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PuraChol™

Choline Chloride

Balchem Research Summary

Study Measures Methyl Donor Content of Key Commodities

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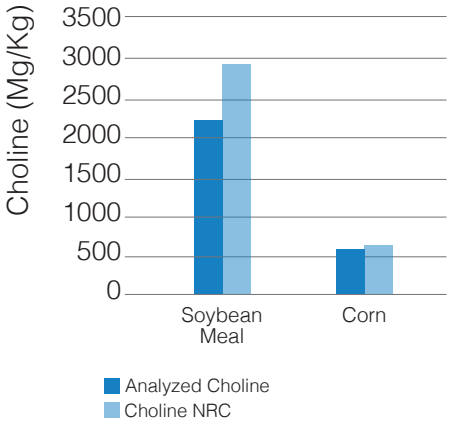
Purpose

The goal of this project was to sample and analyze numerous soybean meal (SBM) and corn samples collected in 2018 for choline and other methyl-containing compound concentrations to build an updated library.

Methods

29 SBM samples and 22 corn samples were collected from two international countries and 10 states within the United States. Samples were then analyzed at Eurofins Scientific (Des Moines, IA) for amino acids, choline, betaine, folic acid, and vitamin B12 concentrations.



Choline Levels (Analyzed vs NRC (1994)

Results

- In general, corn exhibited lower analyzed methyl-containing nutrient concentrations and was more variable when compared with SBM (Table 1).
- Vitamin B12 concentrations in both SBM and corn were low and below detection limits (<4.40 and <5.96 µg/kg, respectively).
- Of the nutrients analyzed, the Poultry NRC has published only choline and Met values for SBM and only choline, folic acid, and Met values for corn.
- Analyzed choline levels were 24% lower for SBM and 9% lower for corn than those reported by the Poultry NRC.
- Met content of SBM and folic acid content of corn were numerically similar to those reported by the NRC, however, Met content of corn was determined to be 22% lower than that reported by the NRC.

Conclusions

Accurately characterizing the choline content in commodities has important implications. Using the Poultry NRC (1994) values to formulate for choline could cause a gross under-supplementation in most diets. Table 2 compares the supplementation rates needed to meet dietary choline requirements when NRC book values and analyzed values are used to formulate a typical (corn/soy based) broiler starter diet.

This discrepancy, coupled with a potentially greater choline requirement to meet the needs of today's genetically superior production animals, could seriously compromise productivity and producer profitability.

Table 1.

Ingredient	Nutrient	Mean	NRC Value (1994)	Difference
Soybean Meal	Choline, mg/kg	2188.74	2894	705.26
	Folic Acid, mg/kg	3.07	-	
	Vit B12, ug/kg	<4.40	-	
	Betaine, mg/kg	61.76	-	
Corn	Choline, mg/kg	561.8	620	58.2
	Folic Acid, mg/kg	0.4	0.4	0
	Vit B12, ug/kg	<5.96	-	
	Betaine, mg/kg	41.34	-	

Table 2.

Choline chloride supplementation rates required when using NRC and actual values for soybean meal.

Supplement	Using NRC (1994) Values	Using Analyzed Values
Choline Chloride 70% (lb./ton)	0.45	1.30

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