PSVI-10 Evaluation of Vegetable Protein Sources on Nursery Pig Performance in a Commercial Environment. Rafe Q. Royall[1], Joel M. DeRouchey[1], Mike D. Tokach[1], Jason C. Woodworth[1], Robert D. Goodband[1], Jordan T. Gebhardt[1], Keith D. Haydon[2], *[1]Kansas State University, [2]CJ America-Bio*

Abstract: This experiment was conducted to evaluate the influence of vegetable protein sources on growth performance of nursery pigs in a commercial research environment. A total of 2,592 pigs (L337 × 1050, PIC; initial BW of 5.3 ± 0.05 kg) were used in a 42-d study. Pens of pigs were blocked by BW and weaning date and allotted to 1 of 6 dietary treatments in a randomized complete block design with 27 pigs/pen and 16 replications/treatment. A corn-soybean meal control diet with no specialty vegetable protein source was used to compare performance against 5 diets containing either 1 of 2 soy protein concentrates (XSoy 600; CJ America-Bio, Downers Grove, IL; 5.0 and 2.5%, phase 1 and 2, respectively or Soytide; CJ America-Bio, Downers Grove, IL; 5.5 and 2.75%, phase 1 and 2, respectively), enzyme-treated soybean meal (HP 300; Hamlet Protein, Findlay, OH; 5.7 and 2.83%, phase 1 and 2, respectively), fermented soybean meal (Fermex 200; Purina Animal Nutrition, Shoreview, MN; 6.7 and 3.35%, phase 1 and 2, respectively), or high-protein corn DDGs (NexPro; Poet, Wichita, KS; 7.5 and 3.75%, phase 1 and 2, respectively). Diets were formulated in 2 dietary phases and fed at 2.27 kg/pig and 8.16 kg/pig, respectively, with a common phase 3 diet fed until d 42. The dietary level of soybean meal was held constant within phases 1 and 2 for diets 2 to 5 with protein sources replaced on a digestible lysine basis. During the experimental diet period (d 0 to 21) or overall (d 0 to 42), there was no evidence of difference ($P > 0.05$) for ADG, ADFI or G:F. Additionally, there was no evidence of difference ($P > 0.05$) for total removals, and mortality. In summary, none of the protein sources evaluated improved growth performance relative to soybean meal.

Table 1. Effects of vegetable protein sources on nursery pig performance

Item	Vegetable Protein Source						SEM	*P* =
	Control	Soy protein concentrate 1	Soy protein concentrate 2	Enzyme-treated SBM	Fermented SBM	High protein corn DDGS		
d 0 to 21 (Experimental period)								
ADG, g	193	193	195	202	207	194	1.5	0.351
G:F, g/kg	556	578	564	595	591	554	2.5	0.306
Removals, %[1]	13.0	14.0	15.1	13.2	13.5	12.9	2.00	0.941
Mortality, %[1]	2.8	4.4	3.7	2.3	1.6	3.0	0.99	0.221

Keywords: nursery pig, soy protein concentrate

PSVI-11 Flavonoid Supplementation to Low Protein Diets Recovers Growth Performance in Broilers. Jun Ho Song[1], Md Raihanul Hoque[1], Md Mortuza Hossain[1], Inho Kim[1], *[1]Dankook University*

Abstract: Recently, phytogenic feed additives containing flavonoids, essential oils and phenols are getting more attention as they have antimicrobial, anti-inflammatory, and digestibility aiding abilities. Flavonoids have proved their abilities in reducing environmental stress along with activating immune responses. These positive impacts can be used to bring an improved growth performance in broilers, so we aimed to evaluate the effect of flavonoid supplementation to a low protein diet on growth performance, nutrient digestibility, excreta bacterial count and excreta gas emission in broilers. In total 800 one-day-old Ross 308 broilers (average body weight of 42.90±1.43 g) were divided randomly into 1 of 4 dietary treatments. Each treatment had 10 replicate pens with 20 chickens. Treatment diets were HCP (High protein diet), basal diet; LCP (Low protein diet), basal diet – 2.5% protein; TRT1, LCP + 0.025 flavonoid; TRT2, LCP + 0.050% flavonoid. Experimental diets were provided to broilers from d 8 to 35. HCP, LCP supplemented with flavonoid showed greater ($P < 0.05$) body weight gain (BWG) than the low protein diet (LCP) without flavonoid supplementation during d 8 to 21, and in the overall experiment. However, feed conversion ratio (FCR) of HCP group was reduced ($P < 0.05$) than the LCP group during d 8 to 21 and in overall period. Increasing level of flavonoid supplementations brought a linear increase in BWG during d 8 to 21 ($P = 0.0141$), and overall period ($P = 0.0153$). Increasing doses of flavonoid showed a tendency of gradual increase ($P = 0.0702$) in dry matter (DM) digestibility in broilers. *Lactobacillus*, *E. coli* and *Salmonella* counts in excreta samples of experimental groups showed no significant difference ($P > 0.05$). Flavonoid supplementation (0.050%) in low protein diet reduced ($P < 0.05$) drip loss in breast muscle than the low protein diet with 0% flavonoid supplementation. In short, flavonoid supplementation to a low protein diet recovered the body weight gain through better digestion broilers

Keywords: broilers, flavonoids, growth performance, nutrient digestibility