

FURTHER STUDIES ON SOLUBILITY AND DEGRADATION OF GREEK RUMINANT FEEDSTUFFS

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Protein solubility in the rumen is of considerable nutritional significance. Performance of ruminants has been improved by feeding diets containing protein which is poorly soluble in buffers or by including protein sources which are slowly degraded in the rumen (Amos 1986). However, there are conflicting reports with regard to the accuracy of the relationship between protein degradation in the rumen and protein solubility measured in solvents. The aim of this study was to investigate the relationship between solubility in 3 solvents and degradability of some typical feedstuffs available in Greece using a variety of ruminant feeds.

Each feed was categorized into 1 of 3 feed types: (1) energy feeds (wheat, corn, barley, rye, oats), (2) plant protein sources (pea, horse bean, vetch, lupin, rapeseed, linseed, whole cottonseed, extracted cottonseed meal, distillers dried grain with solubles, alfalfa meal), and (3) animal and fish by-products (meat and bone meal, fish meal, herring meal, meat meal, blood meal). Soluble nitrogen was measured by techniques of Crooker *et al.* (1978) with McDougall's buffer, 0.02 N NaOH and 0.15 N NaCl as solvents, while degradability of protein and dry matter (DM) in feeds was estimated by the dacron bag technique (Orskov and McDonald 1979) in 3 ruminally cannulated sheep.

The amount of nitrogen extracted by the 3 solvents for all diets was highly correlated between the solvents (McDougall's buffer vs 0.02 N NaOH, $R = 0.91$; 0.02 N NaOH vs 0.15 N NaCl, $R = 0.79$; and McDougall's buffer vs 0.15 N NaCl, $R = 0.85$). Among all types of feedstuffs a fairly high correlation was found between DM degradation *in sacco* and protein solubility in the 3 solvents, but there was no correlation between protein degradation *in sacco* and protein solubility in any of the 3 solvents used. However, the above correlation was improved when the feedstuffs were categorized into groups of the same type. From our results it can be concluded that protein solubility only roughly estimates ruminal protein degradability, when considering a variety of different type of feedstuffs.

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