

Effective fiber for swine ... a practical approach in formulation diets for swine

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Fiber can be defined as carbohydrates or lignin in plant materials that are indigestible by endogenous animal enzymes and have physiological effects on animal nutrition. Appreciation of the nutritional and antinutritional function of dietary fiber (DF) on pigs has been reached dialectically with the growing understanding of its physical and chemical properties. The regulation of intestinal microbiota has been the focus of research on the nutritional value of fibre in recent years, which is not limited to the impact on intestinal health, but also covers a wide range of interventions on pig immunity and energy metabolism. Nevertheless, the amplitude of the effects of fibre depends on many factors related to the fibre per sé (incorporation rate, fibre source and physicochemical properties), to environmental conditions (feeding and housing systems) and individual animal factors (parity).

The requirement for fiber in the different performance phases (rearing gilts, gestation, farrowing, lactation) of sows are totally different. Gestation feeding in group housing systems expect a sufficient satiety, BCS-regulation, energy-dilution. On the other hand, at farrowing the sows need a fibre fraction which improves the intestinal peristalsis and the transit or passage time as well as cause to no constipation and a good fecal consistency. Further in the lactation period the fiber of the sow feed should lead to less volume in the diets, high energy concentration and support intestinal health due to high levels of hindgut fermentation.

Such different requirements for fiber could not be represented by just one analytical fiber parameter like crude fiber. Fiber may be analyzed using different methods and procedures. The crude fiber method procedure is very robust and repeatable, but this analyze method has to be expanded to include values for soluble and in-soluble fiber, physicochemical properties like fermentability, water holding capacity, water binding capacity, the swelling capacity as well as extract viscosity, to meet the feeding requirements of sows and pigs in general.

Overall, future research needs to focus more on the combined effects of SDF and IDF, processing methods, and timing of addition to improve the nutritional and feeding value of fibre sources, and further explore the physical- and physiological functions and regulatory mechanisms of fiber in pigs.