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TITLE

EFFECTS OF OIL ADMINISTRATION ON ENDOTOXIN TRANSLOCATION IN WEANING PIGLETS

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CONTENT

In healthy pigs, the gut barrier prevents endotoxins reaching the blood flow. However, specific types of oil are described to promote the absorption of endotoxins, also known as lipopolysaccharides (LPS), from the gut. The aim of the study was to assess if administration of coconut oil alone or in combination with LPS can induce an increased endotoxin translocation to the blood.

Thirty-six weaning piglets (~7 kg) were allocated to metabolic cages. Animals were assigned to three different groups: oral administration of 0.9% saline (control), coconut oil (1 mL/kg b.w.) or coconut oil (1 mL/kg b.w.) combined with LPS (10 mg/kg b.w.). Animals were sampled at 4 or 8 hours after administration. Endotoxin activity (LAL assay), endotoxin concentration (HPLC-MS/MS) and acute phase proteins CRP, haptoglobin, SAA and pig-Map (ELISA) were assessed in the blood.

After 4 hours of administration, serum endotoxin concentration increased by 4-fold in the oil + LPS group compared to the control group ($P < 0.05$). In addition, the blood endotoxin concentration was increased by two-fold in the oil group ($P < 0.05$). The oil + LPS group showed a trend to increase the endotoxin concentration by two-fold ($P < 0.1$). Haptoglobin and CRP concentrations were not affected by any treatment. However, the oil alone administration increased the pig-MAP concentration ($P < 0.05$), and showed a trend to increase the SAA concentration by 3-fold ($P < 0.1$). The oil + LPS administration significantly increased the SAA concentration by 2.5 fold ($P < 0.05$). After 8 hours, no effect of any treatment was observed.

Results confirm that coconut oil alone and in combination with LPS had an effect on endotoxin translocation to the blood as well as on the acute phase response. However, the exact mechanism needs to be further investigated.