

Rumen Degradable Protein

Rumen Degradable Protein (RDP) is the fraction of Crude Protein (CP) consumed which is broken down by rumen microbes. In the 1989 edition of *Nutrient Requirements of Dairy Cattle*, RDP was referred to as Degradable Intake Protein (DIP).

The degradability of the protein in any particular diet or feed ingredient is dependent upon both the feed itself and the animal to which it is fed. When feed intake is low (e.g., dry cow), passage of feed through the rumen is slower and RDP may be higher because time of exposure to microbial degradation is increased. Conversely, high intakes (e.g., peak lactation cow) accompanied by high feed passage rates result in lower RDP values.

RDP is estimated by measuring the disappearance of CP from feed samples incubated in porous nylon bags in the rumen of a fistulated animal such as the one shown on the left. The procedure is labourious and expensive, limiting its use to research facilities. Results obtained with this method have been quite variable both within and between laboratories.

A much simpler benchtop method has been proposed, in which feed samples are incubated with a mixture of protein-degrading enzymes extracted from the rumen. Although several commercial labs offer RDP analysis using this method, lack of standardization of both protocols and enzymes makes it difficult to place confidence in results.

Soluble Protein and Non-protein Nitrogen (NPN) are crude protein fractions considered to be rapidly and completely degraded in the rumen. Since these two fractions can be readily measured in the feed lab, they have been used as indicators of feed protein degradability.