

Estimation of true phosphorus digestibility of soybean meal is affected by Ca level in broilers.

Colwayne Morris^{*2}, Roger Davin¹, Fenglan Yan¹, Megharaja Manangi¹, David Ledoux², Mercedes Vazquez¹, ¹*Novus International Inc, Saint Charles, MO*, ²*University of Missouri, Columbia, MO*.

Previous regression analysis estimations of true ileal P digestibility (TIPD) in SBM using a fixed Ca:total P ratio predicted values lower than apparent ileal digestibility (AIPD) values in broilers. The objective of the current study was to estimate TIPD in SBM by regression analyses, using 2 fixed Ca levels (0.35 and 0.85%), and to estimate endogenous P losses (EPL) by regression analysis and by providing P-free diets. A total of 320 Ross 308 male broiler chicks were fed a common corn-SBM based diet from d 1 to d 19. From d 19 to 22, birds were fed 8 experimental diets that consisted of 3 graded levels (20, 40 and 60%; low, medium and high, respectively) of SBM and 2 gelatin-based P-free diets containing either 0.35% or 0.85% Ca. Each treatment was fed to 8 replicate cages with 5 birds/cage. Digesta from the posterior 2/3rd of the ileum was collected on d 22. Data were analyzed by one-way ANOVA to determine statistical differences among treatments. TIPD and endogenous P loss estimates were obtained by regressing P output against dietary P content in SBM diets. TIPD of SBM with 0.85% Ca was estimated to be 59.3%, a value 19 points lower than the TIPD estimation of SBM with 0.35% Ca (78.3%). TIPD estimate values were greater than the AIPD values obtained from the SBM diets supplemented at different Ca inclusion levels. Increasing SBM level from low to medium improved AIPD at both Ca concentrations. However, increasing SBM from 40 to 60% did not further increase AIPD. As previously reported, EPL estimates were significantly affected by the methodology employed, being 341 and 48.9 mg/kg DMI using the regression approach and P-free diets, respectively. Ca level did not affect EPL ($P > 0.4$) in both methodologies. In summary, TIPD values from SBM were greater than AIPD values when a fixed dietary Ca level is employed, however Ca concentration has a significant impact on both TIPD and AIPD. EPL estimates vary depending on the methodology employed.

Key Words: digestibility, endogenous losses, phosphorus, soybean meal