

## Effects of artificial feeding on the body weight, nutritional status and rumen function in reindeer

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In Finland the lichen grazing areas of semi-domesticated reindeer are decreasing, especially in the forested part of Lapland, where 2/3 of the reindeer are raised. Simultaneously the number of reindeer is increasing rapidly and the supplementary feeding of reindeer is expanding.

A feeding experiment was carried out during winter 1986 in Kaamanen Field Station. Altogether 36 female reindeer were fed with five commercial fodders differing in feed components and chemical composition and with lichens. The nutritional condition of reindeer was followed by weighing and blood samples. The digestibilities of six natural and artificial reindeer fodders were also studied by *in vitro* micro-digestion technique with rumen liquors from six reindeer and one sheep.

During the three months feeding period the body weights of artificially fed groups remained unchanged or increased. Only the lichen fed group lost body weight and it differed significantly from the artificially fed groups in April. The birth weight and the body weight of three-week-old calves correlated with the body weight of hinds just prior to calving ( $r=0.391$  and  $0.491$ ). The daily weight gain of calves during the first weeks of their life (age between 15 - 29 days) differed between groups.

In February the creatinine, cholesterol, triglyceride and phosphate concentration of serum differed between feeding groups. In April there were also differences in total protein,

albumin, gammaglobulin and calcium concentration. However, only the lichen fed group differed significantly from the other groups. There was significant correlation between the daily intake of digestible crude protein ( $g/W^{0.75}$ ) and total serum proteins ( $r=0.425$ ). Also the daily intake of calcium and phosphorus correlated with serum calcium and phosphate concentration.

The *in vitro* digestibilities (dry matter disappearance) of both ground (*Cladina* spp.) and arboreal (*Bryoria* spp.) lichens were lower in liquor from sheep than from reindeer. Especially the digestibilities of ground and arboreal lichens were low (14.2% and 47.2% IVDMD) in liquor from sheep. Dry hay (*Phleum pratense*) had higher digestibility in liquor from sheep than in liquor from reindeer. When using liquor from lichen fed and artificially fed reindeer the digestibility of dry hay was lower than in liquor from the reindeer grazed in natural winter pastures. Arboreal lichens had higher digestibility in liquor from artificially fed and naturally grazed reindeer than in that from lichen fed reindeer. The digestibility of ground lichens was lower in liquor from naturally grazed reindeer than in liquor from artificially fed and lichen fed reindeer. Commercial reindeer fodder had lower digestibility in liquor from lichen fed than artificially fed and naturally grazed reindeer.