



Importance of mountain forage for evaluation of feeds and biodiversity protection of protected landscape area of the Czech Republic

V. Koukolová*, P. Homolka, F. Jančík

Institute of Animal Science, Přátelství 815, 104 00 Praha, Czech Republic; *koukolova.veronika@vuzv.cz

Introduction

Description of the specific mountain forages typical for the protected area of Krkonoše Mts. National Park is important for knowing of all nutritive factors of broad range of feeds as a key information for understanding of all biochemical processes in the rumen of ruminants. These plant/animal interactions can be studied *in vivo*, *in situ*, and *in vitro* techniques.

Hypothesis of this study was based on requirements to specify these forages and initiate it into relationship with farm animal needs.

The proposed study is based on current feed evaluation system with focus on digestibility mechanisms in relations to forage quality of animal nutritional needs.

Objective

The objective of this study was to investigate relationship among *in vivo* digestibilities of dry matter (DM), crude protein (CP), neutral-detergent fibre (NDF) and acid-detergent fibre (ADF) of two forages (pasture forage and *Deschampsia flexuosa*) originated from Krkonoše Mts. National Park of the Czech Republic.

Design of study

The experimental materials (pasture forage, *Deschampsia flexuosa*) from the observed locality Krkonoše Mts. National Park, locality of Zadní Rennerovky were collected in May 2008. Forage samples were analyzed for:

Chemical composition: content of DM, CP, ether extract, ash, NDF and ADF.

***In vivo* digestibility methods:** the *in vivo* metabolic trials were performed on six wethers Romanovské breed (weighing 83±9 kg) stabled in balance separators. The forages were offered twice a day (7.2 kg of pasture forage/animal/day and 5 kg of *Deschampsia flexuosa*/animal/day). The animals had free access to drinking water.

Calculations and statistical analysis: Correlation coefficients between variables were computed using PROC CORR (SAS Institute, 2003). Treatment means were compared by Scheffe test of multiple-comparison procedure at $P < 0.05$.

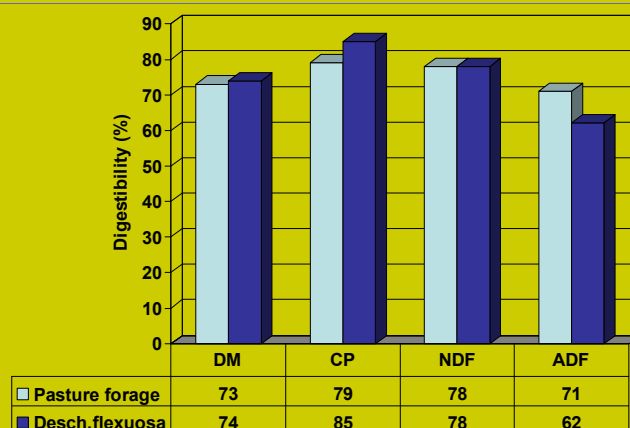
Results

The *in vivo* digestibilities of DM, CP, NDF and ADF were determined in *in vivo* metabolic trials. The chemical composition values (g/kg of absolute dry matter) of pasture forage and *Deschampsia flexuosa* were 238 and 220 g/kg for CP, 19 and 25 g/kg for ether extract, 60 and 52 g/kg for ash, 724 and 641 g/kg for NDF, and 309 and 282 g/kg for ADF, respectively. The *in vivo* digestibilities of DM, CP, NDF and ADF averaged 73, 79, 78 and 71 % for pasture forage and 74, 85, 78 and 62 % for *Deschampsia flexuosa*, respectively. Significant differences ($P < 0.05$) between the pasture forage and *Deschampsia flexuosa* in the *in vivo* digestibilities of CP and ADF were observed.

Table 1. Chemical composition (g/kg of dry matter).

	Pasture forage	<i>Deschampsia flexuosa</i>
Original dry matter (g/kg)	203	283
Crude protein (g/kg)	238	220
Ether extract (g/kg)	19	25
Ash (g/kg)	60	52
Neutral-detergent fibre (g/kg)	724	641
Acid-detergent fibre (g/kg)	309	282

Figure 1. *In vivo* sheep digestibility (units are in % of absolute dry matter).



ADF = acid-detergent fibre, CP = crude protein, NDF = neutral-detergent fibre, DM = dry matter.

Conclusion

Feed estimation as a set of parameters of the chemical composition and *in vivo* sheep digestibility analysis are information important for feed quality evaluation. The evaluation of nutritive value of the specific mountain forages is necessary for reason of landscape conservation and cultivation, and interactions between plant/animal productions.