Methionine and Methyldonors for Mink (Mustela vison) in the Furring Period

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Introduction
Glem-Hansen (1976) showed, that methionine and cystine were the first limiting amino acids in typical Scandinavian mink feed. In following trials, to establish the requirement for sulphur containing amino acids in the growing period, dl-methionine was used (Glem-Hansen and Hansen, 1980). Investigations with other species have shown a varying degree of utilisation of dl-methionine. Teeter et al. (1978) concluded, that d-methionine was well utilised by cats. A calculation from their data indicates about 80 % of growth as compared to l-methionine. Due to the trial design, they could not quantify the degree of utilisation. An alternative to methionine is the Methionine Hydroxy Analog (MHA). Teeter et al. (1978) tested MHA to growing cats. On a semipurified diet, the MHA group achieved a growth of about 78 % of that achieved by the group receiving l-methionine.

Besides being an essential amino acid in itself, methionine is converted to cystine and may cover the requirement for this amino acid. This process liberates methyl groups, which in themselves have metabolic functions.

Materials and Methods
The trial was carried out in the period from September 6th and until pelting.

Animals
Three groups of 120 male mink of the wild colourtype were used.

Feed
A standard feed kitchen diet was fed until the initiation of the experiment. The basal feed was composed to have a 20 % deficiency of methionine as compared to the norm for mink in the furring period.

In the 1st group, 0.14 % of dl-methionine was added (only l-methionine calculated as utilisable). The 2nd group received 0.079 % dl-Methionine (Glem-Hansen and Hansen, 1980). The 2nd group received 0.079 % added (only l-methionine calculated as utilisable). The 2nd group received 0.079 % of dl-methionine ended up with about 5 % excess as compared to the plan. This is within the normal variance in the analysis results (only l-methionine given nutritional value). However, if one considers the content of d-methionine as a possible nutritional source of methionine, the excess might be as much as 20 %.

Results
The energy distribution and the content of essential amino acids in the feeds are shown in figure 1.

Figure 1. Energy distribution and digestible essential amino acids/MJ.

The amino acid content was generally above the requirement for mink in the furring period. Methionine had successfully been lowered about 20 % in the basal feed as compared to norm (the analysis results from the groups MHA and Betaine). The group with added dl-methionine ended up with about 5 % excess as compared to the plan. This is within the normal variance in the analysis results (only l-methionine given nutritional value). However, if one considers the content of d-methionine as a possible nutritional source of methionine, the excess might be as much as 20 %.

Weights and gain
There was no significant difference in weight gains from September to pelting. This indicates that the methionine requirement per se for gain in the furring period is covered by a content of d-methionine in the basal feed as compared to norm (the analysis results from the groups MHA and Betaine). The group with added dl-methionine ended up with about 5 % excess as compared to the plan. This is within the normal variance in the analysis results (only l-methionine given nutritional value). However, if one considers the content of d-methionine as a possible nutritional source of methionine, the excess might be as much as 20 %.

Pelt length and fur quality
The group receiving MHA had the longest pelts and the group receiving dl-methionine the shortest; but there was no statistically significant difference between the groups.

The group receiving Betaine had significantly better quality (p<0.0007) and the most reddish furs (p<0.0001) when compared to the two other groups (figure 2). The group receiving MHA had the least reddish furs (p<0.0001) when compared to the two other groups.

Figure 2. Pelt quality and clarity.

Figure 3. Wool quality.

References


