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The effects of lactose inclusion and seaweed extract derived from Laminaria spp. on performance, digestibility of diet components and microbial populations in newly weaned pigs.

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Abstract

A 2 × 2 factorial experiment was conducted to investigate the interactions between two different lactose (L) levels (150 g/kg vs. 250 g/kg) and seaweed extract (SWE): (0 g/kg vs. 2.8 g/kg; containing laminarin and fucoidan) derived from Laminaria spp. on growth performance, coefficient of total tract apparent digestibility (CTTAD) and faecal microbial populations in the weanling pig. Two hundred and forty pigs (120 male and 120 female) were selected after weaning (24 days of age, 7.6 ± 0.9 kg live weight) and blocked on the basis of live weight and within each block assigned to one of the four dietary treatments. The pigs were offered the following diets on an ad libitum basis for 25 days: (T1) 150 g L/kg; (T2) 150 g L/kg + SWE; (T3) 250 g L/kg; (T4) 250 g L/kg + SWE. Pigs offered diets supplemented with SWE had a higher average daily gain (ADG): (322 g vs. 281 g, s.e. ± 9.0; $P<0.01$) and gain to feed (G:F) ratio (669 g/kg vs. 611 g/kg, s.e. ± 19.0; $P<0.05$) between days (d) 0–25 compared with pigs offered non-SWE diets. Pigs offered high L diets had a higher ADG (319 g vs. 283 g, s.e. ± 9.0; $P<0.05$) and average daily feed intake (ADFI) between d 0–25 (480 g vs. 447 g, s.e. ± 11.0; $P<0.05$) compared with pigs offered the low L diets. The inclusion of SWE increased ($P<0.001$) the CTTAD of nitrogen (N) and gross energy (GE) and reduced the counts of Escherichia coli in the faeces compared with non-SWE diets. Pigs fed the high L diets had increased CTTAD of GE ($P<0.001$) and N ($P<0.05$) and decreased the counts of E. coli in the faeces compared with pigs offered low L diets. Summarising, the inclusion of either a high dietary concentration of L or a laminarin–fucoidan extract increased the CTTAD of diet components, decreased the counts of E. coli in the faeces and improved performance of pigs after weaning in the current study.

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