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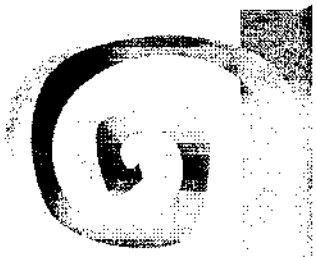

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THE INFLUENCE OF FEED QUALITY AND FEEDING TECHNOLOGY ON THE DISEASE OCCURANCE AND ITS CONTROL

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ABSTRACT: In modern poultry farming, requirements regarding to nutrition and health care are more demanding because high productivity of poultry hybrids aproches its biological potentials. In the paper, the nutritional requirements and most frequent deviations are analyzed in detail, such as the structure and distribution of feed, feeding space, expert and technical aberrations in composition of commplete diets. Proper and forehand elimination of factors that had lead to particular nutripathy, directly linked to feed or feeding technology, represent the key of successful poultry production.
Key words: *poultry, feed quality, feeding technology, disease, control.*

INTRODUCTION

Aiming for profitable food production that contains no harmful substances, high requirements for the new very demanding poultry lines must be provided (Kapetanov, 1997). High productivity that reaches close to the biological maximum of poultry implicates high requirements related to nutrition and health protection that are not easily acomplished. Thus in our poultry farming numerous problems occur with impact to the quality of final products and health status of birds (Kapetanov i sar., 1997). These problems are defined as nutripathy.
In the paper most frequent causes and consequences of nutripathies in poultry production are presented and means to recognize, reduce or eliminate them.

THE CHARACTERISTICS OF FEED TYPES

Feed granulation. Poultry is natural seed-eater. Roughly mashed diets are used in chickens and adult poultry. If the content of very small particles is high or the granulation is too large, selective intake of feed and certain components may occur (Pavkov i sar., 1993). During the warm months when ventilation system is on the forced regimen, too many fine, powder-like particles containing essential nutrients are pooled out. White dust cover surfaces in front and around the outlets including roof and parts of farm surrounding.
The type of diet differs because the meal can be provided as mashed, pelleted or extruded. In some regions of the world it is common to mix whole grains in complete diets before feeding. In general, pelleted or extruded feed is easier to handle in compair to mashed one. It is known that single particles should not extend 3 mm in diameter in chick starter and 5 mm in grower diets.

The size and hardness of pellets. The size and hardness of pellets must be adjusted to the poultry species, age and category. However, large and hard pellets are not so rarely found. This may be evident immediatelly after the first body weight measuring that tend toward rapid growth decrease. On clinical examination small number of birds is seen around the feeders throwing out the pellets in search for adequate by size and hardness. The rest of the flock follow man consistently pecking the footware. The significant amount of feed is located around the feeders but sometimes it is necesary to remove the superficial litter to discover it. In case of prolonged consumption mechanical damage in oral cavity may occur. From our

experience such cases were often seen in fattening turkeys. It is possible to test the pellets by disolving them in a glass of warm water, that has to take no longer than five minutes.

Feeding with whole grain in mating period. It is observed that many peacocks die during the mating period after consumption of whole corn seed. In the spring, males produce very loud sounds to atract the females when they find feed. Females respond to the call and the male swallow the whole seed of corn, which sometimes ends in trachea („the jewish end"). For several hours males try to take out the corn by moving backward with their neck outstreched. In time the corn swell up causing dyspnoe and death. This is why males should not be fed with whole grain, especially corn in the mating period.

FEEDING SPACE AND FEED DISTRIBUTION

The optimal feeding space is essential in any type of feeding. Insufficient feeding space influence reduced weight gain and threaten flock uniformity. Nowadays, in the first ten days of life in broiler production biodegradable paper is used (chick paper) as additional feeder; it is wide 1 to 1.5 meters and the length is one third of the building. This method provides enough quantity of complete diet but also its availability. Often chicks „take a nap" in feeders thus reducing the overall feeding space, especially during the colder months.
Insufficient feeding space and poor feed distribution in growing flocks of layers or parents, that include feed restriction may cause health problems and poor production The decrease of growth may occur, inadequate flock uniformity and high variation interval. Because the birds compete over the feed, they can get injuries, most frequently on head, necks and legs. Between 8 and 15 weeks of age, swollen joints on one or both legs are often seen and infection with *Staphylococcus aureus* (Kapetanov i sar., 1999). Mechanical injuries are mostly seen in heavy line males, sometimes causing the lower reproductive ability in later, mature age. Frequently birds compensate reduced feed consumption by feeding with litter, particularly fresh straw or wood shaving. In such cases clostridiosis was diagnosed on numerous occasions (Kapetanov i sar., 2008).
In growing flocks in which anticoccidials are used to prevent coccidiosis instead of vaccination, sometimes feed restriction is over seen. The clinical coccidiosis is very common in such flocks, particularly if feeding technology is not proper. In our cases, mixed infections, coccidiosis and clostridiosis was quite often seen.
In layers, kept in cages during the production feeding system becomes deformed over time, causing uneaven distribution of meal.
Insufficient feeding space and inadequate distribution of feed cause the increased mortality. In the structure of mortality dominate: suffocation, „hungry mortality", technological discard, mechanical injuries and its consequences (Kapetanov i sar., 1997; Kapetanov i sar., 2000; Kapetanov i sar., 2003; Orlić i sar. 2005; Živkov-Baloš, 2007).

TECHNICAL ABBERATIONS IN COMPLETE DIETS

Drug toxicity. When certain therapy is indicated precausion must be taken in flocks fed with complete diets that contain coccidiostats. The simultaneous use of some drugs, for example ionophore antibiotics and tiamulin, monensin and suplphonamides or erithromycine etc., favor its toxicity even in therapeutical dose. Side effects are expressed in short time with excitation, frequent and hard breathing, swollen head, exudative and haemorrhagic diathesis and death in position with streched neck and legs. Thus every shippment of feed must have declaration in which added substances and contraindications must be documented.

Calcium deficiency. The consequences of calcium deficiency in complete diets were found in all production stages, however the most prominent and detrimental effects were during the peak of egg production. After viral infections are excluded, it is diagnosed easily at this production phase since large number of cracked eggs and soft egg shell are found. However,

if pre-lay rations have less protein and calcium content, the diagnose is more difficult. In our experience clinical features in layers include lie with head put down, ruffled neck feathers, sometimes streched legs and pinguine position, moving with the help of wings, softened and deformed beak and deformities on brest region caused by flexure of keel, ribs and spine.

Deficiency of vitamine E. Low content of vitamine E in poultry rations induce two syndromes, that can occur solitary or together, encephalomalathia and exudative diathesis. Cases of encephalomalatia are mainly seen at the age of 2 to 4 weeks, sometimes earlier at 7 days, with clinical signs of: drowse, ataxia, movements in circle, tremor, uncontrolled shiverring, torticolis. The death is usually in side position. On postmortem examination cerebral oedema and solitar petechial haemorrhagies are present, also possible subcutaneous oedema on neck, chest and abdomen and cold and blue colouration of adjecent skin. From our experience, cases of deficiency occur during the summer in broiler flocks with exellent weight gain. The incriminated feed in cases of exudative diathesis had specific aroma like unsaturated fat, particularly pronounced after it was rubbed between palms The successful therapy was application of vitamine E and selenium, for example 50 ml per 1000 kg body weight of commercial preparation Evitaselen, for three days. Also multivitamine preparations containing high vitamine E and A gave good results.

Intoxication with inadequately heat treated soy products. Besides high valuable nutrient content, soy bean has some undesireble and toxic substances. Crude soy beans contain tripsin inhibitors, lipid oxidase, hemagglutines and allergenes. All these substances are proteins that are denaturated during heat treatment and thus decrease their activity to the harmless level. In our two year investigations significant percentage of soy bean products was under or too much heat treated: 19.56% of 19,56% soy bean meal, 28.95% of extruded soy bean meal and 14.29% of soy cake. Intoxication with unsufficiently treated soy bean products was determined mostly in broilers, because they use such nutrients at most. The clinical signs were evident usually at the age of 3 to 4 weeks, including: impaired uniformity, low vitality and grouping around the heaters, paresis and paralysis and dysrupted behaviour with the pecking of litter, wall, feeders and drinkers. Wet litter was observed because of yellow to pale redish diarhoea and undigested feed particles. The weight gain was poor. Based on case history, clinical signs and section findings of catarrhal enteritis and underdeveloped gizzard, the chemical analysis of soy products was advised. Substitution with safe product and treatment with multivitamine preparations with essential amino acids provided good results (Kapetanov i sar., 2010).

The use of freshly harvested grains in complete rations. Feed producers and farmers often use freshly harvested grains like wheat or corn, because of shortage or high market prices. The moisture content and histamin level are too high in these grains. Shortly after consumption, clinical ilness begins, with symptoms of paresis, paralysis, exudative diathesis, protruding diarrhea with significant amount of undigested particles, catarrhal enteritis. Combined treatment with vitamine E and selenium was beneficial and the problem was eliminated. Such cases were most frequently observed in broilers.

CONCLUSIONS

The adequate and forehand removal of condition that caused certain nutripathy linked to feed or feeding technology, represent the key for successful poultry production.

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