ± 58 kg canlı ağırlık ortalamasına, 7364 ± 1202 litre süt verimine sahip, 1-4. laktasyondaki 36 baş Siyah Alaca inek oluşturmuştur. Araştırmada tercih testi için üç farklı altlık materyali kullanılmıştır: a) kauçuk, b) gübre-saman karışımı ve c) kum. Hayvan vücudunun hijyenik skorlaması 4 puanlı sistem ile yapılmıştır. İncelenen fonksiyonel aktivite (FA) için ortalama değerler, bu amaç için adapte edilen bir matematik model yardımı ile belirlenmiştir. Beton zemine serilen yumuşak kauçuk, dinlenme sırasındaki hayvan davranışları üzerine olumsuz etkileri azaltmıştır. Kauçuk zemindeki yatma süresi (iFa=0,4133) ve günlük yatma sayısı (21,2)



Review

EFFECT OF LAMENESS ON SOME PRODUCTIVE TRAITS AND HEALTH STATUS OF COWS IN DAIRY CATTLE FARMS

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ABSTRACT

The intensification of modern cattle husbandry has achieved high milk productivity standards. The discussion performed herein makes clear that high milk yields predispose cows to lameness and as a result, to considerable milk losses. This productivity of cows necessitates adequate feed intake to respond to the enhanced metabolic rates. This type of feeding often results in metabolic disorders and presents a risk for lameness occurrence. Hoof and foot diseases in cattle reflect on their reproductive potential, udder health, body hygiene, body condition and therefore, on the economic results of dairy cattle industry.

Key words: lameness, dairy cattle, productivity, health

The modern standards of dairy cattle farming have increased the demands for high productivity and profitability. In response to new conditions and trends, cattle husbandry has undergone numerous changes in both production and management systems, and in selection of contemporary dairy cattle breeds (1). The selection in intensive dairy cattle is performed for higher production rates (2). With this respect, it is often ignored that genes responsible for high production of milk are not always predetermining the health of feet and hooves in cows. The stimuli existing so far in dairy cattle husbandry result in a certain underestimation of the good physiological and health status of cows and encourage the efforts aimed at selection for a high milk production (3, 4).

Despite the aroused scientific interest, the opinion about lameness-related milk loss is not yet unanimous. The investigations on the subject had shown that lameness was mostly prevalent in high production cows (5). Besides lameness, the period of lactation, during which cows manifest clinical lameness, the season, and the uniformity among animals may also significantly influence milk yield (Archer et al., 2010) (6). In months with highest rainfall (March, April, October, November), the incidence of lameness is increasing. Lameness is more frequent in stall barns where the humidity is high and when areas with continuous collection of water in unacceptable amounts – around the watering troughs and the low positioned areas (7). The calving season may significantly influence proliferation of lameness when humidity coincides with the peak of lactation around the 4th post parturient month (8, 9). The dry climate leads to dehydration, hardening, fragility and cracking of the hoof horn. The lameness affects cows at all ages, but the incidence is higher between the first and the sixth parity (10). Single cases

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Hygienic and technological conditions favouring lameness in dairy cows: a review

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SUMMARY

The lameness is a complex problem and its development depends on many factors such as technologies of rearing of young animals and dairy cows, the proper design and construction of animal buildings as well as the built-in equipment; the main microclimatic and hygienic conditions of surrounding environment. The social hierarchy, genetic predisposition, age, body condition and lactation stage are aggravating factors for higher rates of lameness in some farms, depending on the applied technology of farming. Farmers around the world spend thousands of Euros in the construction of their farms, but above all, they should be familiar with the animal hygiene and technological characteristics of each system otherwise any deviation or failure from established norms may induce high sensitivity and risk of lameness in dairy cows.

Keywords: Dairy cows, lameness, favouring conditions, animal hygiene, technology.

RÉSUMÉ

Conditions hygiéniques et technologiques favorisant l'apparition de boiterie chez les vaches laitières : une revue

La boiterie est un problème complexe dont l'apparition dépend de nombreux facteurs parmi lesquels les technologies d'élevage des jeunes animaux et des vaches laitières, la conception et la construction des bâtiments d'élevage, les appareils utilisés, les conditions microclimatiques et hygiéniques de l'environnement. La hiérarchie sociale, la prédisposition génétique, l'âge, l'état corporel et le stade de la lactation peuvent constituer des facteurs aggravants dans certaines fermes en fonction des techniques d'élevage employées. Les éleveurs du monde entier dépensent des milliers d'euros pour la construction de leurs fermes mais doivent aussi se familiariser avec les caractéristiques technologiques de chaque système et avec les conditions d'hygiène des animaux, toute défaillance dans le respect des normes préconisées pouvant accroître le risque de boiterie chez les vaches laitières.

Mots clés : Vaches laitières, boiterie, conditions favorables, hygiène animale, technologie.

Introduction

The lameness in contemporary cattle husbandry is poly-aetiological. A number of factors, rearing technologies for young and productive cattle, properly designed and built premises for dairy cows and adequate equipment, are essential for lameness occurrence. The environmental hygienic parameters for animals are additional preconditions with this respect in herds. Social hierarchy, the genetic predisposition, age [8, 24, 27, 40], body condition [24, 27, 42, 56, 89] and lactation stage [37] result in higher prevalence of lameness in some farms, depending on the applied production system.

Influence of the dairy production systems

Two principal dairy production systems are known: tie stall and free stall housing. Ordinance 44/20.04.2006 (amended in Official Gazette 90/17.10.2008) "Veterinary medical requirements for the stock-breeding objects" [57] regulates the environmental parameters for dairy cows. The available area (including the place for lying and movement) to a cow in either tie stall or free stall housing is 6 m². Optimal dimensions of bed are: length : minimum 1.70 m and width : 1.10-1.20 m,

and those of cubicles: 2.20 m and 1.10-1.20 m, respectively. According to EFSA (2009) this area is necessary to ensure an adequate space for moving, to reduce social interactions and fights, to maintain good body hygiene, to ensure access to feed for all cows and a stable social hierarchy in the herd [25].

The tie stall production system has provoked more injuries of legs compared to the free stall housing and resulted in higher predisposition of cows to lameness [2, 71]. The transition from tie stall to free stall housing of dairy cows is related to a markedly higher predisposition to hoof diseases and a higher degree of clinical lameness [1, 43]. In the view of authors, this is due to the stress resulting from gathering of numerous animals, the longer time spent standing, the concrete floor, high flooring humidity, the continuous contact of hooves and manure, the worse immune status of cattle etc.

Grazing dairy cattle system is widely practiced on a global scale. Numerous researchers have provided evidence that this technology ensured a softer and more comfortable flooring and prevented traumas and diseases in animals [19, 20, 23, 35, 41, 47, 67, 75, 79]. Grazing production system could cause lameness if cows step on stones or other sharp objects traumatizing the hooves at the pasture or on pathways leading to it [13, 15, 74].

The attitude of animal carers and farmers to cows could significantly influence the prevalence of lameness [6]. Forcing

EFFECT OF LAMENESS ON THE BEHAVIOR OF DAIRY COWS UNDER INTENSIVE PRODUCTION SYSTEMS

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Abstract

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This review is an attempt to systematize and analyze published research to date concerning lameness and its influence on behavior of dairy cows kept in intensive conditions. It was found that lameness affects the behavior of the individual animal's social rank and hierarchy in the herd. Cows with movement problems and found lameness losing position in the food trail, changing his place of rest, losing the position to enter the milking room or visits of milking robot, which changes the whole order of entry for milking. All this reflects on the one hand, their productivity, and the other on their ability to survive in the herd, which requires prompt and adequate measures by farmers to control the problem. Strict control of herd behavior, and welfare and professional attitude of the stockman of animals can provide early indications of real change in health status of cows and it should not be ignored in the choice of technology in modern, intensive dairy cattle rearing.

Key words: welfare, herd behavior, social rank, milking parlor, health status

The economical interests of man have a substantial impact on the development of modern dairy cattle husbandry. Today, dairy cattle are reared both on pastures and in contemporary high-technology farms that resulted in changes in their behavior and natural life rhythm. The new rearing conditions led to a number of restrictions in the natural behavior of cattle as they live in a risk environment to an extent that many of them suffer from the so-called technology-related diseases of high-production animals. This required the development of Welfare standards for dairy cattle (1997) from

the Royal Society for the Prevention of Cruelty to Animals (RSPCA) aimed at ensuring compliance to minimum rearing standards of dairy cattle. Standards were developed on the basis of the so called Five Freedoms whose observance reduces to a minimum the harmful effect of the environment on biological demands of cattle. One of the five freedoms is the freedom of animals to express their normal behavior. The principal elements of the natural cattle behavior are the ability to move, to turn, to rub up, to feed, to lie down, to ruminate, to hold a stable position in herd hierarchy and

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Effect of Body Condition Score at Calving on 305-day and Test-day Milk Yield in Holstein-Friesian and Brown Swiss Cows

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ABSTRACT

The study included 37 cows, 20 of which were of the Holstein-Friesian and 17 of which were of the Brown Swiss breed at the Agricultural Institute's farm in Stara Zagora. The cows from both breeds were kept together under similar rearing and feeding conditions. A free-range production system with individual boxes for rest was applied. The cows were divided into three technological groups depending on their physiological condition, respectively: dry period, first lactation period (up to the 120th day of lactation) and second lactation period. Feeding was based on a complete ration including maize silage, alfalfa haylage, concentrated feed, and vitamin mineral premix. The concentrated feed during lactation was in accordance with the group's mean milk yield. The cows' body condition score (BCS) was measured monthly per a 5-grade evaluation system with accuracy of up to 0.5 points. The body condition score of the cows at calving was measured 7 to 10 days before calving. The BCS at calving had a significant influence on the 305-day lactation milk yield, test-day milk yield and peak lactation production. The cows that reached a BCS of 3.5 – 4 points at calving had sufficient body reserves for the lactation's beginning, which allowed them to reach higher milk yield during the peak of lactation, and higher yield for 305 days compared to cows with grades of 3 or lower at calving. The Holstein-Friesian cows had better mobilisation potential than Brown Swiss cows. At BCS of 2 to 2.5 points at calving, Holstein-Friesian cows reached a milk yield that was only 876 kg less than those of cows with high BCS (3.5 – 4 points), whereas in Brown Swiss cows the difference was 1,400 kg. The cows of the Brown Swiss breed had preserved to a greater extent the defence reaction to reduce milk production when body reserves were diminished.

Key Words: Body condition score evaluation, 305-day lactation, peak lactation, test-day milk yield, Holstein-Friesian, Brown Swiss cattle

The Effect of Adding of the Enzyme Products Xybeten and Protozin-A to a Diet on Ethological Parameters of Sheep

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ABSTRACT

It has been studied the effect of adding synthetic multienzymes *Xybeten* and *Protozin-A* in the ration by examining basic behavioral activities of sheep. The experiment has been carried out using the period's method. During the test period the enzyme products are added at dose 1 g/kg mixture concentrate. Animal behavior is studied through direct individual continuous monitoring for 24 hours. The basic functional activities registered in the ethograms are: feeding, moving and rest as well as markers for presence of discomfort. It was found that the addition of *Protozin-A* and *Xybeten* to ration is not perceived as a stressor and is suitable for use as promoters of the digestive processes in sheep. *Protozin-A* has more significant effect on feeding activity as stimulator. *Xybeten* increases the number of chewing movements ($P<0.01$) and duration of rumination ($P<0.01$) per 1 bolus. The sheep spend most time on the feeding activity, followed by time spent on rest when environmental conditions are controlled by human.

Key Words: Animal behavior, enzyme, feeding additives, sheep

ÖZET

RASYONA KATILAN XYBETEN VE PROTOZİN-A ENZİM ÜRÜNLERİNİN KOYUNLARDAKİ ETHOLOJİK PARAMETRELER ÜZERİNE ETKİLERİ

Rasyona katılan sentetik enzimler olan *Xybeten* ve *Protozin-A*'nın koyunlardaki temel davranış faaliyetleri üzerine etkisi incelenmiştir. Deney, periyot yöntemi kullanılarak yapılmıştır. Test dönemi süresince, enzim ürünleri 1 g/kg konsantrasyonunda eklenmiştir. Hayvan davranışları bireysel olarak, 24 saat boyunca devamlı süreyle izlenmiştir. Ethograma kayıtlı temel fonksiyonel aktiviteler: beslenme, hareket ve dinlenme yanı sıra rahatsızlık varlığı belirleyicileridir. Rasyona katılan *Protozin-A* ve *Xybeten* bir stres olarak algılanmamış ve koyunlarda sindirim sistemi düzenleyicisi olarak kullanılmak üzere uygun olduğu saptanmıştır. *Protozin-A*'nın, beslenme aktivitesinin stimülanı olarak daha önemli bir etkisi vardır. *Xybeten*, çiğneme hareketleri sayısını ($P<0,01$) ve her kimus başına ruminasyon süresini ($P<0,01$) artırmıştır. Çevre koşulları insan tarafından kontrol edildiğinde, koyunlar en çok beslenme aktivitesine zaman harcamışlar, geri kalan zamanı dinlenmeye harcamışlardır.

Anahtar Kelimeler: Hayvan davranışları, enzim, yem katkı maddeleri, koyun

Morphological Investigations of Experimental Acute Intoxication with the Anticoagulant Rodenticide Bromadiolone in Pheasants

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ABSTRACT

Morphological investigations were performed to observe the changes after experimental acute intoxication with the anticoagulant rodenticide bromadiolone in pheasants. The study was performed with 8 groups of pheasants treated with increasing doses of the tested preparation: 5 mg/kg (group I), 10 mg/kg (group II), 20 mg/kg (group III), 30 mg/kg (group IV), 40 mg/kg (group V), 50 mg/kg (group VI), 60 mg/kg (group VII) and 70 mg/kg (group VIII). All birds from groups I to V have survived the intoxication whereas those from groups VI, VII and VIII have died. During the intoxication, inappetence, accelerated and difficult breathing, adynamia, watery blood discharge from the beak were observed. All pheasants with fatal outcome and the survivors, which were euthanized after the experiment (day 20) were necropsied and gross changes in the liver, the lungs and kidneys were described. Liver alterations varied from strong hyperaemia and activation of the monocytic-macrophageal system to diffuse vacuolar or granular parenchymal dystrophy, as well as necrobiotic to necrotic changes, intra- and inter-lobular haemorrhages, perivascular mononuclear proliferations and bile duct hyperplasia. Lungs exhibited congestive hyperaemia, oedema in the interstitium and the mucous coats of bronchi and parabronchi, desquamation of epithelial cells in bronchioles and lung parenchymal haemorrhages. In the kidney parenchyma, congestive hyperaemia and haemorrhages were seen, varying within a broad range from karyolysis and karyopyknosis in epithelial tubular cells to cellular desquamation and disintegration and necrosis. All observed changes in parenchymal organs were dose-related, being more pronounced in pheasants treated with higher doses of the tested rodenticide.

Key Words: Anticoagulant rodenticide, bromadiolone, pheasants, acute intoxication, morphological investigations

ÖZET

SÜLÜNLERDE ANTİKOAGÜLAN RODENTİSİT BROMADİOLONE İLE OLUŞTURULAN DENEYSSEL AKUT İNTOKSİKASYONUN MORFOLOJİK İNCELENMESİ

Sülünlerde antikoagülan rodentisit bromadiolone kullanılarak geliştirilen deneysel akut intoksikasyondan sonra değişimleri gözlemlemek amacıyla morfolojik incelemeler yapılmıştır. Çalışmada 8 grup sülün artan dozlarda incelemeye alındı: 5 mg/kg (Grup 1), 10 mg/kg (Grup 2), 20 mg/kg (Grup 3), 30 mg/kg (Grup 4), 40 mg/kg (Grup 5), 50 mg/kg (Grup 6), 60 mg/kg (Grup 7) ve 70 mg/kg (Grup 8). Birinci ve 5. gruplar arasındaki kuş gruplarının hepsi

НАЧИНИ ЗА ПОДОБРЯВАНЕ ОХЛАЖДАНЕТО НА ЛАКТИРАЩИ КРАВИ И ТЯХНОТО ПРИЛОЖЕНИЕ У НАС

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WAYS TO IMPROVE COOLING OF LACTATING COWS AND THEIR APPLICATION IN BULGARIA

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ABSTRACT

In cattle practice more widely used various methods for additional cooling of the air in livestock buildings to eliminate the harmful effects of high temperatures on the dairy cows. To optimize the temperature and humidity conditions in livestock buildings in summer successfully are applying different combinations of fans and sprinklers, evaporative cooling, reducing the direct effect of solar radiation, providing a sufficient amount of cold, fresh water etc. Places to implement these cooling facilities are including both animal buildings and parlors. Gradually these practices are introducing in dairy farms in the country, mainly in larger farms and from farmers who are highly motivated to continue working in this agricultural sector.

Key words: additional cooling, fans, sprinklers, sprayers, dairy cows

Въведение

Едно от сериозните предизвикателства пред фермерите от млечните говедовъдни ферми е да намалят загубата на продукция през горещите летни месеци и да предпазят животните от негативните последици на топлинния стрес (West, 2003). Стратегиите за успешно охлаждане на лактиращите крави се базират на увеличаване пътищата за отделяне на топлината чрез конвекция, кондукция, радиация и изпаряване (Kadzere et al., 2002), осъществявано по различни начини и с различни средства.

За отстраняване на вредното влияние на високите температури върху организма на кравите за мляко се използват различни методи за охлаждане на въздуха в животновъдните сгради. Съвременните сгради се изпълняват основно с естествена вентилация (чрез премахване на надлъжните стени и замяната им с подвижни завеси, оформяне на отворени шлицове на билото и др.). За оптимизиране на температурно-влажностния режим в животновъдните сгради през лятото се прилагат с успех различни комбинации от вентилатори и овлажнители, изпарително охлаждане, намаляване прякото действие на слънчевата радиация, предоставяне на достатъчно количество студена и прясна вода, модифициране състава на изхранваните дажби и др. (Jones and Stallings, 1999; Janni, 2000). Местата за прилагане на охлаждане с цел подобряване на комфорта, повишаване на млечната продуктивност и репродуктивната ефективност включват както помещенията за отглеждане на животните, така и доилните зали (Brouk et al., 2001; Collier et al., 2006; Perissinotto et al., 2006).

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Реконструкция на сграда за вързано отглеждане на крави с оглед подобряване на някои зоохигиенни показатели

Building Reconstruction for the Tied Rearing of Dairy Cows to Improve Some Animal Hygiene Parameters

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Abstract

The aim of this study is to develop the technological decision for reconstruction and modernization of the real existing building for tied rearing of 50 dairy cows with intention to improve some of the important animal hygiene parameters. Two technical-technological variants of cows' rearing are compared. It was established that developed decision of tied rearing of 50 dairy cows, with 2 rows of cubicles, central feeding alley and manure cleaning system using tractor with bulldozer shovel allow animals better comfort that the other variant and assure 63.1% bigger build up area, 2.6 times bigger build up volume and the required by regulations coefficient of natural light in buildings. The developed decision provides suitable and comfort conditions for rearing of animals and that decision is appropriate for modernization of other dairy farms in Bulgaria with capacity of 50 dairy cows.

Key words: reconstruction, farm buildings, dairy cows, animal hygiene

Увод

При съвременните условия на подпомагане от различни европейски програми се увеличава броят на говедовъдите в България, които инвестират в реконструкция и модернизация на своите ферми. Много от фермерите предпочитат традиционните решения за вързано отглеждане на кравите, което редица литературни източници (Станев и кол., 2007; Relative Products LLC, 2002; Anderson, 2004; Faromor Ltd., 2007) посочват като все още приемлива възможност, ако се използва съвременно модерно оборудване (вързващи устройства, ясли, поилки, подови по-

крития, делители, врати и др.) с размери, съобразени с изискванията на технологичните процеси и осигуряващо както комфорт за животните и работниците, така и производство на качествено мляко. Според Динев (2007) вързаното отглеждане ще е актуално и в близките години (особено във ферми с капацитет до 100 крави) – въпреки че тенденцията по света и у нас е към увеличаване дела на свободното отглеждане.

Важно условие за правилното проектиране на сгради за млечни крави е спазването на нормите за оптимални параметри на микроклимата (Технологични норми, 1982; Наредба № 44, 2006). В

PROTOFORM OF THE MODERN EXTENSION SERVICE IN THE FIELD OF ANIMAL HUSBANDRY AND VETERINARY MEDICINE. III. THE PERIOD AFTER THE LIBERATION OF BULGARIA (PERIOD OF NATIONAL PROGRESS IN AGRICULTURE)

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ABSTRACT

The present research analyses the activities of state, public and private structures assisting the work of agriculture producers after the Liberation of Bulgaria (aka period of national progress in agriculture), and throws light on their role as a protoform of the modern extension service in the field of animal husbandry and veterinary medicine from historical point of view. For this purpose, a number of governmental documents (orders, laws, ordinances etc.), rules for organisation of agricultural schools, programmes of public organisations and unions, museum and library funds expositions relevant to the study's goal were investigated. The period of national progress in agriculture in Bulgaria is associated with the foundation of different types of agricultural schools and training courses. The organisation of agricultural experimental stations and the implementation of professional training have improved the practical skills of people engaged in farm animal rearing. The foundation of livestock husbandry unions and social movements, the educational activities related to improving the knowledge and skills of livestock producers became more pragmatic and species-specific. During that period, due to the direct transition of Bulgaria to bourgeois capitalist development, agricultural educational and administrative structures organised and institutionalised in the country were similar to those of West Europe. This way, agricultural teachers, practicing agronomists, veterinarians and zootechnicians, specialists and administrative staff hired by livestock husbandry unions became the founders and distributors of scientific and applied knowledge in the field of animal and veterinary medical sciences. The training of livestock producers in the country performed by them at that time is a kind of a protoform of the modern extension service.

Key words: extension service, proto-form, animal science, veterinary medicine

Introduction

After five centuries of Ottoman rule, the freedom that the all of Bulgaria had hoped for was achieved after the Russian-Turkish Liberating War. Plundered, underdeveloped and torn, Bulgaria was finally free. The Liberation played the role of a bourgeois-democratic revolution.

The land passed from the large-scale Turkish farmsteads into the hands of Bulgarian peasants. The small and, to a lesser extent, medium landed ownership system was established.

There was, however, significant damage in the field of animal husbandry. The retreating Turkish armies and the fleeing populace slaughtered for food or took with them many of the domestic animals. Thus, soon after the Liberation arose an acute need to restore animal husbandry in Bulgaria for the purposes of agriculture, the cavalry and officer corps, intercity transport and commerce (with the railway system being in very early stages of development), as the country embarked upon the road to capitalism, albeit with a delay (Iliev et al., 2008).

The aim of the present study is to analyse the activity of the state, social and private organisations in Bulgaria after the Liberation, which assisted in the work of livestock breeders and crop farmers, as well as to clarify from an informative-historical perspective their role as the protoform of contemporary extension service in the field of animal husbandry and veterinary medicine for the period following the Liberation, known as the period of national progress in agriculture.

Comparative investigation on some welfare indicators of cattle under different housing systems

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Abstract. Dairy cattle welfare is of exceptional importance in modern production systems. The purpose of the present study was to compare the effect of some of most popular contemporary solutions for free-stall housing of dairy cows on some welfare indicators. It was performed with 150 Holstein-Friesian cows in three farms as followed: housed freely in group boxes in a semi-open barn (farm A), and housed freely in group stalls, with individual cubicles of a different size (farms B and C). The results showed that the free housing in groups with straw bedding was optimal with regard to the prevalence of traumatism as seen from the least percentage of body decubitus ulcers – 2% of cows, but it was most unfavorable from the point of view of body hygiene level. The free housing in individual cubicles (farms B and C) with the specific cubicle and neck rail dimensions were a prerequisite for increased trauma incidence and were not compliant with the allowances of this welfare indicator. The application of systems for complex evaluation of the level of dairy cattle welfare allows for an easy detection of existing flaws and disadvantages at a specific farm and for timely suggestion of efficient measures for their correction.

Keywords: dairy cattle, welfare indicators, lameness, hygienic score, body condition score

Abbreviations: BCS – body condition score, SCC – somatic cells count

Introduction

The welfare of farm animals became a topic of considerable interest during the recent years at a worldwide scale (Varlyakov, 2011). A serious attention is paid on cattle welfare, especially in dairy cows. Numerous systems for evaluation of different welfare indicators in dairy cattle are reported (Mitev, 2011). The application of these scoring systems allows for both scientific and practical understanding of the level of animal welfare, moreover, it is anticipated that the quality of produced milk should be also included as a criterion of good welfare (Dospatliev et al., 2010). The creation of preconditions for high animal welfare standards related to all its aspects is essential for realization of the genetic potential for maximum performance, optimal health condition, lack of reproduction problems and consequently, longer production life.

The criteria for evaluation of welfare level and the respective scoring systems are based upon different aspects of dairy cow housing and rearing. Some of them account for the emotional state and the comfort of animals, which are described as "animal needs" (Bartussek, 1999). These are the need for movement, the possibility to express normal behavioural reactions, the quality and magnitude of various technological housing elements, optimal microclimate, proper care etc. (Phillipot et al., 1994; Whay et al., 2003; Popescu et al., 2010). The emotional state indicators as the fear from men are also important. Such parameters often remain underestimated due to subjective judgment from the part of humans. Physiological (clinical) parameters of animal welfare are another large and important group of indicators. It included a number of disorders and illnesses, with utmost importance with regard to welfare of overgrown hooves, lameness, loss of hair from different body parts,

chronic traumas leading to decubitus wounds, arthritis, bursitis, metabolic disorders etc. (Whay et al., 2003; Popescu et al., 2010).

The maintenance of good hygiene level of the animal environment and of animals themselves corresponds to lower somatic cell counts in the milk and lower risk of mastitis occurrence (Barkema et al., 1998; Reneau et al., 2003). Regardless of the improvements in numerous aspects of dairy industry, the possibility to maintain the cows clean and to reduce the bacterial load on teat ends has little improved. The increased herd size, the inadequate construction of barns, the irregular cleaning of alleys and manure collection, the pressure exerted on milk producers to increase the capacity of milking parlours and the changes in the availability and use of different bedding materials hinder the progress in this field. Recently, different scoring systems have been introduced to assess the udder and body hygiene with regard to somatic cell counts in the milk and subclinical mastitis (Schreiner and Ruegg, 2003; Ruegg, 2006). Some of existing hygiene scoring systems (Cook, 2002; Schreiner and Ruegg, 2003; Reneau et al., 2005) have been implemented for improvement of poor hygiene and hence, of udder health.

The body condition of dairy cows and its control is another essential parameter of the so-called "five freedoms" (Welfare standards for dairy cattle – RSPCA, 1997), i.e. the freedom from hunger and thirst. It is guaranteed by the maintenance of animals at an optimal body condition depending on their physiological state. The deviations from the desired values are a reliable proof of impaired animal welfare, and could have a negative impact on productivity, health etc. (Mitev, 1998, 2011; Popescu et al., 2010).

Recently, animal welfare became extensively discussed in our country, especially dairy cows, but practically, neither the cited

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ПОЯВА И РАЗВИТИЕ НА КОНСУЛТАНТСКИТЕ СЛУЖБИ В ЗЕМЕДЕЛИЕТО ПО СВЕТА

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THE ORIGIN AND THE DEVELOPMENT OF THE EXTENSION SERVICES IN THE AGRICULTURE AROUND THE WORLD

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Abstract

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The term "extension service" contains within itself an explanation for publicly funded, non-formal educational structure with research resources and self-organization. The mission of this structure is associated with the provision of relevant and useful information about the older generation of a different nature. This is a significant social innovation, having important implications for agricultural development. It is created and recreated, adapted and developed over the centuries.

The analysis of survey sources indicates that the development of extension services is directly related to increasing the efficiency of agricultural production through the promotion of professional knowledge among farmers. These structures are organized and financed in different ways, but meet the same objectives - support and service to farmers to increase production results, qualification and knowledge of farmers and improve the living standards of farmers.

Key words: extension service, development, history, agriculture

Резюме

Терминът „консултантска служба“ обяснява същността му, а именно – самостоятелна, обществено финансирана, неформална образователна структура с изследователски ресурси. Мисията на такава структура се свързва с предоставянето на подходяща и полезна информация за

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**DAIRY SECTOR IN REPUBLIC OF MACEDONIA
– YESTERDAY, TODAY, TOMORROW**
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ABSTRACT

The aim of this study was to follow the changes in dairy sector in Republic of Macedonia. This study is an attempt to address the various important aspects related to dairy sector in Macedonia like source of milk production, average unit productivity, cost of milk production and milk supply channels. It may also provide an understanding of the opportunities and problems associated with the dairy enterprises in Macedonia. The findings of the study may help in ensuring development of country's dairy sector because the research based decisions of policy makers may have real impact on welfare of farmers and progress of all the stakeholders of the sector. The above mentioned objectives of study are achieved through surveying the farmers, statistical data, direct interviews with representatives of government institutions.

Key words: milk production, dairy farmers, dairy industry

Effect of the Degree of Udder Contamination in Dairy Cows on the Somatic Cell Count in Milk

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ABSTRACT

The study includes a total of 310 Black-and-white cows from 9 herds throughout the period from November 2010 till January 2011. The farms used two rearing technologies (free and tied) and were of different capacity. To assess the degree of udder contamination a 4-grade system has been used. The rearing technology and the farm capacity had a reliable effect on somatic cells count (SCC) in milk. In tied rearing higher SCC have been recorded than in free rearing, a lesser relative share of cows with clean udders (hygiene score -1) and a greater one of cows with contaminated udders (hygiene score 3 and 4). The greatest was the relative share of cows with contaminated udders (hygiene score 3 and 4) and the least clean were the cows in farms with tied rearing and capacity from 50 to 100 cows. Cows with score 1 (clean udder) had the smallest somatic cell count – $172.4 \times 10^3/\text{ml}$, which was related to low risk of mastitis diseases. The ones with score 3 and 4 had somatic cell count over $400 \times 10^3/\text{ml}$. The availability of more than 20% of cows with udder hygiene score 3 and 4 was an indicator for increased risk of mastitis in the herd and obtaining low quality milk. Somatic cell count in milk depended largely on the maintenance of bedding and the farm hygiene rather than the farm capacity and the rearing technology.

Key Words: Udder hygiene score, somatic cells, dairy cows, free rearing, tied rearing

ÖZET

SÜT SİĞIRLARINDA MEME KONTAMİNASYON DERECESİNİN SÜTTEKİ SOMATİK HÜCRE SAYISI ÜZERİNE ETKİSİ

Çalışma, Kasım 2010'dan Ocak 2011'e kadar olan süre zarfında 9 sirtüde bulunan 310 adet siyah alaca ineği kapsamıştır. Çiftlikler farklı kapasitelerde bulunan iki yetiştiricilik sistemini (serbest gezinmeli ve bağlamalı sistem) içermektedir. Meme kirlenme derecesini değerlendirmek için 4-dereceli sistem kullanılmıştır. Sütte somatik hücre sayımının (SHS) yetiştiricilik sistemi ve çiftlik kapasitesi üzerinde güvenilir sonuçları olduğu bulunmuştur. Temiz memelerden (hijyen skoru-1) daha az, kontamine memelerden (hijyen skoru-3 ve 4) ise daha yüksek olmak üzere, bağlamalı sistemde bulunan hayvanların sütlerinde serbest gezinmeli sistemden daha yüksek oranda SHS bulunmuştur.

A Study on the Temperament Type of Puppies in the Animated Toy Test with Regard to Their Proper Socialization and Specific Behaviour Build-up

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ABSTRACT

In order to typify their temperaments and facilitate their training and formation of desired behaviour, 24 7-week-old Pointer, Boxer, and German Shepherd puppies were tested twice in an ethological test. Emphasis was put on behavioural activities such as fear, orientation, purposefulness, curiosity, confidence, indifference and aggression. The Quéinnec animated toy test was applied, the results of which indicated that the German Shepherd breed was the most balanced, oriented, purposeful and non-aggressive. It was followed by the Boxer and the Pointer. According to our experiments, it became clear that this test was easy to perform and did not stress the puppies.

Key Words: Behaviour, puppies, socialization, temperament

ÖZET

YAVRULARDA UYGUN SOSYALLEŞMENİN VE SPESİFİK DAVRANIŞLARIN GELİŞTİRİLEBİLMESİ İLE İLGİLİ OLARAK ANİMASYONLU OYUNCAK TESTİNDE YAVRULARIN MİZAÇ TÜRÜ ÜZERİNE BİR ÇALIŞMA

Arzu edilen davranışların oluşumu, eğitimlerinin kolaylaştırılması ve mizaçlarının simgelenebilmesi amacıyla 24 adet 7 haftalık Pointer, Boxer ve Alman Çoban köpeği yavruları etholojik test ile iki kez test edilmişlerdir. Korku, uyum sağlama, amaç, merak, güven, kayıtsızlık ve saldırganlık gibi davranışsal aktiviteler üzerinde durulmuştur. Yapılan Quéinnec animasyonlu oyuncak testi sonuçları, Alman Çoban köpeği ırkının en dengeli, amaçlı, kararlı ve

TYPIFIED THE NERVOUS SYSTEM OF THE DOG IN ORDER TO PROPERLY SOCIALIZATION AND MODELING OF CERTAIN BEHAVIORS

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ABSTRACT

Behaviors were examined on 27 puppies of breeds of dogs "German shepherd", "Collie" and "Doberman" through the mirror test of Bretto, to characterize the type of nervous system (temperament) for proper education, training and modeling their behavior. It is proved that the applied test is fast, simple, easy to implement and does not cause stressful feelings in experimental dogs, the test is qualify for welfare.

The obtained results show that the most bold and the most balanced are the representatives of "German Shepherd" followed by "Collie" and "Doberman."

Key words: puppies, behavior, temperament test, socialization

INTRODUCTION

The dog is the most recent pet today and have active presence in human life as a frontier guard, courier, hunter, criminologists, tax collector, tutor on children, help the disabled, healer, dog is perfect revealer of human emotional states and because that successfully detects psychosis (2, 3, 4).

Typified of the nervous system (temperament) is a topic on which is working in recent years in Bulgaria. Lot of veterinary colleges from and outside of the European Union isn't aware of the mandatory need for such a manipulation. The characteristic - temperament of the dog is directly related to integration into the environment after birth and subsequent formation of subsequent behavior (1, 3). The most appropriate age for this for us compulsory manipulation is between 3 - weeks and 3 - months of age (7, 8). It is proven that the most accurate and reliable results from a statistical point of view are the results in the course of study during this period (8, 9). According to this (8, 9, 10) indirect link exists between typified the dog's temperament and modeling on behavior. If the owner kept the dog according to the hygienic and biological requirements and have a knowledge of dog's temperament, he will have the right approach to it, the training and education will run smoothly and the dog will develop the desired behavior, without appear on behavioral disorders which sometimes can be from irreversible pathological nature - severe depression, tics, obsessions, anorexia, etc., accompanied by unpleasant behavioral activities of the sick dog: howls, constantly whining, unreasonably barking and so on (1, 10).

Behavioral pathology, however, is not only due to the incorrect approach of man to the animal, that is not only ethological nature (8, 10). It occurs less frequently when the dog is not kept in microclimatic conditions consistent with its biological requirements. However, proper socialization, successful adaptation on animal to the environment in which lives depends mainly from proper behavior of the owner towards animal. This happens when the owner known temperament of the dog

which means a successful approach to its seamlessly socialization and the formation of a behavioral model (9).

It is proven that the dog has 4 types of nervous system (temperament):

1. Type L-sanguine - strong, balanced, leadership type of nervous system;
2. Type F-choleric - strong receptive, but flighty and excitable temperament;
3. Type G-phlegmatic - slower and passive type of nervous system;
4. Type A - melancholic - weak, unstable, indifferent, apathetic, but sometimes prone to wicked type of nervous system.

Most common are choleric and sanguine temperaments (1, 7, 8, 9). Some authors have found that quickly and easily socialize dogs are those with sanguine and choleric temperament, followed by phlegmatic type (4, 5, 6).

Typified the nervous system of the dog is an act by which it is possible to avoid increasing the homeless dog's population because if the owner knows the animal's temperament, he will have an appropriate approach to it, and the socialization will progress properly. The dog will not develop behavioral disorders and intolerable behavior which is the main reason for dog to be abandoned from its owner. Indeed, what will do the owner of animal with behavioral disorders? This depends on the value system, but research has shown that the most dogs are abandoned (8, 9, 10).

Determination of the nervous system of the dog is indicator of its welfare, because that animal is intimidated by the possible failure of man to approach it (2, 4, 5).

Today are apply different test methods for typified the nervous system of the dog. The publicized research data show that one of the most used methods for is the test with mirror on Bretto. In this regard, our goal is to characterize temperament and its influence in the socialization period through the ethological manifestations of puppies observed by use of this test, in order to conduct proper upbringing, socialization and the formation of future behavior (10).

Helical computed tomography application in rabbit liver anatomy: comparison with frozen cross-sectional cuts

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Abstract: Our focus has been to study and compare the anatomical helical computed tomography (CT) features of the normal rabbit liver with its native cross-sectional anatomy. Helical CT was used for scanning the cranial part of the abdominal cavity. The slice thickness was 5 mm. Frozen transversal anatomic cross-sections with a thickness of 10 mm were obtained from the cranial abdominal part of 4 animals following euthanasia. They were compared with the corresponding helical CT scans. At Th9 (thoracic vertebra), the helical CT images showed in the whole aspect a normal liver. It was a massive, heterogeneous, soft tissue, with normal attenuating findings and distinguished edges. The gallbladder was hypoattenuated compared to the liver parenchyma. At the level of Th11 the liver was in sharp distinction to the fundus and body of the stomach. At Th12 the rabbit liver was found in close contact with the stomach, duodenum, and ascending colon. Only the right hepatic lobe was visible at the level of Th13, outlined by the right kidney impression. The right hepatic and caudate lobe were observed at L1 (lumbar vertebra). The frozen cross-sections have analogues to the corresponding helical CT images. That motivated us to conclude that helical CT is an accurate mode for studying the rabbit liver anatomy.

Key words: Rabbit, liver, helical computed tomography, cross-sectional anatomy

1. Introduction

Computed tomography (CT) is a suitable anatomic imaging technique for providing detailed information about internal organ morphology in small animals and humans without contrast enhancement (1).

The rabbit liver consists of 4 lobes: right hepatic lobe, left hepatic lobe (separated in lateral and medial parts), quadrate lobe, and caudate lobe. The quadrate lobe is underdeveloped and a marker for its position is the fossa of the gallbladder. The caudate process of the caudate lobe carries the right kidney impression. The rabbit liver is situated in the epigastric region. It touches the stomach fundus, caudal, and caudate process and covers the cranial part of the duodenum (2,3).

Frank et al. (4) performed a helical anatomic CT study of the liver and portal system in clinically normal dogs in order to create a base for normal imaging features of this organ. This particular technique could help in surgical interventions tremendously, with a decrease of time and degree of necessary invasive dissections. The canine

liver has been observed at the level of Th12–13 (thoracic vertebra) or Th13–L1 (lumbar vertebra).

In feline viscera imaging anatomy, CT is widely applied because of the accurate results obtained by this mode. For best visualization of the feline heart and its adjacent structures, the animals should be positioned in supine and sternal recumbency with a thickness of slices of 5 mm, as observed by Vladova et al. (5,6), Vladova (7), and Pazvant et al. (8).

Samii et al. (9) performed a CT study of the feline thorax and abdomen and proved the correspondence between the results obtained by this imaging modality and regional cross-sectional anatomy of the scanned structures. The same approach is being used for the atlas of normal cross-sectional, gross, and CT anatomy of the feline thorax and abdomen for interpretation of any cross-sectional imaging modality.

Smallwood and George (10) produced an atlas of CT anatomy from the thorax and cranial abdomen in dogs. The animals were positioned in sternal recumbency with

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Проучвания върху някои форми на стереотипни (психични) нарушения при зоопаркови животни

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Studies upon some forms of stereotypical (psychological) disorders in zoo animals: Within 5 years (2008 to 2012) were performed observations of animals from Zoo, Stara Zagora. The aim of this study was to specify different manifestations of behavioral (stereotypical) disorders in wild animals in Zoo conditions. In addition, studied the causes and outlines measures to prevent abnormal behavioral activities. It was found that the most commonly found abnormal locomotor activities. Separation from their natural environment and the lack of incentives for zoo animals are the most common causes for the occurrence but stereotypical disorders.

Key words: stereotypical (abnormal), disorders, Zoo, wild animals

УВОД

Зоопарковете имат цел да запознават хората с животни, които не биха могли да се видят в естествената им среда. Не рядко тези обекти са единственото място където някои видове животни могат да се срещнат.

Лишаването на дивите животни от естествените стимули за обитаване и поставянето им в условия на ограничена или липсваща свобода са основни причини за възникването на стереотипни (абнормални, поведенчески, психични) нарушения при тях [3, 7, 19, 21]. От друга страна, изкуствената среда (каквито са зоопарковете) не позволява на животните да удовлетворяват своите естествени поведенчески нужди [5, 15, 23].

В голяма степен демонстрацията на стереотипно поведение е указание за нарушена среда [23], затова стереотипите често се обясняват като резултат от психологически стрес при животните, причинен от липсата на естествените им стимули [11, 15, 19].

Прието е за психично нарушение да се класифицира поведение, което е непрекъснато, постоянно или често повтарящо се, с приблизително сходство или еднаквост на симптоматиката. Напоследък са налице все повече доказателства, че подобно нарушено поведение се осъществява с определена цел от страна на животните, за задоволяване недостига от стимули [12, 14]. Този факт е особено характерен за зоопарковите условия. Те стават причина, животните постоянно да изпитват „скука“ за преодоляването на която, осъществяват разнообразни активности. Често подобно поведение се определя като нежелано от хората, но за зоопарковите животни е необходимост. Нови данни сочат, че чрез стереотипното поведение, животните изпитват удоволствие. Това се доказва, чрез резултатите от изследванията върху промените в нивата на някои специфични маркери на емоционалното състояние (melatonin, dopamin, serotonin и др.) [1]. Стереотипите може да са едновременно симптоми на няколко психопатологични синдрома, като свръхактивност, разстройство, тревожност и др. [6, 8, 13].

Преобладават становищата, че стереотипните активности се наблюдават най-често при животни държани в плен, на които не им е осигурено достатъчно място и средата им в която живеят не се доближава до тяхната естествена. Най-голямо значение за възникването на абнормалности е липсата на естествени стимули (свободно набавяне на храната, изследване на нови територии, избор на брачен партньор и др.) [9, 10, 23].

Симптомите на стереотипните нарушения могат да се класифицират като първични и вторични. Първичните определят вида на нарушението и се демонстрират със свръхчувствителност, хиперактивност, фрустрация от ограничения, тревожност, социална изолация и др. Вторичните признаци се проявят като самозащита или агресията в случай на контакт с тялото на друго животно от заграждението [1, 15, 19,

P2 **INVESTIGATIONS ON SOME FORMS
OF STEREOTYPIC MOVEMENT (PSYCHOLOGICAL)
DISORDERS IN ANIMALS KEPT IN ZOOS**

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ABSTRACT

Introduction

The purpose of zoos is to acquaint people with animals that could not be seen in their natural environment. Often, these are the only places where some animal species could be really encountered. The deprivation of wild animals from the natural stimuli of the habitat and their life in conditions of limited or no freedom are the main causes for the occurrence of stereotypic movement (abnormal, behavioural, psychic) disorders. On the other side, the artificial surroundings of a zoo did not permit the animals to satisfy their natural behavioural needs. It is acknowledged that a behaviour that is non-provoked, permanently or frequently exhibited, with similar or equal signs, should be classified as a psychic disorder. Recently there is increasing body of evidence that such a disturbed behaviour is exhibited by animals in order to compensate for the deficiency of various stimuli. This fact is particularly specific for zoo environment. It makes animals permanently "frustrated" and for overcoming the boredom, they perform a number of activities. Often, such a behaviour is unsolicited by people but it remains a necessity for animals kept in zoos.

Materials and Methods

The investigations were performed within a 5-year period (2008 to 2012) on the territory of the city zoo in Stara Zagora. It is situated on an area of 70 decares and is the home of 72 different animal species. The regimen of feeding and watering is in compliance with their biological requirements.

The behaviour animals with behavioural, disorders was analysed by means of visual and optical observation, 8 h a day, during the light part of the day. The following behavioural activities have been monitored: locomotion, irritability, scratching and vocalisation.

**P1 INVESTIGATIONS ON BEHAVIOURAL DISORDERS
IN BROILER CHICKENS AFFECTED BY COCCIDIOSIS**

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ABSTRACT

Introduction

Coccidiosis is a parasitic disease with acute or extremely acute development, affecting broiler chickens and other avian species. It is caused by protozoa from the family Coccidia, genus *Eimeria*, which affect different part of the intestines of infected birds. They could be encountered in the caecum, duodenum, proximal jejunum, small intestine without duodenum, the distal part of small and the proximal part of large intestine.

The parasitic infection is manifested when coccidiostatic in poultry feed is absent or deficient. Possibly, the infection could occur after application of a nonefficient coccidiostatic drug. The most significant predisposing environmental factor is the high humidity of the inadequately thick permanent litter on which broiler chickens are reared.

Considering the fact that coccidiosis is a disease of the so-called „diseases of environment-technopathy“ / that exhibits mostly at non-specific animal hygiene requirements / the purpose of our research is proving accurate pathognomonic complex that integrating a specific clinical presentation and typical behavior and facilitating the diagnosis of common diseases, without the obligatory till now autopsy of dead birds.

Materials and Methods

Targeted behavioral changes are studied in 30-day-old broiler chickens from the hen type shown suffering from coccidiosis mortem and parasitological / isolation of the causative /. Study animals were 8000 in number, grown on deep irremovable bed of straw, 4000 in two monolithic rooms without windows and lighting / light with use of program-3 h illumination with a break of 1 h /, in two different farms. Feeding the birds is carried out by the chain-grooved feeding

Ultrasonographic Characteristics of Rabbit's Pancreas

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ABSTRACT

Aim of the study was to demonstrate some ultrasonography specifications of the normal pancreas in rabbit and their use as model for visual anatomical imaging study of pancreatic lesions in animals and humans. We used 12 clinically healthy 8 months old of New Zealand White rabbits between 2.8 and 3.2 kilos, who were mature and all anesthetized. Our investigation had been done Diagnostic Ultrasound System and micro convex multi frequency transducer. The trial animals were starved before the experiments. Before the study we injected (per os) isotonic solution. The animals were positioned in dorsal recumbency. The ultrasonographic accesses were percutaneous transabdominal epigastric and transgastric. The pancreas was scanned longitudinally, transverse and oblique. In the four of the studied animals the pancreas were extirpated after their euthanasia. The organs were researched under liquid isotonic medium. We determined three parts of the gland. The pancreas showed similar acoustic density to the liver. The left lobe was more determined and showed more echogenicity. It has been visualized as striped finding in front of the cranial mesenteric vein. Great amount of adipose tissue has been seen in the peripheral part of the gland that gave hyperechogenic structure of the capsule. The glandular parenchyma showed hyperechogenic linear findings. Portal vein was near the cranial mesenteric vein. The caudal vena cava was seen on the right of the aorta. Transabdominal epigastric access is very good method for visualization of pancreas in rabbits. 8 hours after their last meal an isotonic liquid was injected before the study to provide quality visualization of the gland. The placement of the animals in dorsal recumbency is suitable condition for visualization of the gland. Filling liquid of stomach is great acoustic window for the study of the pancreas in rabbits.

Key Words: Pancreas, anatomy, ultrasonography, rabbit

TAVŞAN PANKREASININ ULTRASONOGRAFİK ÖZELLİKLERİ

ÖZET

Bu çalışmanın amacı tavşanlarda normal pankreasın bazı ultrasonografik özellikleri ve pankreatik lezyonların insanlarda ve hayvanlarda görsel anatomik görüntüleme çalışmaları için kullanılmasıdır. Bu amaçla 12 adet sağlıklı, 2,8-3,2 kilo arasındaki 8 aylık Yeni Zelanda beyaz tavşanı kullanılmıştır. Bütün hayvanlar anestezide alınmıştır. Araştırmamız Diagnostik Ultrasound sistemi ve multikonveks multifrekans transduser kullanılarak yapılmıştır. Denekler deneyden önce aç bırakılmışlardır. Çalışmadan önce per os yolla izotonik solüsyonu verilmiştir. Hayvanlar dorsale doğru yatırılmıştır. Ultrasonografik erişim perkutanöz transabdominal epigastrik ve transgastrik yolları ile

RAPID IDENTIFICATION OF THE TEMPERAMENT TYPE IN DACHSHUND, PEKINESE AND JAPANESE CHIN COMPANION DOG BREEDS

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Abstract

UZUNOVA, K., R. BINEV, Y. MITEV, V. RADEV, C. MITEVA, T. SLAVOV and T. PENEV, 2013. Rapid identification of the temperament type in Dachshund, Pekinese and Japanese Chin companion dog breeds. *Bulg. J. Agric. Sci.*, 19: 1134-1139

The aim of this study was to rapidly identify the temperament type which greatly influences the extent of the dog socialization in young puppies using the statuette test. For that, a total of 27, 7 week old puppies from 3 breeds used worldwide as companions (Dachshund, Pekinese and Japanese Chin breeds, 9 puppies from each breed) were tested 2 times after placing an odourless dog statuette in an empty and unfamiliar room, for specific behavioural activities (purposefulness / orientation, confidence, curiosity, indifference, fear and aggressive traits), leading to the establishment of the temperament type. The L (sanguine) type characterizing a strong and balanced temperament (highly correct orientation, high curiosity, no indifference, no fear, and high confidence and no aggressiveness) was encountered in 6 Dachshund, 5 Pekinese and only in 3 Japanese puppies. Two puppies from each breed exhibited the second strong temperament, the F (choleric) type, differing from the first by a weakly lower orientation and by some aggressive traits. The weak and balanced temperament (low orientation, weak confidence and curiosity but fear signs and no aggressiveness), the G (phlegmatic type) was found in only one Dachshund dog but in 4 Pekinese and Japanese Chin dogs whereas the last weak and unbalanced temperament, the A (melancholic or antisocial) type was evidenced only in 2 Japanese dogs. These results show that the strong temperament types (L and F at a lesser extend) leading to a stable and rapid socialisation can be rapidly and easily determined by the statuette test and were more frequently evidenced in the Dachshund than in Pekinese or Japanese Chin dogs.

Key words: dog puppy, companion, behaviour, temperament, socialisation, statuette test, breed

Introduction

Animals, especially dogs, are a key part of man's connection with nature. Their ever increasing closeness to humans makes them an exceptionally gifted, even intelligent. Due to the benefit of its six senses, the dog has numerous professions (Denkov, 1996; Saetre et al., 2006; Uzunova, 2006). It is used as a companion, hunter, shepherd, rescuer, courier, postman, border patrol, criminal investigator, customs officer, natural resources detector, children guardian, disabled people's assistant, healer (the dog can detect human emotions and successfully recognizes psychotic states) and odourologist (in service of the police). Dogs are also involved in scientific research (Queinnet, 1996; Diederich, 1998; Giffroy, 1998).

The issue of dog socialisation has always attracted the attention of ethologists (Queinnet, 1996; Vastrade, 1996; Diederich, 1998).

The way it adapts to its environment (socialisation) is very important, as it also reflects on its overall behaviour (Petkov et al., 1999). Contacts between humans and dogs are often successful, as well as among dogs (Montagnier, 1998). In this relation, the influence of the temperament type on the extent of socialisation and specific behaviour formation is very important (Renaud, 1996; Diederich and Giffroy, 2006; Houpt, 2007). Just as in humans, 4 temperament types have been described in dogs (Renaud, 1996; Vastrade, 1996):

- strong, balanced, calm, brave – type L, sanguine;
- strong, unbalanced, brave – type F, choleric;
- weak, unbalanced, slow, fearful – type G, phlegmatic;
- weak, unbalanced, irritable, sometimes aggressive, fearful – type A, melancholic.

Some authors (Campan and Scapini, 2002; Keeling and Jensen, 2002) have pointed out a fifth temperament type:

INVESTIGATION OF SOME HOOF DISEASE PREVENTION PRACTICES ON CLAW HORN HARDNESS AND FRICTIONAL PROPERTIES IN DAIRY CATTLE

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ABSTRACT

The purpose of the present research was to investigate the influence of some hoof care practices in dairy cattle (trimming and baths with disinfection solutions) on claw horn hardness and cohesion with concrete floor. Trimmed hooves exhibited reduction in sole horn hardness from 92.75 to 85.125 Shore A, whereas heel horn hardness decreased from 81.75 to 80.375 Shore A. On the other hand, this resulted in increased coefficients of static and dynamic friction from 0.61 to 0.63, and 0.5 to 0.55, respectively, indicating the trimming of hooves increased the walking and stepping safety of cows. The treatment of hooves with 5% disinfection solutions resulted in highest increase in the hardness of all studied hoof zones (walls, soles and heels) after formalin bath, followed by sodium chloride. The 5% solutions of copper and zinc sulfate had a less significant effect on claw horn hardness. The higher concentrations of disinfection solutions resulted in even greater increase in hardness, with highest values after formalin baths again. The treatment with copper sulfate did not exhibit a linear trend in hardness increase although by the end of the study hardness values were higher than initial ones. The increased hardness is essential for coefficients of static and dynamic friction, with evidence for negative correlation between these parameters. The hardness of soles and heels played a significant role for friction coefficient values, as the stability during locomotion depended mainly on the horn quality in these hoof areas.

Key words: dairy cows, hardness, claw horn, trimming, disinfection solutions, cohesion

Abbreviations used: sodium chloride (NaCl), copper sulfate (CuSO₄), zinc sulfate (ZnSO₄)

Introduction

Lameness in dairy cows is a clinical sign of hoof and claw diseases, and one of most important problems of cattle husbandry. Losses attributed to lameness are huge and together with infertility and mastitis, this problem is among the commonest causes for culling cows and for poor economic results at farms (Esslemont and Kosaibati, 1997). The strength and resistance of claw horn are essential for the onset of lameness (Penev, 2013, Penev et al., 2014). Factors influencing claw horn strength are selection, nutrition, the environment and horn chemical composition. According to some researchers, the content of zinc (Zn) and copper (Cu) has an important role for increasing the resistance and strength of hooves (Rodin, 1985; Lukyanovski and Gorshkov, 1985; Lukyanovski, 1988; 1997). The authors believe that foot baths with ZnSO₄ and CuSO₄ solutions have an astringent effect on claw horn, increasing its density. Furthermore, copper is essential for the buildup of disulfide bonds in keratin molecules, which improve horn strength (Underwood,

Ultrasound Anatomical Visualization of the Rabbit Liver

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Abstract

The topic was to investigate the anatomical features of the rabbit liver by two- and three-dimensional ultrasonography. Eighteen sexually mature healthy clinically New Zealand rabbits aged eight months were studied. Two-dimensional ultrasonographic anatomical image of the rabbit liver presented it in the cranial abdominal region as a relatively hypoechoic finding. Its contours were regular and in close contact with the hyperechoic diaphragm. Liver parenchyma was heterogeneous. The gall bladder was visualized as an oval soft tissue structure, filled with anechoic content. Its walls were hypoechoic. Two-dimensional ultrasonographic anatomical image of left hepatic lobe was sharply distinguished to right hepatic lobe's outlines. In three-dimensional ultrasonographic anatomical study, the organ image was in three orthogonal planes. Its relief was regular and uninterrupted. Left hepatic lobe was found on the left and the right hepatic lobe was a soft tissue point for gall bladder position. Left and lateral was left lateral hepatic lobe. It was covered partly by left medial hepatic lobe. The right hepatic lobe was visualized as a single structure. The gall bladder was an oval finding. Its walls were hyperechoic and regular, without roughness. The results could be used as a base for modern interpretation of rabbit liver anatomy.

Keywords: anatomy, liver, rabbit, ultrasound

1. Introduction

The rabbit liver is situated in the cranial abdominal region, between both costal arches. It is located transversally to the median plane and reaches 7th rib on the right and 9th on the left. It is composed of five lobes: right hepatic lobe, caudate lobe, quadrate lobe, left lateral hepatic lobe and left medial hepatic lobe [1].

Ultrasonography (2D and 3D) as non-invasive method is suitable for imaging anatomical study of the rabbit liver, including determination of organ sizes, echogenicity's intensity, topography and boundaries [2].

Ultrasonography is widely distributed functional non-invasive method to study the imaging anatomical features of human liver in order to diagnose accurately the liver diseases. The

obtained ultrasonographic images present structures with different echoic granularity which corresponds to the tissue structures in different anatomical parts of the investigated organ [3].

Many authors [4] carry out imaging anatomical ultrasonographic study of the rabbit abdominal organs by 7.5 MHz sector transducer. Data of the investigation, giving information for liver shape, surface, borders and echogenicity are used as a base for diagnosis of non-infectious nodular pathologies and inflammatory alterations in the liver parenchyma.

Three-dimensional ultrasonography is a non-invasive method that gives information not only for the echoic parameters of the investigated organs, but links them to their morphological features. Thus much more accurately is found a correlative connection between the echoic structure and morphological structure of the studied organs [5].

By data of some researchers [6] three-dimensional ultrasonography creates panoramic anatomical

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necropsied. Of these, 31 were males, 21 females and were aged between one and three years. We collected all the digestive tract to determine the endoparasites present in all bodies. We performed two examinations: macroscopic (gastrointestinal examination portions of the digestive tract) and microscopic (examination of faeces by flotation and sedimentation methods).

Results: In 43 corpses (83%) we identified nematode and cestode parasitism with the following prevalence: *Toxocara canis* 69%, *Trichocephalus vulpis* 23%, *Pterygodermatites affinis* 9.6%, *Taenia pisiformis* 26%, *Mesocostoides lineatus* 36%.

Conclusion: We emphasize that this is the first study of foxes carried out in western Romania. This study reveals high prevalence of endoparasites and the risk of contamination of domestic carnivores and humans, equally.

P7

The evaluation of atopic dermatitis impact on health-related quality of life of affected dogs and their owners in Romania

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Introduction: In the last few years atopic dermatitis (AD) has become widespread both in humans and dogs in Romania. This skin disease impairs the quality of life (QoL) of affected patients. It is known that AD is usually evaluated using a clinical approach and pruritus score. That's why several studies have been recently carried out to establish disease-specific questionnaires to assess both the QoL and health-related quality of life (HRQoL) in affected individuals (children with AD and their parents, owners with AD dogs).

Material and methods: In this respect, 100 questionnaires aiming to evaluate QoL and HRQoL both in owners and their AD dogs were prepared in Timisoara, Romania. Only 26 (26%) valid ones were returned from the owners. Answers were statistically analyzed to reveal the relationship between owner and his pet.

Results: In this study, this relationship was not influenced by the age of the owner, and the more severe the disease is, the more QoL is severely affected in both. Euthanasia is not an option for the pet owners from Timisoara, and the costs of establishing and applying the treatment appear to be not restrictive, showing a very close pet-owner relationship.

Conclusion: This is the first study of this kind conducted in Romania.

P8

Effect of optigen on some parameters of rumen fermentation in yearling rams

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A physiological experiment was conducted to evaluate the addition of Optigen® to the ration of yearling rams on rumen fermentation. Optigen® is a source of specifically protected non-protein nitrogen (NPN) with indirect controlled (slow) release in fore stomachs, specially designed for supplementation of ruminants' diets. Six yearling rams were used - Blackhead Plevan × Suffolk crosses, with initial live body weight of 45±2 kg. The animals were of uniform gender, body weight and origin. They were housed indoors, in individual boxes at the Experimental base of the Physiology Unit to the Faculty of Agriculture, Trakia University - Stara Zagora. The experiment consisted of two periods - control and experimental. The following parameters were investigated: hydrogen ion concentration (pH), ammonia concentration, total volatile-fatty acid (VFA) concentration, total counts and generic composition of rumen ciliates, and in vivo cellulolytic activity in the rumen. It was established that the supplementation of yearling rams' ration with Optigen increased and stabilised rumen pH values, which varied within a narrow range - from 6.61 to 6.78. The differences between control period and post feeding hours 1, 2.5 and 5 were statistically significant ($p < 0.001$, $p < 0.05$; $p < 0.01$). Optigen reduced the total volatile fatty acids and ammonia concentrations in the rumen content after feeding ($0.05 < p < 0.001$). Optigen exhibited an inhibitory effect on ciliate fauna ($p < 0.01$) as well as 1.3 times higher cellulolytic activity (9.02% vs 6.98% during the control period).

P9

Laser surgery for the treatment of epiglottic retroversion in horse - One case

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Retroversion of epiglottis has been reported in horses as a relatively uncommon cause of the upper airway obstruction.

Two-year old crossbred colt was admitted to the Equine Clinic Brno because of the stridor audible during exercise. Resting airway endoscopy revealed pharyngeal lymphoid hyperplasia grade III/IV. Because the treadmill endoscopy

Oral and dental disorders in pet hedgehogs

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Abstract: Hedgehogs are increasingly popular pets. As more people come to keep these unique creatures as pets, it is important to know how to properly take care of them, including how to provide the dental care they need. Hedgehogs are omnivorous with very well-developed jaws and short and relatively coarse teeth with a primitive structure. The skull is low with well-developed zygomatic arches. The incisors are sharp, modified forceps that are needed for elevation of small prey. The canines are small and often look like incisors or premolars. The molars and premolars are flat and wide. The teeth have closed root canals and grow for a limited time. Hedgehogs are prone to oral conditions. Captive hedgehogs are often afflicted with tooth and gum disease. Typical clinical signs and appropriate diagnostics and treatment options are discussed here where possible. The intent of this review is to provide the practitioner with a relevant and practical guide to the management of oral and dental disorders in the captive hedgehog. Proper dental care for hedgehogs will help avoid the need for treatment later.

Key words: Hedgehog, oral disorders, dental disorders, therapy

1. Introduction

The hedgehog family includes small insectivorous mammals, whose backs are covered with modified needles for hair. They fall into the order Insectivora, family Erinaceidae (1). Hedgehogs are classified according to their ear length, zygomatic morphology, and the shape and color of the needles (2). Their natural habitat includes Asia, Africa, and Europe. The most common species are the African hedgehog (*Ateleurix albiventris*) and the European hedgehog (*Erinaceus europaeus*) (3). The African hedgehog is often preferred as a domesticated pet (4).

2. Historical background

2.1. Dentition and dental variations

Hedgehogs are omnivorous with very well-developed jaws and short and relatively coarse teeth (Figure 1) with primitive structure (5). The skull is low with well-developed zygomatic arches (Figure 2). The dental formula of the African hedgehog is: I 3/2, C 1/1, P 3/2, M 3/3, with a total of 36 teeth (6). There are a few other possible variations, which provide the following dental formula: I 2-3/3, C 1/1, P 3-4/2-4, M 3/3 = 36-44 teeth in total (7). In more than 2% of European hedgehogs there are 1 or a few teeth missing (8).

The incisors are sharp modified forceps (6), needed for elevating small prey (Figure 3). The canines are small and often look like incisors or premolars (9). The molars and premolars are flat and wide (Figure 3) (3). The teeth have closed root canals and grow for a limited time. The milk teeth grow between days 18 and 23. Hedgehogs develop their complete temporary dentition in the ninth week of their development. The growth of the new permanent teeth occurs between the 7th and 9th weeks. With *Erinaceus europaeus*, fully grown permanent M1, M2, P2, and I3 are found in the second month (10). The canines appear between the 2nd and the 3rd month, followed by M3, P3 and P4 come out between the 4th and the 5th month. The permanent dentition of the European hedgehog appears in the following order: M1, M2, P2, I3, C, M3, P4, P3, I2, I1 (10).

2.2. Anesthesia and sedation for oral and dental examination

Knowing the case history, including information about the diet, is as equally important for the correct diagnosis as the complete physical exam of the animal. When examining the oral cavity, it is necessary to sedate or anesthetize the animal (11).

The preferred method for sedating the animal is gas anesthesia with isoflurane or sevoflurane (12). A nose cone

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Investigation of Manure-Induced Physicochemical Changes of the Claw Horn in Dairy Cattle

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ABSTRACT

The study was conducted on three claw horn areas (walls, soles and heels) in dairy cows. Claw horn samples were collected from cows at first lactation without signs of lameness. The changes in the hardness, the fat content and the swelling under the influence of manure from intensively reared cows were evaluated. The hardness and fat content were determined by the beginning of the experiment and at 7-day intervals for 28 days stay in manure. The swelling of hoof zones was done by placing samples in graduated cylinders filled with manure and distilled water for 48 h. The hardness of claw walls decreased most significantly during the first 14 experimental days (3.75 Shore A units). For the same period, fat content of this claw zone underwent the most significant reduction. In the sole area, the hardness decreased most intensely during the first 14 days – by 8.15 Shore A units which was in agreement with claw fat reduction in this area. A similar trend was observed in heels, where the hardness decreased most considerably until the 7th day by 3.85 Shore A units and between days 7 and 14 – by 4.45 Shore A units. The respective fat content reduction was by 0.75 and 2.79 mg/g DM. The significant loss of claw horn fat predisposes to water penetration and a strong swelling of keratin. The strongest and most prolonged swelling was detected in the heel area, which enlarged their volume until the 48th experimental hour up to 8 cm³, and where fat content decreased the most compared to other studied claw horn zones.

Key Words: Manure mass, claw horn, keratin, fat, softening, swelling

ÖZET

GÜBREYE MARUZ BIRAKILAN SÜTÇÜ SIĞIRLARIN TIRNAK YAPILARINDA MEYDANA GELEN FİZİKOKİMYASAL DEĞİŞİMLERİN İNCELENMESİ

Bu çalışma sütçü sığırlarda üç farklı tırnak bölgesinde (duvar, taban, ökçe) yürütülmüştür. Tırnak örnekleri birinci laktasyonunda topallık göstermeyen sığırlardan toplanmıştır. Entansif yetiştirilen ineklerde tırnağın sertliği, yağ içeriği ve şişme gibi özelliklerinde gübreyle bağlı şekillenen değişimler incelenmiştir. Sertlik ve yağ içeriği çalışmanın başında

A Case of Acute Renal Failure Following Ethylene Glycol Intoxication in a Dog

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ABSTRACT

The manuscript describes a clinical case of severe oligoanuric acute renal failure in a young dog following ethylene glycol intoxication. Significant deviations were established in urinary renal markers and blood biochemical parameters: severe azotemia, hypocalcaemia, hyperphosphataemia, hyperkalaemia and metabolic acidosis. The ultrasound renal findings demonstrated increased renal cortex echogenicity the typical for ethylene glycol intoxication, with a characteristic halo sign around the medulla. Electrocardiography showed a progressive decrease in amplitudes of P and R peaks, increased sharp edged repolarisation T wave. The performed symptomatic therapy did not lead to favourable outcome due to delayed intervention by the owner and non-administered antidotal therapy. The histopathological finding was consisted in degeneration, necrosis, desquamation of kidney epithelial cells, dilated tubules and multiple calcium oxalate deposits. The described changes, in our opinion, are relevant and could be used for diagnostics of the studied pathology.

Key Words: Acute renal failure, ethylene glycol, intoxication, glomerular marker, dogs

ÖZET

BİR KÖPEKTE ETİLEN GLİKOL İNTOKSİKASYONU ARDINDAN GELİŞEN AKUT RENAL YETMEZLİK VAKASI

Bu metin genç bir köpekte etilen glikol intoksikasyonu ardından gelişen şiddetli oligoanürik renal yetmezlik sonucu oluşan klinik vakayı tanımlamaktadır. Üriner renal markerlarda ve kan biyokimyasal parametrelerinde önemli sapmalar belirlenmiştir: şiddetli azotemi, hipokalsemi, hiperfosfatemi, hiperkalemi ve metabolik asidoz. Böbrekteki ultrason bulguları, etilen glikol intoksikasyonunda tipik olarak görülen renal korteks ekojenitesinde artış ile birlikte medulla çevresinde karakteristik hale işaretini ortaya koymuştur. Elektrokardiyografi sonucunda, P ve R piklerinin amplitüdlerinde progresif azalma, T dalgasının tepe noktasının repolarizasyonunda artış meydana geldiği görülmüştür. Uygulanan semptomatik tedavi, hayvan sahibinin gecikmiş müdahalesi ve antidot terapinin ilaç verilmeden gerçekleştirilmesi yüzünden olumlu sonuca ulaşamamıştır. Görülen histopatolojik bulgular; böbrek epitel hücrelerinin dejenerasyon, nekroz ve deskuamasyonu, tubul dilatasyonu, çoklu kalsiyum okzalat birikintilerinden meydana gelmektedir. Bizce, tarif edilen değişiklikler, çalışılan patolojik durumla ilgilidir ve diagnostik açıdan kullanılabilir.

Anahtar Kelimeler: Akut renal yetersizlik, etilen glikol, intoksikasyon (zehirlenme), glomeruler marker, köpekler

Anatomical and Ethological Changes in Poultry Affected by Osteopetrosis

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Abstract

An integral veterinary hygiene survey in a farm rearing stock layers, 4 months of age, has been performed to throw light on the unknown etiology of sporadic osteopetrosis outbreaks. Observations (ethological and anatomical) were conducted to evidence the development of the disease. The welfare of affected birds was assessed as poor after detailed analysis of all elements of housing environment. This was the cause for the development of the severe illness regardless of the fact that birds were preliminary vaccinated

Keywords: anatomical and ethological changes, osteopetrosis, poultry, welfare

1. Introduction

In poultry, osteopetrosis is a neoplastic infectious disorder cause by retro-or herpes viruses. In the veterinary practice, it is more popular as thick leg disease, marble bone disease, sporadic diffuse osteoperiostitis [1].

Numerous morphological studies have been performed on spontaneous growth on appendicular bones of chickens and guinea hens, caused by the Pts 56 viral strain. The acknowledged etiological and structural features of osteopetrosis suggested the more appropriate term leukosarcomatous osteodysplasia. Hens older than 1 month of age are affected [2].

Anatomically clinical manifestation consisted in impaired remodelling of bone diaphyses, imbalance between old bone resorption and new bone formation in the middle part of long bones. These events result in easy fracturing of bones—this is a relatively milder form of osteopetrosis [3]. Other specific signs are the excessive thickening

and deformation of long bones, bilaterally thickened legs (boot shanks), very hard and painful appendicular bones as early as the beginning of the disease. The excessively thickened boot shank is observed in the later stage of the disease [4].

The ethological signs [1, 5] consist in specifically altered behavior of birds. They are lame, with generally impeded locomotion due to thickened legs. They could hardly get up, tend to lie down, do not reach the feeders, are emaciated and lethargic [6].

In Bulgaria the diseases is only sporadic because the owners of poultry farm comply with the veterinary hygiene requirements with respect to poultry welfare [5]. Yet, despite that the etiology and prevention of osteopetrosis is acknowledged, the pathology is still seen in vaccinated layers. Therefore, another factor provoking the disease is involved, regardless of the proper prevention [3]. This circumstance has motivated the aim of the present study—determination of the secondary etiology of the occurrence of osteopetrosis in stock layers.

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Fear and Aggression in German Shepherd, Boxer and Rottweiler Dogs

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Abstract

As a result of long-term active fear, variable moods can occur – howling, whimpering, crying, tremor, tics, manias, depressions, etc. It is now acknowledged that fear and aggression are closely related. It is also known that the different dog breeds manifest a various extent of fear and aggression. The study aimed to provide answers to two questions - classification of factors invoking fear and aggression according to their significance and which of investigated dog breeds – German Shepherd, Rottweiler or Boxer is the most resistant to fear and aggression episodes? The exclusion of all factors on the rearing of three breeds of dogs / they complied with the norms / found that the causes of fear aggressive conditions are listed as follows – first of fear and aggression depend on the temperament of the dog and on the second place of the breed origin, growing conditions and the associated level of primary and secondary socialization. Fear aggressive manifestations occur at least in dogs with sanguine and choleric temperament. Representatives of the breed "Boxer" and "German Shepherd" are at the same level on the manifestations of fear and aggression. Rottweiler breed is in third place in this direction.

Keywords: aggression, breed, dogs, fear

1. Introduction

It is known that the dog is the first animal, being the most attached to man. This is due to the well-known fact that it fulfils various tasks, is of both economic (work) and social (companion animal) importance.

Fear and aggression in dogs are two emotional states [1] associated with specific behavioural activities resulting to the undesirable outcomes and sometimes, with lethal outcome for injured

dogs or people. It has been proven that these conditions are related [2].

Aggression is an emotional behavioural response of the animal to the feeling of fear. Aggression without apparent cause is already a patho-ethological disorder [3], often of fatal outcome. Our research team is the first to use the term patho-ethological – coming from patho-ethology – the science that investigates the pathological behavioural disorders in dogs and animals in general [4].

Fear is an emotional state, always caused by a specific and clear reason, when the dog feels that it is unable to apply an established behavioural

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RESEARCH ARTICLE



Changes in Blood Biochemical Indices in Yearling Rams after Dietary Supplementation of Optigen

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Abstract

A physiological experiment was conducted to evaluate the effect of the technological product Optigen® supplemented to the feed of yearling rams at a dose of 12 g. The blood concentrations of glucose, creatinine, urea, total protein, albumin, globulins, and protein coefficient (albumin/globulin ratio) were assayed in samples collected from *v. jugularis*. A positive influence of Optigen was established, with maintaining higher blood glucose, creatinine and urea levels 2.5 h after feeding ($p \leq 0.05$). The increased total protein concentrations during the experimental period suggested for enhanced and stable rates of absorption from the digestive tract into the blood – effect of Optigen's active principle. Higher albumin/globulin ratio ($p < 0.001$) was demonstrated, as a result of increased albumin levels especially at post feeding hours ($p < 0.001$) and the reduced blood serum globulins ($p < 0.05$). The supplementation of Optigen to the ration did not show any side or adverse effect on the health and welfare of experimental animals.

Keywords: blood indices (Optigen), feeding additives, sheep.

1. Introduction

The analysis of blood parameters is an important means for assessment of the nutritional, health and welfare status of farm animals. After detailed analysis, they could be a good criterion for the evaluation of effects of different feeding practices (22). The knowledge of all digestive processes occurring in the complex stomach makes possible their modification with regard to the complete conversion of feeds by ruminants and increased productivity. During the last years, a special attention is paid on the possibilities for guided rumen fermentation through biotechnological products and enzyme preparations on the basis of non-pathogenic bacteria and yeasts. The ideal supplement should be specific and with stable effect, not to be absorbed in the digestive tract, not toxic for the host at the recommended dose, without residues in tissues and to be biodegradable when excreted in the environment (1). Many substances used so far – ionophore antibiotics, methane inhibitors, growth promoters etc.

are not compliant with these requirements. The production of special nutritional supplements containing protected proteins has started. One of these products is Optigen. According to the manufacturer Alltech, USA, the active ingredient of Optigen® is covered with biodegradable film permitting controlled slow release of nitrogen. The material is an excellent nitrogen concentrate, which behaves completely differently from urea and could improve rumen fermentation through nitrogen supplementation (7,23). In our country, the studies on the effect of Optigen® as a dietary supplement in small ruminants are still scarce. The mechanisms of its biological action is neither known. The main purpose of the present study was to throw light on these points. A more general aim was to optimise the costs related to protein ingredients in the ruminant diets.

2. Material and methods

The experiment was conducted with six yearling rams, Plevan Blackhead × Suffolk crosses at the Experimental Base of Animal Physiology Unit to the

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