

Effect of lactitol, lactic acid bacteria, or their combinations (synbiotic) on intestinal proteolysis in vitro, and on feed efficiency in weaned pigs

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The purpose of the present study was to evaluate in vitro the intestinal microflora response to lactitol (LCT) as a non-digestible oligosaccharide (NDO) and/or to two swine lactic acid bacteria (LAB) isolates (*Lactobacillus brevis* and *L. salivarius*), and to select the most effective treatment to modulate intestinal fermentation in a subsequent growth study with weaning piglets. During a 24-h in vitro cecal fermentation, LCT alone or in combination with either bacteria isolate stimulated gas production rate ($P < 0.05$), while LAB isolates alone did not ($P > 0.05$). Both combinations of isolates with LCT reduced ammonia levels after 24 h by 26 and 31%, respectively ($P < 0.05$), while LCT alone was effective in keeping ammonia lower than the control only in the first 8 h ($P < 0.05$). All treatments increased ($P < 0.05$) the production of total volatile fatty acids. The most effective combination (LCT + *L. salivarius*) in vitro was selected to be used in a 49-d feeding experiment with weaned piglets (32 animals per group, eight piglets per cage, four cages per treatment). Feed efficiency was improved (13%) by LCT + *L. salivarius* ($P < 0.05$), while average daily gain and feed consumption were not affected ($P > 0.05$). These data substantiated the positive synergistic effect of the combination of an NDO with a LAB isolate as compared with the use of individual components in modulating the cecal microflora under in vitro conditions. This study showed that such combination may positively influence feed efficiency when fed to pigs.

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