

Fermentation of fibers by cat fecal microflora: evaluation of six novel fibre sources, two non-digestible oligosaccharides and two gelling agents

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An *in vitro* investigation of the fermentation capacity of six novel dietary fibers, two non-digestible oligosaccharides (NDO) and two gelling agents by feline fecal microflora has identified fibers that are likely to be beneficial to colonic function and health in the cat.

Faeces from 14 healthy, adult, domestic short hair cats were collected and used as fresh triplicate inocula for an *in vitro* fermentation system (1). Cats were fed commercial pet foods for two months prior to start of the study and had access to fresh water at all times. Housing conditions were within the requirements of the Animals (Scientific Procedures) Act 1986.

Fibres differed significantly in the rate, extent and pattern of fermentability between substrates. The highest concentration of total SCFA, acetate and propionate were generated from guar gum, however, no significant fermentation of carboxymethyl cellulose, the other gelling agent, was observed. Desert flower and the two NDO (inulin and fructo-oligosaccharide (FOS)) were also rapidly fermented but yielded more moderate levels of SCFA and acetate. Inulin and desert flower were the only substrates to significantly increase butyrate production and, in both cases, there was a prolonged component to the fermentation pattern. Concentrations of SCFA and butyrate continued to rise through to 24 h. Ground fucus, green pea, green tea and agave were fermented, yielding significant, but relatively low concentrations of SCFA after incubation for 24 h.

The concentration of branched chain fatty acids and ammonia in the inocula were reduced by FOS, inulin, guar gum and yucca in the first 6 h of incubation. Desert flower, agave, green pea and green tea also lowered ammonia concentrations.

The production of gas was significantly increased in the presence of inulin, desert flower and FOS after 6 h and these three substrates plus guar gum after 24 h fermentation.

These data suggest that desert flower and inulin, which were moderately fermentable and yielded prodigious amounts of butyrate, have the potential to improve colonic function and health in cats. Substrates that suppressed ammonia concentrations, and FOS in particular, may also be beneficial, especially in modifying ammonia metabolism in disease states such as hepatic encephalopathy.

1. Markwell PJ, Giffard CJ. Dietary fibre in dogs and cats – application in health and disease. Proceedings of the Nutrition Society of Australia 2000; 24: 43–50.