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Poster Number: 03*

In vitro effects of seaweed extracts on intestinal commensals and pathogens of weaned piglets

Abstract

While the inclusion of certain seaweed extracts in weaner piglet diets leads to a beneficial gut microbial profile, the mode of action is not known. The aim of this study was to evaluate the prebiotic and antimicrobial potential of *Laminaria digitata* and *Ascophylum nodosum* extracts *in vitro*. Both extracts were two-fold diluted from 2 mg/ml to 0.25 mg/ml. The following strains were used at 10^6 - 10^7 colony-forming unit(CFU)/ml concentrations: *Lactobacillus plantarum*, *L. reuteri*, *Bifidobacterium thermophilum*, Enterotoxigenic *Escherichia coli* O149 and *Salmonella enterica* ser Typhimurium PT12. Each concentration of each extract and controls (0 mg/ml) were incubated for 18 h at 37 °C aerobically or anaerobically (*B. thermophilum*). Final bacterial concentrations were determined by spread plating. All experiments were carried out with technical replicates on three independent occasions. All data were logarithmically transformed and analysed using the PROC GLM (SAS 9.4). The *L. digitata* extract increased *B. thermophilum* 0.7 LogCFU/ml at 0.25 mg/ml ($P < 0.05$) and ≥ 1 LogCFU/ml from 0.5-2 mg/ml ($P < 0.05$), with no effect on lactobacilli. The *A. nodosum* extract increased *B. thermophilum* up to 0.9 LogCFU/ml at all concentrations tested ($P < 0.05$). Additionally, a 0.2 LogCFU/ml increase of *L. reuteri* and *L. plantarum* was observed at 2 mg/ml ($P < 0.05$) and 1mg/ml ($P < 0.05$), respectively. Both extracts displayed no antimicrobial activity against ETEC or *S. Typhimurium*. In conclusion, both extracts exhibited bifidogenic activity *in vitro*, with an additional slight increase of *Lactobacillus spp.* for *A. nodosum*, indicating a prebiotic potential.

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*Poster presented during flash poster presentation