

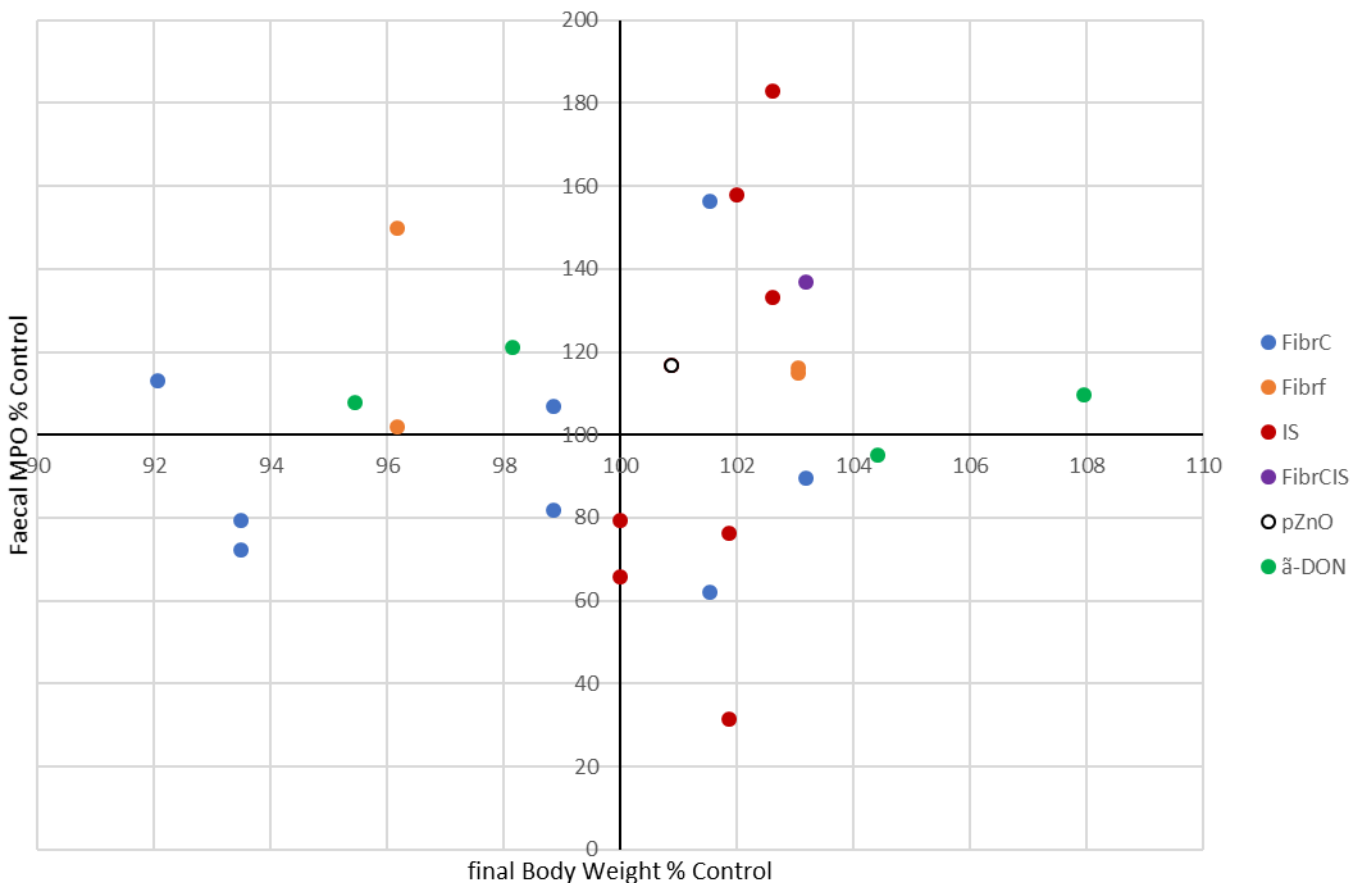
Faecal biomarker of inflammation (MPO) combined to growth for selection of alternatives to in-feed therapeutics

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Background and objectives: Many alternatives to in-feed therapeutics (AIFT) are now documented for their effects on gut integrity, microbiota and immune system modulation. However, evaluating complete solution (feedstuffs, processing and added functional ingredients) is recommended. In that aim, measurement of growth response and, to assess gut health, faecal myeloperoxidase (MPO) were used to evaluate response to AIFT.

Material and methods: 7 feeding trials were conducted with weaned piglets (21 d old) at Mixscience Research Center (St Symphorien, Sarthe, France). Pre-starter diet was fed during 21 days post-weaning, followed by starter diet until the end of the nursery period (69 d of age). Nutrient levels (NE, digestible amino acids, digestible P) remained the same across trials, except when fibre sources were studied (diluting the recipe). In total, 27 diets were evaluated, corresponding to 25 alternative ingredients or combinations: 8 coarse fibre and 4 fine fibre sources; 7 immuno-stimulating (IS) premixes; 1 combined fibre and IS; protected zinc oxide; 4 anti-mycotoxin solutions. In each trial, one replicate for weight corresponded to 6 to 12 pens of 5 piglets, when MPO was determined on 4 to 10 piglets per treatment. Faeces were taken, processed and analyzed for MPO according to the method described by Lemoine *et al.* (2018). Each trial was analyzed with ANOVA models adapted to relevant design (randomized, factorial or split plot) using R-project packages. In order to merge the results, final body weight and faecal MPO were expressed in % of the control (within trial).

Results: Response of growth and faecal MPO to the different feeding treatments is summarized in the graph below. Out of the 25 AIFT tested, 13 improved (1 to 8%), 8 depressed (-1 to -8%), and 2 did not affect growth; 9 decreased (-5 to -49%) but 15 increased (7 to 58%) inflammation biomarker.



Conclusion: Classification of AIFT according to their effect on growth and inflammation biomarker revealed solutions with higher chance of success and suggested to revise the mode of action of selected ingredients and dose.

References:

Lemoine N., Fautrel A. Técher M., Guillou D., 2018. Validation of a quantitative biomarker of gut inflammation in weaned piglets. 14th International Symp. Digest. Physiol. Pigs, Brisbane, Australia.