



Effects of isoquinoline alkaloids from *Macleaya cordata* on physiological, immunological and inflammatory parameters in dogs

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Previous studies with farm animals have shown positive effects on feed intake, growth and performance after feeding a standardized blend of plant-derived isoquinoline alkaloids (IQs, Sangrovit® Extra) due to its anti-inflammatory properties [1, 2]. Immune modulating and anti-inflammatory effects might also be of interest for dog nutrition. This study should test effects on nutrient digestion and blood parameters in healthy, adult dogs. The hypothesis was that the product would cause effects on gut physiology and immune system.

Methods

10 healthy beagles, 1-5 years old and of mixed sex were tested in two groups in a cross-over design. The experimental (EXP) and the control (CON) group received the same feed with the main ingredients corn, wheat, greaves meal and poultry fat. Diet EXP contained 1.2 g IQs /kg feed, the experiment lasted 2x3 weeks, including blood sampling, and collection of faeces in the last week. Measurements included standard blood counts, phenotyping of lymphocytes (FACS), determination of serum immunoglobulins, serum biochemistry, and blood amino acids. Total apparent nutrient digestibility was measured by titanium dioxide as indigestible marker, faecal lactic acid and short chain fatty acid concentrations were determined by HPLC and GC. Analysis of variance was performed with SPSS 18 ($p < 0.05$).

Results

Feed intake was not affected by the addition of the test product. Differential blood count, as well as immunological parameters (IgA serum concentration and lymphocyte phenotyping) did not show differences during the dietary periods. Numerically higher serum concentrations of tryptophan, leucine, isoleucine, valine and methionine were observed in the EXP group ($p > 0.05$). Analysis of microbial metabolites in faeces showed a higher molar percentage of acetic acid in EXP (57.1 ± 4.5) than in CON (52.3 ± 5.2) ($p = 0.042$). Total lactate, D-lactate and L-lactate in the faeces were numerically higher in EXP. Ammonium concentration in faeces and apparent digestibility of crude protein (CON 72.2 ± 3.8 vs. EXP 74.0 ± 2.3 %) and other nutrients were not affected by the addition of IQs. Neither fresh nor dry weight, nor consistency of faeces showed differences between groups.

Conclusions

Neither immunological blood measurements, nor nutrient digestion showed significant differences between both treatments. Differences of faecal short chain fatty acids might indicate an impact on the intestinal microbiota and its metabolic activity by IQs. The results of this study did not indicate any adverse effects on healthy adult dogs.

References

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