Digestible lysine requirement of pigs from 90 to 120 kg live weight

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Three experiments were carried out with the aim to establish pig digestible lysine requirements from 90 to 120 kg live weight. One hundred and twenty pigs of three genders were used (n=40 for each gender) with average weight of 90.33 ± 0.91 kg for gilts, 89.71 ± 0.92 kg for barrows and 89.83 ± 1.11 kg for immunocastrated boars (MII). The pigs were from the progeny of Embrapa MS-115 sire line crossed with F1 sows. In each experiment (gender), the pigs were sorted, considering initial weight, in one of five levels of digestible lysine, with eight replicates of one pig per experimental unit. The lysine levels evaluated were: 0.52, 0.66, 0.80, 0.94, 1.08% for gilts, 0.50, 0.64, 0.78, 0.92, 1.06% for barrows, and 0.56, 0.70, 0.84, 0.98, 1.12% for MII. Experimental period lasted 28 days for all genders. The variables evaluated were: daily weight gain (GPD, kg), daily feed consumption (CRD, kg), feed to gain ratio (CA, kg kg^{-1}), daily lysine consumption (CLD, g), lysine intake to gain ratio (CLGP, g kg^{-1}), and lysine efficiency for weight gain (ELGP, g g^{-1}). Statistical analysis was performed using SAS GLM procedure. There were no treatment effects (P>0.05) on GPD for barrows and MII and on CDR for MII. However gilts showed a quadratic increase of GDP ($y = -0.2890 + 3.350x - 1.9715x^2$, P<0.0001 and $R^2 = 0.88$). The CRD showed a quadratic increase for gilts ($y = 1.1497 + 5.9965x - 3.870x^2$, P<0.007 and $R^2 = 0.63$) with the maximum level at 0.77% of digestible lysine and a quadratic decrease for barrows ($y = 5.7801 - 5.283x + 2.9697x^2$, P<0.03 and $R^2 = 0.66$). The CLD increased linearly (P<0.001) for the three genders and the following models were adjusted: $y = 2.0235 + 30.5594x$ ($R^2 = 0.94$) for gilts, $y = 3.0684 + 31.5611x$ ($R^2 = 0.96$) for barrows and $y = -0.5168 + 42.0746x$ ($R^2 = 0.94$) for MII. CA showed a quadratic response for gilts, barrows, and boars with $y = 5.6316 - 5.5249x + 2.867x^2$ (P<0.06 and $R^2 = 0.59$), $y = 5.3842 - 5.4787x + 3.2044x^2$ (P<0.02 and $R^2 = 0.66$) and $y = 1.4647 + 4.6428x - 2.8173x^2$ (P<0.008 and $R^2 = 0.46$), respectively. For CLGP linear response was observed for gilts with $y = 5.0041 + 24.8753x$ (P<0.0001 and $R^2 = 0.92$) and quadratic effects were observed for barrows with $y = 12.2344 + 1.0710x + 17.9010x^2$ (P<0.06 and $R^2 = 0.95$) and for MII with $y = 15.9019 + 74.3745x - 25.7394x^2$ (P<0.003, $R^2 = 0.96$). ELGP responded linearly for gilts with $y = 76.3087 - 42.7831x$ (P<0.0001, $R^2 = 0.90$) and for barrows with $y = 82.6393 - 50.5730x$ (P<0.0001, $R^2 = 0.93$) and presented a quadratic form for MII with $y = 137.5936 - 194.9632x + 87.3465x^2$ (P<0.0001, $R^2 = 0.95$). Digestible lysine requirements for gilts, barrows and MII were estimated as 0.96, 0.85 and 0.96%, respectively, considering the values calculated by CA. The estimated values for requirements correspond to daily lysine intakes of 31.36, 33.37 and 39.87 g, respectively, for gilts, barrows and MII.
Keywords: amino acid, barrows, gilts, immunocastrated boars, performance, swine nutrition

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