T305 Oral administration of amino acids as energy sources for newborn piglets. N. E. Manzke[1], L. B. Scapini[2], W. Loyola[3], M. Kutschenko[4], J. M. Fontana[5], E. T. Nogueira[4], E. G. Xavier[1], A. Coldebella[3], and G. J. M. M. Lima*[3], *[1]Universidade Federal de Pelotas, Pelotas, RS, Brazil, [2]Universidade Federal do Parana, Palotina, PR, Brazil, [3]EMBRAPA, Concordia, SC, Brazil, [4]Ajinomoto, Sao Paulo, SP, Brazil, [5]Granja Fontana, Charrua, RS, Brazil.*

Amino acids have been supplemented in diets due to their beneficial effects on performance, health and immune status. Some of these occur because they may be readily available sources of energy, especially to young animals, which may face malnutrition after birth. This study was carried out to evaluate the effects of glutamine (Gln), glutamic acid (Glu) and AminoGut (Amg) supplementation on performance, immune response and blood parameters. Forty-seven litters, selected based on genotype and parity, were distributed according to a complete randomized block design. Within each litter, 4 piglets were chosen with body weights close to litter average. Treatments consisted of daily intragastric applications of 4-mL doses containing one of the following: Placebo: distilled water; Gln: 2 g L-glutamine; Glu: 2 g L-glutamic acid; Amg: 2 g of the commercial mixture of L-glutamine and L-glutamic acid. Animals were supplemented with treatments along the first 7 d of life with the first dose provided to piglets just after colostrum consumption. There were no treatment effects ($P > 0.10$) on individual weight and weight gain of piglets. Amino acid supplementation increased ($P = 0.06$) the diameter of the papule produced by *Phaseolus vulgaris* lectin skin test at 24 h after intradermal injection, compared with Placebo (6.12 mm). Amg (8.68 mm) and Glu (8.09 mm) showed the highest response for this variable ($P < 0.05$), at the same time as Amg promoted higher cell-mediated immunity than Gln (7.16 mm, $P < 0.05$) when compared with Placebo by *t*-test. There were no differences in plasmatic levels of glucose ($P = 0.40$) and creatinine ($P = 0.49$) among treatments. However, serum urea was significantly higher ($P < 0.0001$) in animals supplied with Gln, when compared with Glu, Amg and Placebo. Glu and Amg also increased blood urea compared with the Placebo group. Higher blood urea levels verified in amino acid supplemented piglets may suggest that the amounts supplied are above requirements. Despite there were no significant responses on piglet weight, amino acid supplementation provided better cell-mediated immunity, with a higher reaction shown by animals receiving Amg and Glu.

Key Words: glutamine, glutamic acid, AminoGut

T306 Effect of dietary lysine to energy ratio on growth performance and sensory characteristics of indigenous Venda chickens. O. J. Alabi*, J. W. Ng'ambi, and D. Norris, *University of Limpopo, Mankweng, Polokwane, South Africa.*

The study determined the effect of dietary lysine to energy ratio on optimal productivity, carcass and sensory characteristics of indigenous Venda chickens aged 8–13 weeks. A completely randomized design was used. One hundred and 60 female indigenous Venda chickens (BW 362 ± 10 g) were allocated to 4 dietary treatments. Each treatment was replicated 4 times and each replicate had 10 chickens. Four maize-soybeans based diets were formulated. Each treatment had similar dietary lysine (12 g/kg DM) but different energy levels (11, 12, 13 and 14 MJ ME/kg DM), thus, forming 4 dietary lysine to energy ratios (L:E) of 1.09, 1.00, 0.92 and 0.86, respectively. Data on chicken productivity, carcass characteristics (as percentages of live weights) and meat sensory attributes were measured. These data were analyzed using one way ANOVA. A quadratic curve estimate model was used to determine dietary lysine to energy ratio for optimum growth rate, feed intake, FCR, metabolizable energy, N-retention, relative carcass and sensory characteristic values. Results showed that dietary lysine to energy ratio of 0.88 supported optimum growth rate (17.89 g/bird/day), heart weight (0.76%) and meat flavor (4 points out of a 5-point hedonic scale). While a ratio of 0.99 g/MJ ME supported optimum feed intake (109.92 g/bird/day), FCR (6.05 g feed/g live weight gain), metabolizable energy value (11.33 MJ ME/kg), N- retention (1.63 g/bird/day), carcass (87.18%), breast meat (20.36%) and drumstick (12.00%). A higher ratio of 1.05 optimized liver (2.27%), wing (11.29%), gizzard (5.40%) and fat pad (2.84%). Meat tenderness and juiciness (3.25 points each out of a 5-point hedonic scale) were optimized at a ratio of 1.07. Thus, dietary L:E level for chicken production optimization depended on the particular parameter of interest. These findings have many implications on ration formulation for female indigenous Venda chickens.

Key Words: growth performance, lysine to energy ratio, optimization

T307 Evaluation of dietary glutamic acid plus glutamine levels on the growth performance of piglets. D. Lescano[1], L. Albino[1], M. Hannas[1], S. Salguero[1], M. Kutschenko[2], E. Nogueira[2], and H. Rostagno*[1], *[1]Federal University of Viçosa, Viçosa, MG, Brazil, [2]Ajinomoto of Brazil Ajinomoto Animal Nutrition, São Paulo, SP, Brazil.*

A study was conducted to evaluate the utilization of 4 dietary levels of a commercial product containing glutamic acid plus glutamine (min 95%) in diets for weanling pigs (18 d) to 46 d old. A total of 44 piglets were randomly assigned in a completely randomized block design into 4 treatments, 5 replicates and 2 or 3 pigs per experimental unit. The treatments were: T1 = 0.0%; T2 = 0.4%; T3 = 0.8% and T4 = 1.2% glutamic acid (Glu) plus glutamine (Gln). Diets were based on corn, soybean meal, pre-cooked corn, dairy products, blood plasma, L-lysine, L-threonine and DL-methionine. The experimental period lasted 28 d and the parameters evaluated were body weight, weight gain, feed intake and feed conversion ratio. The addition of Glu plus Gln improved linearly ($P < 0.05$) daily feed intake (DFI) and feed conversion ratio (F:G) of the piglets. There were also linear ($P < 0.01$) and quadratic effects ($P < 0.04$) of dietary Glu plus Gln level on final body weight (FBW), total weight gain (TWG) and daily weight gain (DWG) of the piglets (Table 1). It is concluded that the best dietary Glu plus Gln level is 0.8% for weanling piglets from 18 to 46 days of age.

Table 1. Growth performance of weanling piglets from 18 to 46 days of age

	Glu plus Gln (%)				Regression		
Parameter	0.0	0.4	0.8	1.2	Linear	Quadratic	CV (%)
BW initial, kg	5.24	5.24	5.22	5.06	NS	NS	3.22
FBW, kg	15.41	16.55	17.33	16.95	<0.002	0.03	4.24
DFI, kg	0.48	0.55	0.52	0.54	<0.04	NS	6.13
TWG, kg	10.16	11.30	12.11	11.88	<0.001	<0.04	6.13
DWG, kg	0.36	0.40	0.43	0.42	<0.001	<0.04	6.13
F:G ratio	1.34	1.33	1.17	1.23	<0.002	NS	5.12

NS = not significant ($P > 0.05$).

Key Words: piglet, growth performance, glutamic acid plus glutamine