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Effects of cellulose, pectin and guar gum on plasma insulin and metabolites in resting dogs. By L. ISTASSE, V. DE HAAN, J. F. BECKERS, C. VAN EENAEME and J. M. BIENFAIT, *Veterinary Faculty, 45 rue des Vétérinaires, 1070 Bruxelles, Belgium*

Dietary fibre has been shown to influence transit time, digestibility and absorption of nutrients (de Haan *et al.* 1989). For these reasons, dietary fibre has been used as an aid to the dietary management of obese and diabetic subjects.

Four young adult beagles as outlined in the previous paper were used in a 4×4 Latin-square design and given the same diets as previously (de Haan *et al.* 1990).

Blood samples were taken before feeding and then 20, 40, 60, 90, 120, 180, 240, 300 and 360 min after feeding. Before feeding, mean insulin concentration was 13 μ U/ml, with no significant differences between treatments. Insulin concentration remained relatively low until 3 h after feeding and then increased to a plateau of about 30 μ U/ml in animals given the control and the guar gum-supplemented diets. The inclusion of pectin resulted in a peak which appeared earlier and reached a significantly ($P<0.05$) higher concentration (50 μ U/ml). When cellulose was added the insulin profile was intermediate between those of animals given the control and pectin-supplemented diets.

The average fasting plasma glucose concentration was 840 mg/l with no significant difference between treatments. The post-prandial glucose profiles were characterized by a decline just after feeding, followed 3 h later by an increase. There were no significant differences between treatments in the pattern of the curves although guar gum tended to induce lower glycaemia and pectin higher glycaemia.

Plasma α -amino-nitrogen concentration rose shortly after feeding, remained high over 1 h and then dropped to a plateau in the control group. The inclusion of dietary fibre reduced the post-prandial peak of free amino-N the reduction being significant ($P<0.01$ or 0.05) with guar gum. Plasma urea concentrations rose steadily to reach peak values 4 or 5 h after feeding. Guar gum significantly reduced the post-prandial peak of plasma urea at each sampling time ($P<0.05$ or 0.01).

Plasma triglyceride concentrations increased, with a slight delay, to a plateau. The height of the plateau tended to be lower when guar gum and cellulose were added to the diet. Plasma non-esterified fatty acid concentration decreased during the first hour after feeding and then rose to a peak. The overall pattern was similar with the different diets but significantly ($P<0.05$) lower concentrations were found with guar gum. The highest concentrations in plasma cholesterol were observed before feeding with the control diet and the lowest with the guar gum-supplemented diet. Plasma cholesterol concentration before feeding varied between treatment groups and no typical pattern changes were observed after feeding. The dogs fed on the guar gum-supplemented diet showed lower concentrations of cholesterol ($P<0.05$ or 0.10).

de Haan, V., Istasse, L. & Bienfait, J. M. (1989). *Annales de Médecine Vétérinaire* **133**, 115-121.

de Haan, V., Istasse, L., Jakovljevic, S., Dufasne, I. & Bienfait, J. M. (1990). *Proceedings of the Nutrition Society* **49**, 146A.