Digestibility of grain milling and oilseed co-products determined in young pigs

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Co-products from the grain milling and oilseed industries are sometimes included in diets for pigs, but limited data exist on the digestibility of protein in these ingredients when fed to younger pigs. Research at the

University of Illinois is giving producers more information about the feeding value of grain and oilseed co-products fed to young growing pigs.

A team led by Hans H. Stein, professor in the Department of Animal Sciences at U of I, determined the standardized ileal digestibility (SID) of crude protein and amino acids in brewers rice, full-fat rice bran (FFRB), defatted rice bran (DFRB), peanut meal, sesame meal, rapeseed meal, rapeseed expellers, soybean expellers, cassava meal, and bakery meal fed to pigs starting at 14 kilograms.

The results, published in the *Journal of Animal Science*, indicated that the SID of crude protein and amino acids was greatest in brewers rice (with 93.7 percent crude protein digestibility) and sesame meal (88.5 percent) and lowest in cassava meal (30.2 percent).

The SID of crude protein and most amino acids was equivalent for rapeseed meal, rapeseed expellers, and soybean expellers; SID of crude protein ranged from 78 to 82 percent in the three ingredients. The SID of arginine, isoleucine, leucine, lysine, and methionine was greater in full-fat rice bran compared with defatted rice bran, but the SID of crude protein and other amino acids did not differ between the two rice co-products.

However, Stein points out that digestibility is only part of the picture. "To determine how much digestible protein was available to the pigs from each ingredient, we also had to take into account the total protein concentrations in each one."

When adjusted for the total amount of protein and amino acids in each ingredient, the researchers found that sesame meal contained the greatest concentration of SID crude protein (482.32 g/kg DM) and most amino acids. Peanut meal contained 452.38 g/kg digestible crude protein,

followed by soybean expellers (351.33), rapeseed meal (286.64), rapeseed expellers (262.74), defatted rice bran (119.50), full-fat rice bran 112.19), bakery meal (76.63), brewers rice (73.87), and cassava meal (6.93).

However, due to the relatively low digestibility of lysine in sesame meal and peanut meal, soybean expellers, rapeseed meal, and rapeseed expellers contained more digestible lysine.

"Based on these results, we conclude that sesame meal, peanut meal, rapeseed meal, rapeseed expellers, and soybean expellers are excellent sources of digestible protein and amino acids. The last three are especially good sources of lysine," Stein says. "At the other end of the spectrum, brewers rice, bakery meal, and cassava meal contain little digestible protein and amino acids, so they're mainly a source of energy."

The paper, "Ileal digestibility of amino acids in selected feed ingredients fed to young growing pigs," is published in the *Journal of Animal Science*

More information: G A Casas et al. Ileal digestibility of amino acids in selected feed ingredients fed to young growing pigs1, *Journal of Animal Science* (2018). DOI: 10.1093/jas/sky114

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