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**Permanent rumen and duodenal cannula in heifers for study of forage nutritive value****Matus Rajsky, Formelova Zuzana, Chrastinova Ľubica, Polacikova Maria, Mlynekova Zuzana, Maria Chrenkova and Zitnan Rudolf**  
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**Statement of the Problem:** Precision feeding of ruminants requires an accurate prediction of ruminal behavior of feed nutrients (protein, cell walls, and starch). Usually, ruminal behavior is predicted from the chemical composition and established relationships between chemical composition and degradation characteristics. The rate and extent of nutrients degradability are important characteristics for their effective utilization by ruminants. The use in sacco and mobile bag method requires ruminally and intestinally cannulated animals. These methods allow obtaining the data for several feeds at the same time. Digestion can be studied without the need to simulate the rumen and intestinal environment. The objective of the study was to prepare animals with cannulas and to determinate the degradability of nutrients and digestibility of pasture herbage (*Festuca pratensis*; *Dactylis glomerata*; *Lotus corniculatus* and *Bromus inermis*), pasture mixture and lucerne.

**Methodology & Theoretical Orientation:** The content of nutrients in tested feeds and in the remains after every feed incubation in rumen were analyzed according to the Commission Regulation (EC) No. 152/2009. The degradation of nutrients was done by the method in sacco. We used three cows in dry period with permanent rumen and duodenal cannulas. Incubation periods were 6, 9, 16, 24, 48 and 72 hours. We used equations recommended by Ørskov and McDonald (1979) to calculate the effective degradability, taking into account washing losses by the program Neway. Crude protein intestinal digestibility of residues undegraded in rumen (after 16 hour) from the mentioned samples was estimated by the mobile bags method, in the same animals fed the same feed ration as in the in sacco trial.

**Findings:** The effective degradability of CP correlated significantly with NDF and CP concentrations. The average value of CP intestinal digestibility by mobile bag method in lucerne was on average 42.74%. Botanical composition of herbage was reflected in its chemical composition, mainly in the composition of cell walls and in the rate of organic matter, NDF (highest 621 g.kg-1 DM in pasture mixtures) and the lowest in lucerne 386 g.kg-1 DM). The highest proportions of NDF from OM were in pasture mixture (66%). High content of cell walls (NDF) results in higher values of lag phase for degradability of the tested parameters. Increasing the content of ADF and lignin also reduces the degradability and digestibility of the organic matter. Delayed onset of cell wall degradation is illustrated by electron microscope in the rumen. The highly significant regression relation was found between the NDF proportion in organic matter and digestibility of dry matter ( $r=-0.845$ ) or organic matter ( $r=-0.874$ ) for the whole set of the analyzed feeds.

**Conclusion & Significance:** The results show that lignin content is a significant (though negative parameter) of feed nutritive value. From its content, it is possible to extrapolate the effective degradability of organic matter and crude protein. The values of effective crude protein degradability significantly influence PDI (protein digestible in intestine) value of feeds. From the practical stand point, it is important to note that with increased lignin during the process of maturation the nutrition value decreased. Substantial impairment of cell walls and bacterial colonization were visible after 24 hours incubation in the rumen. These results could be used to improve the current system of diet formulation in ruminants.

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**Biography**

Matus Rajsky focuses his research on nutrition, feeding and ecology of animals, especially on farm ruminants and free living ruminants. He is the Head of Institute of Nutrition at Research Institute for Animal Production Nitra, National Agricultural and Food Centre. He is involved in several projects related to feed quality, animal nutrition, physiology of animal nutrition, feeding of animals, proposals of new feeds. He also studies the relation between nutrition and food of free living ruminants (roe deer, red deer, fallow deer, mouflon and moose) and their impact on environment.

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