C-043

Development of a calibration curve to estimate dairy cattle dietary particle size with NIRS

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The use of near infrared reflectance spectroscopy (NIRS) to predict the particle size distribution of total mixed rations (TMR) samples measured with the field equipment Penn State Particle Separator (PSPS) was studied. TMR were collected in 25 dairy cattle farms of Sardinia (Italy) at the beginning and at the end of the feed bunks, for a total of 118 diets and 236 samples. One aliquot of each sample was sieved to determine its particle size distribution by using PSPS. The other was scanned as fresh sample by NIRS. Calibrations were attempted from each spectral origin to predict particle size distribution for >19 mm, from 19 to 8 mm, from 8 to 1.18 mm and <1.18 mm. Validation was performed by using a cross validation of the samples. The PSPS showed the following particle size distribution: Upper fraction (>19.0 mm) SD 8.0%, range 1.3%-50.0% of initial weight; Middle fraction (from 19 to 8 mm) SD 7.3%, range 12.3%-56.5%; Lower fraction (from 8 to 1.18 mm) SD 4.8%, range 24.5%-48.7%; Bottom fraction (<1.18 mm) SD 3.8%, range 9.5%-28%. The standard error of the NIRS prediction (SEP) ranged from 2.310 for the Middle to 1.687 for the Bottom fraction. The SEP for the Upper and Lower fractions were, respectively, 2.219 and 2.133. The highest bias was observed for the Middle fraction (+0.094), whereas the smallest was for the Lower fraction (-0.032). The slope was slightly lower than 1 for the Upper, Middle and Bottom screens (0.989, 0.997 and 0.990, respectively), whereas it was slightly higher than 1 (1.002) for the Lower screen. The peNDF (% of DM) measured by the PSPS and that predicted by NIRS. NIRS also predicted with high accuracy and precision the peNDF (% of DM) measured by the PSPS (as fraction above 1.18 mm). The regression equation of measured on predicted peNDF was: $y = 1.025\ x - 0.70$, $R^2=0.95$, RSD = 0.760. In conclusion, NIRS can be used to accurately predict particle size distribution and peNDF of TMR samples.

C-044

Evaluation of gastric degradability of antigenic protein expressed in tobacco seeds

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Plants have been recognized as expression system for the production of edible vaccine because of the possibility of introducing antigenic proteins into their genoma. In livestock, transformed plants for the expression of immunogenic proteins, could be administered, orally, in feed to induce mucosal immune response in the gastrointestinal tract. Moreover, edible vaccines for veterinary use could reduce costs of traditional vaccines associated with the production, the cold storage, and parenteral administration. However the most important problem related to the oral delivery route is the potential for antigen degradation in the gastrointestinal tract. For these reasons the aim of this study was the evaluation of the effect of swine gastric fluid on VT2e-B antigenic protein, derived from a strain of Oedema disease *E. coli*, expressed in tobacco seeds by *Agroinfection*. Samples of transgenic tobacco seeds, both milled and whole, were incubated with porcine gastric fluid, at 38°C in Dubnoff Shaker for 1, 2 and 3 hours. After gastric fluid removal, by centrifugation and washing with PBS, samples were homogenized in the presence of protein extraction buffer. Western blot was performed on representative samples of extracted proteins, quantified by Bradford method, using rabbit polyclonal serum. The Vt2e-B specific signal was observed in all samples derived from transgenic tobacco seeds. Nevertheless, from 0 h to 3 h, a progressive reduction of intensity of signal was observed. No significant differences were detected on the reduction of signal intensity between samples derived from whole and milled tobacco seeds.

C-045

Effect of quebracho tannin on fatty acid profile in rumen solid associated bacteria on soya-bean and linseed oils supplemented diets. An *in vitro* study

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Tannins are phenolic compounds which interfere with the biohydrogenation of polyunsaturated fatty acids (PUFA). Aim of this trial was to study the effects of tanniferous extracts of quebracho on the biohydrogenation of linoleic (LA, C18:2 cis9 cis12) and α-linolenic (LNA, C18:3 cis9 cis12 cis15) acids, the most representative fatty acids of soya-bean and linseed oils, respectively. The feed samples used in this *in vitro* study were representative of: two basal diets practically free of tannins, composed of grass hay, soya-bean meal, barley meal, soya-bean or linseed oil (77/5.7/13.8/3.5, on dry matter) used as control (CSO and CLO, respectively); two other diets obtained from supplementation of CSO and CLO with