DETERMINATION METHODS OF CRUDE PROTEIN IN CONCENTRATED FEEDS AND GRASSES

MÉTODOS DE DETERMINAÇÃO DE PROTEÍNA BRUTA EM ALIMENTOS CONCENTRADOS E GRAMÍNEAS

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Determination of crude protein (CP) is important for nutritional characterization of ruminant diets. The objective of this work was to evaluate the results of CP in grasses and concentrated feeds by the Kjeldahl method, based on digestion with acid solution and heating, distillation with addition of a base and heating and titration with standard solution of sulfuric acid, and the Dumas method, based on the release of nitrogen by high temperature combustion in pure oxygen, which is measured by thermal conductivity and converted to CP equivalent. The experiment was conducted at the Animal Nutrition Reference Laboratory of the Institute of Zootechnics (IZ), Nova Odessa, SP, Brazil, in a completely randomized design with six replicates. Samples of six feedstuffs were evaluated, three grasses: Urochloa grass (*Urochloa decumbens*), Tobiatã grass (*Megathyrsus maximus* cv. Tobiata), and star grass (*Cynodon plectostachyus*), and three concentrated feeds: sorghum bicolor grain (*Sorghum bicolor*), corn gluten meal and fish meal. Crude protein concentration was evaluated using PROC GLM SAS® and the Tukeytest ($p < 0.05$). There was a difference between the methods ($P < 0.0001$) and interaction between feed and methods ($P < 0.0001$). For Tobiatã grass, star grass, gluten meal and fish feed, the levels of CP were higher in the Dumas method than in the Kjeldahl method, except for sorghum, where the Kjeldahl method produced higher readings than Dumas. These differences may have occurred due to limitation of the Kjeldahl method in quantifying nitrogen from the nitrates contained in feeds. For Urochloa grass, which is a forage with low CP levels, no difference was observed between the methods ($P = 0.5510$). It can be concluded that there are significant differences between the Kjeldahl and Dumas methods, varying according to the feed, which shows the need for further investigations seeking specific correlations between the results of the methods for different feed classes.

Keywords: Dumas method, Kjeldahl method, ruminant nutrition.

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