

ANIMAL SCIENCE

Title: Critical evaluation of a new novel bio-fuels byproduct “MycoMeal” on growth performance, body composition and intestinal health in nursery pigs – **NPB #12-112**

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Scientific Abstract. Fluctuations in feed prices have led pig producers to search for alternative feed ingredients. Our previous studies have suggested that the filamentous fungus *Rhizopus microsporus* variant *oligosporus* (RO), grown in the leftovers of ethanol production can potentially be used as a high quality source of dietary protein, fat, vitamins and minerals for growing pigs. The objective of this study was to evaluate the bioavailability of lysine (Lys) in RO for nursery pigs. A total of 32 gilts (initial BW (6.5±0.25 kg) were individually penned and assigned to 5 dietary treatments. A basal diet (n=5) formulated to contain 8 g of lysine/kg, but adequate in all other amino acids, was supplemented with 2 and 4 g of lysine/kg from either RO (n =14) or L-lysine-HCl (n =13). Diets were formulated to contain 15.4 MJ/kg of DE. Average daily gain (ADG) and feed intake (ADFI), gain to feed ratio (G:F) and lean growth (LG) were determined over a 7 week period. The latter was determined using dual-energy X-ray absorptiometry. Bioavailability of Lys was estimated using the slope ratios (RO:L-lysine-HCl) obtained from common-intercept multiple regression analyses. Fecal and ileal digesta samples were collected to determine ATTD & AID. Daily feed intake was similar among treatment groups ($P > 0.10$). Average daily gain, LG and G:F response to dietary Lys was linear regardless of Lys source ($P < 0.01$). Results show no significant difference between Ref-1 and RO-1 for AID or ATTD except for Nitrogen ATTD (83.1 v. 81.7; $P < 0.02$). Results for Ref-2 and RO-2 show significant differences in all parameters, although AID differences are much higher. Specifically, lysine AID (86.9 v. 72.3; $P < 0.01$) nitrogen AID (77.1 v. 62.5; $P < 0.02$) and energy AID (81.6 v. 62.7; $P < 0.01$) and nitrogen ATTD (81.8 v. 78.8; $P < 0.02$). The bioavailability of Lys in RO for ADG, G: F and LG was 0.54, 0.61 and 0.69, respectively. Digestibility and bioavailability of the RO biomass may be affected by fungal chitin and chitosan concentrations. Altogether, these results suggest that RO can be used as a source of protein and energy in the diet of nursery pigs.

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