

INTAKE AND PREFERENCE OF MINERAL LICKS WITH A DIFFERENT RATIO OF CA:P ELEMENTS AT FALLOW DEER (*DAMA DAMA*)

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Abstract: This article reviews intake and preference of mineral lick with different Ca:P ratio for cervidae. Experiment was held on Vysočina region from March 2013 till February 2014. Experiment took place in small farm, where was kept 20 head herd of fallow deer. As a model animal, fallow deer was used, mainly for its popularity among Czech farm and hobby cervidae breeders. For data collecting of intake, digital weight was used. For observation of deers and for collecting data about frequency of intake, camera trap, which monitored surroundings of licks for whole duration of experiment, was used. Data itself was evaluated by standard statistic methods. We discovered, that preferred ratio of Ca:P was 1:1. The peak of intake was between July and August. This is probably caused by lactation and antler grow in this period.

Key Words: Cervidae, mineral licks, intake, Ca:P ratio, dama dama, fallow deer

INTRODUCTION

Nutrition of cervidae has same importance as feeding of any other animal kept for production. Wild cervidae are referred on their own ability to survive and natural resources. According to Tuckwell (2003) fallow deer loose 20% of its own body weight during the winter session. Also, need of nutrients is 2 times higher during female lactation, than during winter session (Čermák 2004). This shows that nutrition of wild and also of farm-breed cervidae is important not just for their survival, but also for production that is vital for cervidae farmers.

Meat, that is the main product of cervidae farms, is important for human nutrition. For correct growth of muscles, whole body needs to be in balance. For all biochemical processes, correct supply of mineral elements is required. These substances are vital for correct neural, digestive and also growth processes (Kvasničková 1998). Mineral components are not important just for restoring overall mineral substances supply, they have also direct and instant influence on the production and welfare (Zeman 2006).

Experiment for this article was made on fallow deer, because of its wide spread in Czech cervidae farms and because of its hard constitution and relative ease of breeding (Červený 2003).

MATERIAL AND METHODS

Experiment took place on farm on Vysočina region. Fallow deers on this farm have 0.78 ha of space available for their needs and social interactions. In summer deers were fed fresh grass, in winter they get hay, jerusalem artichokes and other root crops, and oat straw. Every other day there was a bucket of barley and oat given to the deers. Dose of these feed was 0.3 kg per day and head. Root crops were also given out of winter session, but it was irregularly.

There were 9–10 deers in the herd through whole year. The basic herd was made by 1 male and 6 females. Rest of the herd was offspring of the main part of herd. These young deers were later sold. Female gave birth to 4 youngs in total in period between 4. and 25. June.

The heat of female took place in a standard date, 2nd half of October. During the experiment period, there were no losses or diseases recorded in the herd. In February, the medicated mix WILD 2 by

MIKROP company was used. This mix is used against parasitosis and it was presented to the herd for 2 days instead of regular feed. Dose of the mix was 0.7 kg/day/head.

Experiment itself was started on 3.15.2013 and finished on 3.1.2014. There were four different mineral licks at total installed on the farm. The licks were signed A, B, C and D. Licks were planted in identical wooden oblong boxes, that were vertically installed on the pillars near the feeding area of the herd. Each pillar held two boxes with licks. Mineral blocks had standard, normally used commercial composition, except for the content of Ca and P and their ratio.

Fallow deers were, during the whole duration of experiment, monitored by camera trap installed on the nearby tree. Camera trap faced the lick installation and data from it were collected every week. For the evaluation of weight loss of the mineral blocks, digital scale was used. Blocks were weighted every first day of month. All data were evaluated by standard statistic methods. Ca:P ratio is shown in Table 1.

Table 1 Ca:P ratio of mineral blocks

Block	Ca:P ratio
A	2:1
B	1.5:1
C	1:1
D	0.5:1

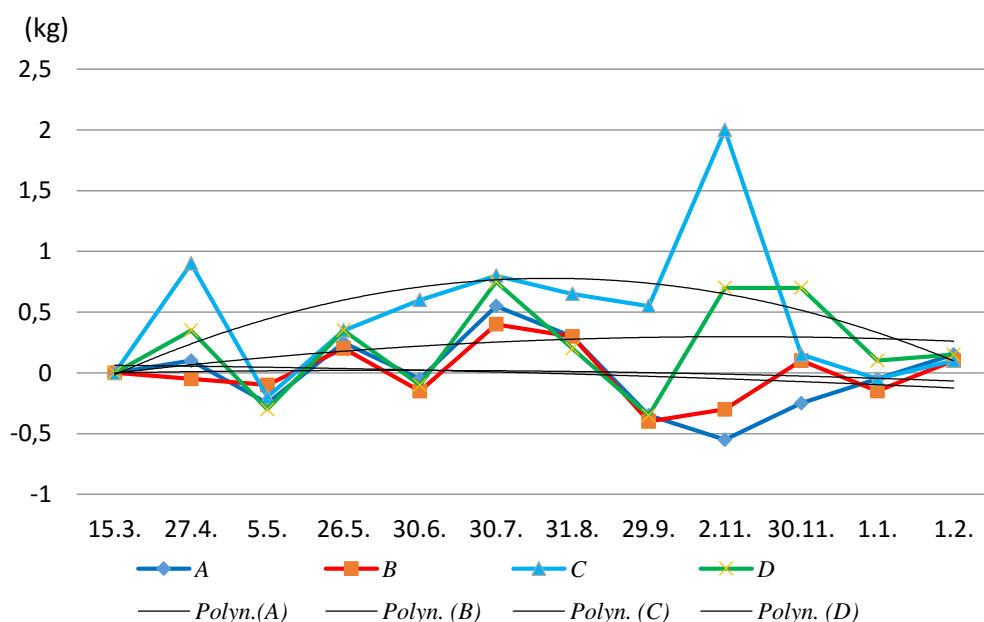
RESULTS AND DISCUSSION

Weight analysis

Weight analysis showed, that the highest consumption of mineral blocks means, largest intake, was between July and August.

In Figure 1 we can see that the deers preferred block C. This trend was persistent almost throughout whole year, except for the start of the year, where block C was temporarily replaced by block D. This can be caused by different need of elements during the winter session. Large increase of C block intake took place in end of August. This could be caused by growth peak of antlers of males. Fallow deer skin his antlers from August to September (Vach 1999), which is after the C block intake peak.

Figure 1 Intake of mineral blocks (in kg)

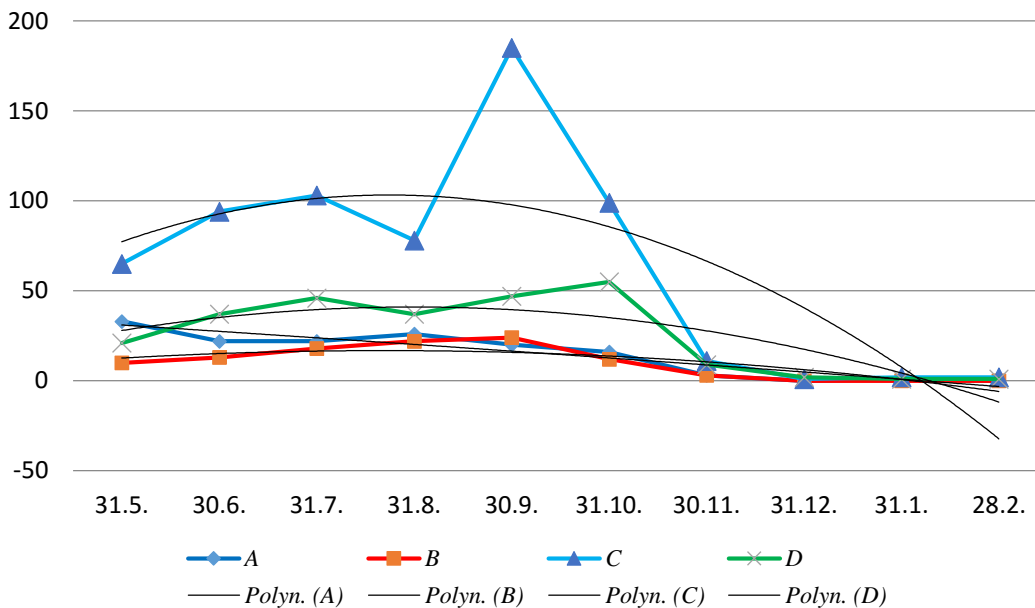


Another reason for increased mineral blocks intake in this time period is lactation of female. Youngs are born in July, therefore end of August seems like the period in which female needs higher intake of mineral elements because of depleted supply of own mineral elements.

This conclusion is in contrary with findings of Babička et al. (2010) who found out, that the best intake of mineral blocks of game is between May and June. Difference between these conclusions are probably caused by different conditions of experiment. Our herd was breed in farm conditions with higher production and lower living space. Mentioned work also indicates on more need of mineral elements during the antler growth. This would explain earlier peak of mineral elements need.

Frequency of intake analysis

Figure 2 Frequency of visits



On Figure 2 we can, again, see that the most visited mineral block was block C and that the peak of intake frequency is in September. This is slightly later than on the first Figure. If we take the overall frequency intake peak, we can see it is similar to Figure 1 (August-September). This support conclusion from weight loss analysis. Differences in block C intake can be caused by air humidity, that could be absorbed to the licks, or other exogenous factors, like temperature or sufficient water supply of herd, that were not part of this research.

Overall block C intake support statement from weight loss analysis, that the favorite block is C. In the winter period intake of block C decreases as well as overall intake of all blocks. This could be caused by higher intake of hay. Hay made on sunlight contains higher amount of vitamin D, which is vital for calcium utilization. Higher levels of vitamin D in body lowers need of calcium thanks to higher utilization. This fact combined with lower total need of calcium, thanks to no lactation or antlers growth, could explain this deviation.

Similar experiment was made by Chládek and Zapletal (2006) on beef cattle. They used similar 4 blocks in their experiment. Results were different as beef cattle favored blocks with Ca:P ratio of 2:1 and 0.8:1. In our experiment 2 most favored blocks were block C (Ca:P 1:1) and block D (Ca:P 0.5:1). This support the statement, that licks for beef cattle are not suitable for cervidae. This is also supported by conclusion of Andrade et al. (2002) that ideal Ca:P ratio for cattle is 1.9:1. Other evidence of this hypothesis is that in our experiment, blocks with ratio of 1.5:1 were refused completely.

CONCLUSION

Experiment, that was made for this paper shows, that mineral nutrition of cervidae is different from mineral nutrition of other ruminants. According to results of experiment ideal Ca:P ratio is 1:1. This is the main difference between beef cattle and cervidae. Even though both species are ruminants used for meat production, we cannot feed them under same terms, at least not in mineral nutrition field.

There was also discovered, that peak of intake is in period between July and September. As mentioned above, this could be caused by intense milk production for offspring and peak of antler growth. Differences between our work and works of other authors could be caused by different need of mineral substances for wildlife, species differences or deviations in block composition.

This finding could be important for cervidae breeders for better efficiency of their production. Meat production and antler production is vital for satisfying the demand and also for preservation of wildlife

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