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## **The effect of dietary Laminaria-derived laminarin and fucoidan on nutrient digestibility, nitrogen utilisation, intestinal microflora and volatile fatty acid concentration in pigs.**

**Lynch MB<sup>1</sup>, T. Sweeney<sup>1</sup>, J.J. Callan<sup>1</sup>, J.T. O'Sullivan<sup>2</sup>, J.V. O'Doherty<sup>1</sup>. 2010, 90: 3, 430-437.**

<sup>1</sup>UCD School of Agriculture, Food Science and Veterinary Medicine, Lyons Research Farm, University College Dublin, Newcastle, Co. Dublin, Ireland.

<sup>2</sup>BioAtlantis Ltd, Kerry Technology Park, Tralee, Ireland.

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## Abstract

**BACKGROUND:** In experiment 1, 30 boars were assigned to one of five treatments (n = 6): T1, 0 g kg<sup>-1</sup> seaweed extract (SWE); T2, 0.7 g kg<sup>-1</sup> SWE; T3, 1.4 g kg<sup>-1</sup> SWE; T4, 2.8 g kg<sup>-1</sup> SWE and T5, 5.6 g kg<sup>-1</sup> SWE. The extract contained laminarin and fucoidan only and was extracted from *Laminaria* spp. In experiment 2, 28 boars were assigned, in a 2 × 2 factorial to one of four treatments (n = 7): T1, control; T2, control plus 300 mg laminarin; T3, control plus 240 mg fucoidan; T4, control plus 300 mg laminarin and 240 mg fucoidan kg<sup>-1</sup> diet. **RESULTS:** In experiment 1 there was a response to SWE on colonic *Bifidobacterium* spp. (P < 0.01 quadratic), *Enterobacterium* spp. (quadratic P < 0.05) and on caecal *Enterobacterium* spp. (quadratic P < 0.05). In experiment 2 there was an interaction (P < 0.05) between laminarin and fucoidan supplementation on *Enterobacterium* spp. in the proximal and distal colon. Pigs offered laminarin had reduced *Enterobacterium* spp. compared with pigs offered the control diet. However, the combination of laminarin and fucoidan had increased *Enterobacterium* spp. compared with alone. Pigs offered diets containing fucoidan had increased *Lactobacilli* spp. in the proximal colon (P < 0.05) and distal colon (P < 0.001) compared with non-fucoidan diets. **CONCLUSION:** Overall, the reductions in intestinal *Enterobacterium* spp. and increases in *Lactobacilli* spp. obtained suggest that laminarin and fucoidan may provide a dietary means to improve gut health in pigs. Copyright © 2009 Society of Chemical Industry

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