

outflow rate of liquid and particulate phases were not affected by protein level. The ATP concentration found in the solid residue, remaining after removal of the liquid phase from the rumen content, increases with increasing fishmeal level, while ATP in the liquid phase remained unchanged. This indicates that, under the conditions of this study, fishmeal exerts its effects on the microbes intimately associated to the fibre, and not upon the whole microbial population. The microbial DNA concentration of digesta nylon bags increased during the first 24 h of incubation and then decreased until the end of incubation, indicating a process of colonisation and depletion of degradable substrates.

Key words: protein level, straw degradation, rumen, cows.

Factors affecting degradation of barley straw *in sacco* and microbial activity in the rumen of cows fed fibre-rich diets. III. The amount of supplemental energy

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A basic diet composed of 76.2% untreated barley straw +23.8% grass hay was given to three non-lactating cows at 90% of *ad libitum* intake; the diet was supplemented with fishmeal to make the ration up to 12% protein on dry matter basis, a mineral-vitamin mixture and either 1.5 kg; 3.0 kg or 4.5 kg of rolled barley/cow x day in a Latin Square design. The inclusion of rolled barley affected the degradability of DM, OM and individual components of the cell wall of barley straw incubated in nylon bags for up to 72 h. The higher the energy level of supplementation, the lower the digestion of the cell wall components. The amount of starch influenced rumen pH, ammonia and VFAs concentrations, ATP and protozoal numbers, but no treatment effect could be detected upon the outflow rate of liquid or particulate phases. The ATP and DNA concentrations found inside the nylon bags suggest the presence of an inactive or less active population towards the substrate after 24 h of incubation.

Key words: energy, supplementation, straw degradation, rumen, cow.