

# Copper hydroxychloride in diets fed to weanling pigs improves performance and health

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Copper is an essential element in diets for pigs, and it can be provided in a number of different forms. Copper hydroxychloride is less likely to react with other vitamins and minerals in a premix than the more commonly used copper sulfate, but research on its effects when fed to pigs is limited. Results of recent research at the University of Illinois indicate that including copper hydroxychloride in diets fed to weanling pigs improves growth performance and reduces diarrhea.

Hans H. Stein, professor in the Department of Animal Sciences and the Division of Nutritional Sciences at U of I, conducted three experiments, along with Ph. D. student Charmaine Espinosa and Scott Fry and James Usry of Micronutrients USA LLC. The [copper](#) hydroxychloride product tested in the experiments was Micronutrients' IntelliBond C. The team published their findings in a recent issue of the *Journal of Animal Science*.

In the first experiment, they compared weanling [pigs](#) fed diets containing 150 mg/kg copper in the form of copper hydroxychloride with pigs fed [control](#) diets containing only enough copper to meet dietary requirements. The pigs in the copper hydroxychloride group had a greater final body weight, average daily feed intake, and average daily gain over the 28-day experimental period than the control pigs. Pigs fed copper hydroxychloride also had less frequent and less severe diarrhea than control pigs.

Another experiment confirmed the results of the first. Pigs were fed a control diet as in the first experiment, or a diet containing 100 or 200 mg/kg copper hydroxychloride. Pigs fed either of the copper hydroxychloride diets had greater final body weight and less severe diarrhea compared with pigs fed the control diet.

"We know that supplementing copper above their nutritional requirement improves growth performance, but it's not clear why," says Stein. "Our hypothesis was that the improvement in growth performance might be due to greater digestibility of gross energy and fat."

Stein's team fed the control [diet](#) and the 100 or 200 mg/kg copper hydroxychloride diets to weanling pigs for 28 days, and calculated the digestibility of gross energy, ash, and fat. They observed no difference in energy or nutrient digestibility between pigs fed diets containing copper hydroxychloride and pigs fed the [control diet](#).

The results didn't bear out their hypothesis, says Stein, adding that further research is needed to determine the mode of action of copper hydroxychloride in diets fed to weanling pigs.

Fry says the growth performance results are consistent with what his company has seen in more than five trials conducted in the U.S. and EU over the last few years. "When we have looked at copper sources, we see pigs fed copper hydroxychloride are, on average, over 850 g bigger than pigs fed [copper sulfate](#). The cost to switch sources are minimal: less than five cents per pig in U.S. dollars."

**More information:** C. D. Espinosa et al, Copper hydroxychloride improves growth performance and reduces diarrhea frequency of weanling pigs fed a corn–soybean meal diet but does not change apparent total tract digestibility of energy and acid hydrolyzed ether extract, *Journal of Animal Science* (2017). [DOI: 10.2527/jas2017.1702](https://doi.org/10.2527/jas2017.1702)

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