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TITLE

DIETARY ALGAL β -(1,3)-GLUCAN, MODULATING INFLAMMATION AND CELL-MEDIATED IMMUNE RESPONSES IN PIGLETS THROUGH THEIR MOTHER SOW

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CONTENT

Weaning is associated with stress, digestive disorders and growth performance depression, consequently antibiotics and minerals (ZnO) are used. Due to an increasing regulatory and consumer demand to reduce usage of those substances, because of concerns on antibiotic resistance and environmental accumulation, alternatives such as natural immune modulators are gaining interest. β -glucans have been demonstrated to modulate immune responses and as such increase resistance to diseases. A new source of β -(1,3)-glucan is the alga *Euglena gracilis*. The aim of the current research was to investigate whether supplementing sows and/or their piglets with algal derived β -(1,3)-glucan had a positive effect on inflammation and cell-mediated immune responses in piglets. This trial was performed at the research and educational institute for agriculture in Belgium. Six sows were supplemented with algal β -(1,3)-glucan (Aleta, Kemin) at 1g/sow/day 3 weeks before and 26 days into lactation. The negative control group was composed of 6 non-supplemented sows. The piglets of supplemented and non-supplemented mother sows were divided into a supplemented (200 g/T algal β -(1,3)-glucan) and a non-supplemented piglet group, resulting in 4 groups with 30 piglets/group, 10 animals per pen. Blood was taken from the piglets at 14 and 42 days after weaning and analyzed for T-lymphocyte counts (analyzing cell-mediated immunity), using flow cytometry, and haptoglobin (a biomarker for inflammation), using a colorimetric assay kit. β -(1,3)-glucan supplementation did significantly decrease haptoglobin level in piglets originating from supplemented mother sows, 42 days after weaning. Additionally, a significantly decreased population of CD4-CD8- T-lymphocytes (T-cell progenitors) and significantly increased populations of CD4+CD8lo (memory T-cells) and CD4-CD8+ (cytotoxic T cells) T-lymphocytes in piglets originating from supplemented mother sows were observed, indicating an increased lymphocyte proliferation and activity. These results show that supplementing sows and their piglets with β -(1,3)-glucan results in an alleviation of inflammation and an enhancement of cell-mediated immune responses.