

# British Journal of Nutrition

Copyright © The Authors 2010.

## **Effect of dietary seaweed extracts and fish oil supplementation in sows on performance, intestinal microflora, intestinal morphology, volatile fatty acid concentrations and immune status of weaned pigs.**

**Leonard S. G.<sup>1,2</sup>, Sweeney T.<sup>1</sup>, Bahar B.<sup>1</sup>, Lynch B. P.<sup>2</sup>. and O'Doherty J. V.<sup>1</sup> 2011, 105: 549-560.**

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

<sup>2</sup>Pig Production Department, Teagasc, Moorepark Research Centre, County Cork, Republic of Ireland.

[http://journals.cambridge.org/abstract\\_S0007114510003739](http://journals.cambridge.org/abstract_S0007114510003739)

doi:10.1017/S0007114510003739

PMID: 20875191 [PubMed - indexed for MEDLINE]

## Abstract

A 2 × 2 factorial experiment (ten sows per treatment) was conducted to investigate the effect of maternal dietary supplementation with a seaweed extract (SWE; 0 v. 10.0 g/d) and fish oil (FO; 0 v. 100 g/d) inclusion from day 109 of gestation until weaning (day 26) on pig performance post-weaning (PW) and intestinal morphology, selected microflora and immune status of pigs 9 d PW. The SWE contained laminarin (10 %), fucoidan (8 %) and ash (82 %) and the FO contained 40 % EPA and 25 % DHA. Pigs weaned from SWE-supplemented sows had higher daily gain ( $P = 0.063$ ) between days 0 and 21 PW and pigs weaned from FO-supplemented sows had higher daily gain ( $P < 0.05$ ) and gain to feed ratio ( $P < 0.01$ ) between days 7 and 14 PW. There was an interaction between maternal SWE and FO supplementation on caecal *Escherichia coli* numbers ( $P < 0.05$ ) and the villous height to crypt depth ratio in the ileum ( $P < 0.01$ ) and jejunum ( $P < 0.05$ ) in pigs 9 d PW. Pigs weaned from SWE-supplemented sows had lower caecal *E. coli* and a higher villous height to crypt depth ratio in the ileum and jejunum compared with non-SWE-supplemented sows ( $P < 0.05$ ). There was no effect of SWE on *E. coli* numbers and villous height to crypt depth ratio with FO inclusion. Maternal FO supplementation induced an increase in colonic mRNA abundance of IL-1 $\alpha$  and IL-6 ( $P < 0.05$ ), while SWE supplementation induced an increase in ileal TNF- $\alpha$  ( $P < 0.01$ ) and colonic TFF3 mRNA expression ( $P < 0.05$ ). In conclusion, these results demonstrate that SWE and FO supplementation to the maternal diet influenced the gastrointestinal environment and performance of the weaned pig. Copyright © The Authors 2010.

This paper is published by *Cambridge University Press* and appears in the *British Journal of Nutrition*. Full text can be obtained using the link below:

[http://journals.cambridge.org/abstract\\_S0007114510003739](http://journals.cambridge.org/abstract_S0007114510003739)

doi:10.1017/S0007114510003739

PMID: 20875191 [PubMed - indexed for MEDLINE]