



## HERD HEALTH MANAGEMENT & ECONOMY

HHM-066

### MODULATION OF INFLAMMATORY MARKERS BY A PHYTOGENIC FEED ADDITIVE

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#### Introduction

The growth-promoting effect of certain antibiotics may be mediated by an anti-inflammatory mode of action. Numerous plants and phytochemicals are known for their anti-inflammatory activities and might therefore be utilised as growth promoters without having the undesirable side-effects of antibiotics. The phytogenic (plant-derived) feed additive (PFA) Digestarom® DC (BIOMIN Holding GmbH, Austria) has demonstrated a beneficial influence on piglet production parameters. In order to identify potential anti-inflammatory effects, the product and its components have been studied *in vitro* in cell-based assays and *in vivo* in a metabolic study.

#### Material and Methods

The PFA and its components were tested in a reporter gene assay for trans-activation of nuclear factor NFκB using TNF-α-stimulated porcine intestinal epithelial cells (IPEC-J2). Subsequently, the influence on inflammatory gene expression was assessed via RT-qPCR and release of the inflammatory cytokine IL-6 was analysed via ELISA. Furthermore, a metabolic study with 24 weaned piglets was conducted for 21 days. Piglets were allocated to one of two groups, which received a basal diet either without additives (control) or PFA (150 g/t feed). Acute phase proteins (APP) from blood samples were analysed as markers of inflammation.

#### Results

The PFA inhibited trans-activation of NFκB *in vitro* (-20%; p<0.05) and reduced the expression of inflammatory genes (IL-6, CXCL8, CCL2; p<0.05) and the release of the cytokine IL-6 (-36%; p<0.05). Of the tested product components, oregano oil displayed the strongest activity. The feeding trial revealed significant differences in the APP Pig-MAP, which was lower in the group fed the PFA (-13%, p<0.05).

#### Discussion and Conclusion

The results indicate a possible anti-inflammatory mode of action of the PFA and illustrate the contribution of its components. Additional feeding trials in larger scale with monitoring of inflammatory markers seem promising to correlate these with production performance parameters.