

In Vitro Fermentation of Dried Food Residues Using Canine Fecal Inoculum

¹Nadine Paßlack, ²Thrassyvoulos Manios, ³Katia Lasaridi and ⁴Jürgen Zentek

¹*Institute of Animal Nutrition, Department of Veterinary Medicine, Freie Universität Berlin, Berlin, Germany (Current address: Small Animal Clinic, Faculty of Veterinary Medicine, Justus-Liebig-University Giessen, Giessen, Germany)*

²*Department of Agriculture, Hellenic Mediterranean University, Heraklion, Crete, Greece*

³*Department of Geography, Harokopio University, Athens, Greece*

⁴*Institute of Animal Nutrition, Department of Veterinary Medicine, Freie Universität Berlin, Berlin, Germany*

Abstract

The project "Food for Feed" aims to investigate the potential use of dried food residues (DFR) for animal nutrition. Depending on the composition, DFR might provide varying amounts of fermentable substrates, which could be relevant for the metabolic activity of the intestinal microbiota. In the present study, an *in vitro* model (Vierbaum et al., 2019; slightly modified) was used for the microbial fermentation of DFR. Two different batches of DFR (batch 1: sterilized and non-sterilized DFR including meat (DFR_{ms}, DFR_m); batch 2: sterilized DFR without meat (DFR_{wms})) as well as different non-digestible carbohydrate sources (beet pulp, wheat bran, inulin, carrot pomace, brewer's spent grains, cellulose and lignocellulose) were incubated with fresh dog feces for 24 hours, and the concentrations of microbial metabolites were measured afterwards. Except for inulin, cellulose and lignocellulose, all substrates were incubated as raw and enzymatically pre-treated substrates. Compared to the other substrates, the DFR were fermented to a similar or partly higher extent, as indicated by high concentrations of bacterial metabolites in the inoculum. In particular, the raw DFR were highly fermentable, although the effects were less pronounced for DFR_{wms}. When the pre-treated DFR were microbially fermented, effects were more clear for the DFR_{ms} and DFR_{wms}. Based on the results when incubating raw and enzymatically pre-treated food residues, DFR might contain both digestible and microbially fermentable substrates. For the potential future use as a component for petfood, collection and processing of food residues should be standardized in order to reduce variability in nutrient composition and effects on the intestinal microbiota.

Keywords: dried food residues, fermentation, dogs

References

Vierbaum et al. (2019). Arch Anim Nutr 73: 399-413.

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