

209 Effects of high standardized ileal digestible tryptophan:lysine ratios with ractopamine HCL on growth and carcass performance of pigs from 110 to 135 kg. Hayden E. Williams¹, Mike D. Tokach¹, Steve S. Dritz¹, Joel M. DeRouchey¹, Jason C. Woodworth², Robert D. Goodband¹, Jose A. Soto³, ¹*Kansas State University, Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506,* ³*Ajinomoto Animal Nutrition North America Inc.*

Recent research has reported that increasing standardized ileal digestible (SID) Trp:Lys ratio above 20% in finishing pigs fed Ractopamine HCL (RAC) resulted in improved growth and carcass performance, however this response has been inconsistent. Therefore, the objective of this study was to evaluate the effects of feeding high SID Trp:Lys ratios with RAC on growth and carcass performance. A total of 1,791 finishing pigs (PIC 1050×337; initially 110 kg BW) were used in a 27-d study. Pens of 25 or 26 pigs were allotted by initial BW and randomly assigned to 1 of 5 dietary treatments in a RCBD with 14 replications per treatment. The dietary treatments consisted of 5 SID Trp:Lys ratios (20, 22, 24, 26, and 28%). Corn-soybean meal-based diets were formulated to 0.90% SID Lys and contained 10 ppm ractopamine. At d 27, pigs were transported to a packing plant for processing and carcass data collection. Growth data were analyzed (GLIMMIX procedure of SAS) as a RCBD with pen as the experimental unit and initial BW as a covariate. Carcass data were analyzed with pen as the experimental unit and block × treatment as the random effect. Hot carcass weight served as a covariate for analysis of backfat, loin depth, and lean percentage. For overall growth performance, increasing SID Trp:Lys increased (linear, $P < 0.0001$) SID Trp g/kg of gain and SID Trp intake (Table 1); however, there were no evidence of treatment differences ($P > 0.10$) for ADG or G:F. For carcass characteristics, increasing SID Trp:Lys decreased (linear; $P = 0.002$) carcass yield and tended to decrease ($P = 0.078$) lean percentage. There was no evidence of treatment differences ($P > 0.10$) for HCW, loin depth, carcass ADG, or carcass feed efficiency. In summary, increasing SID Trp:Lys ratios above 20% in pigs fed RAC did not improve growth or carcass performance.

Table 1. Effects of feeding high standardized ileal digestible (SID) tryptophan to lysine ratio on growth performance and carcass characteristics of late finishing pigs

Item	SID Trp:Lys, %					SEM
	20	22	24	26	28	
d 0 to 27 ¹						
ADG, g	980	936	1001	924	1011	27
Gain:feed	0.367	0.356	0.369	0.354	0.377	0.0077
SID Trp intake, g/d ²	5.4	5.8	6.5	6.8	7.5	0.08
SID Trp g/kg gain ²	5.5	6.2	6.7	7.4	7.5	0.13
Carcass characteristics						
Hot carcass weight, kg	101.0	100.4	100.8	100.2	100.8	1.48
Carcass yield ^{3,4} , %	74.7	74.4	73.8	74.3	73.2	0.40
Backfat ^{3,4} , mm	15.4	15.3	15.8	15.5	16.1	0.28
Loin depth ³ , mm	73.1	73.8	73.3	73.3	73.2	0.44
Lean ^{3,4} , %	58.3	58.4	58.0	58.2	57.8	0.19

¹Performance criteria adjusted using initial BW as a covariate.

²Level effect (linear; $P < 0.05$).

³Adjusted using HCW as a covariate.

⁴Level effect (linear; $P < 0.10$).

Keywords: amino acids, finishing pigs, tryptophan