

Pigs digest fiber efficiently even at high inclusion rates, study finds

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The use of high-fiber feed ingredients in swine diets is on the rise due to their wide availability and relatively low cost. However, because pigs lack enzymes needed to digest dietary fiber, the energy available to pigs from these ingredients is less than lower-fiber ingredients. Researchers at the University of Illinois are helping to determine the contribution that high-fiber feed ingredients make to the energy content of swine diets.

Hans Stein, professor in the Department of Animal Sciences at U of I, hypothesized that different inclusion rates of high-fiber ingredients in diets fed to [pigs](#) might result in different values for digestible and metabolizable [energy](#).

"Energy is obtained from dietary fiber via hindgut fermentation, and there may be a saturation point in the fermentation capacity in the hindgut of growing pigs," he says. "Increasing [dietary fiber](#) also makes feed move through the digestive tract more quickly, so there's less time for it to ferment."

Stein and fellow researchers, Diego Navarro of U of I and Erik Bruininx and Lineke de Jong of Agrifirm Innovation Center, tested ten diets fed to growing pigs. The diets were formulated by adding either 15 or 30 percent canola meal, corn germ meal, sugar beet pulp, or wheat middlings to a basal [diet](#) consisting of corn, soybean meal, and cornstarch.

As expected, apparent ileal and total tract digestibility of gross energy

and the concentration of digestible and metabolizable energy decreased as the inclusion of high-fiber ingredients in the diets increased.

The amount of time it took digesta to pass through the ileum didn't differ among pigs fed the different diets. However, the amount of time it took digesta to pass through the total tract decreased with increased inclusion of any of the high-fiber ingredients. However, the apparent hindgut disappearance of energy increased with increasing inclusion of high-fiber ingredients, indicating that the proportion of energy derived from hindgut fermentation is greater when diets contain more fiber.

The inclusion rate of any of the high-fiber ingredients did not affect the digestibility of energy or the concentration of digestible and metabolizable energy derived from the nutrients themselves. In other words, each ingredient was digested as efficiently when it was included at 30 percent as it was when it was included at 15 percent.

"Based on these results, we can say that the ability of pigs to ferment fiber in the hindgut is not affected by inclusion of high fiber ingredients up to 30 percent," Stein says. "The decrease in energy utilization when high fiber ingredients are fed is mostly likely due to reduction in digestibility of other nutrients due to faster passage through the digestive tract."

The paper, "The contribution of digestible and metabolizable energy from high-fiber dietary ingredients is not affected by inclusion rate in mixed diets fed to growing pigs," is published in the *Journal of Animal Science*.

More information: D M D L Navarro et al, The contribution of digestible and metabolizable energy from high-fiber dietary ingredients is not affected by inclusion rate in mixed diets fed to growing pigs, *Journal of Animal Science* (2018). [DOI: 10.1093/jas/sky090](https://doi.org/10.1093/jas/sky090)

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