Meeting pigs' phosphorous requirements with fermented soybean meal

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(Phys.org)—Fermented soybean meal (FSBM), considered a promising substitute for fish meal in weanling pig diets because of its protein content, lower cost, and lack of anti-nutritional factors, may have an additional advantage. University of Illinois researchers recently found that pigs digest the phosphorous in FSBM better than the phosphorus in conventional soybean meal.

"Most of the P in soybean meal is bound to phytate, so it's not available to pigs," explained animal sciences professor Hans Stein.

Previous research by Stein's group found that pigs digest the phosphorous in fermented corn more easily than that in non-fermented corn. "Fermentation releases phosphorus from the phytate molecule," Stein said.

In this study, Stein and his team looked at whether FSBM offered the same advantage. They observed that the standardized, total-tract digestibility of phosphorus in FSBM is 65.5 percent, compared with 46.1 percent in conventional soybean meal. When the enzyme phytase was added to the diets, the digestibility of phosphorus in FSBM increased slightly to 71.9 percent, whereas phosphorus digestibility in conventional soybean meal increased to 71.4 percent.

"In conventional soybean meal, the majority of the phosphorus was bound in phytate, but the phytase enzyme released much of the phytate-bound phosphorus," Stein explained. "That is why the digestibility increased so much when we added phytase to conventional soybean meal. In FSBM, fermentation had already released much of the phosphorus from phytate, so adding phytase did not improve digestibility very much."

These results show that fermentation is almost as effective as the enzyme phytase at releasing phosphorus. Producers can save money on phosphorus by using fermented soybean meal.

"If swine producers use fermented soybean meal without phytase, they can use a greater digestibility value for phosphorus than if they use conventional soybean meal. Therefore, they need less supplemental phosphorus from other sources in the diets to meet the pig's requirements," Stein said.

The study was published in a recent issue of the *Journal of Animal Science* and was co-authored with doctoral candidate Oscar Rojas.

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