

Colostrum protein isolate enhances gut development, growth performance and plasma IGF-I and II in neonatal pigs

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Background - The growth performance of young pigs fed by the sow alone is far less than their potential. While nutrient intake may be one constraint to a neonatal pig achieving its growth potential, so too may be endocrine status. Growth factors are present in relatively high quantities in colostrum and play an important part in gut development.

Objective - To determine the effect of feeding a colostrum protein isolate on gut development, growth performance and plasma IGF-I and II in neonatal pigs.

Design - Eight male and 8 female piglets were weaned at 1 d after each pig had obtained colostrum, and were trained to drink one of two liquid diets via a teat. The diets, which were fed *ad libitum* for 28 d, were based on either a colostrum protein isolate (CP) or whey protein concentrate (WPC) and were formulated to contain equal levels of amino acids.

Outcomes - Pigs fed CP had higher daily gain (171 v. 216 g/d, P=0.010), liquid feed intake (25.5 v. 29.1 kg, P=0.074) and feed efficiency (0.203 v. 0.223 g/g liquid feed, P=0.056) than pigs fed WPC. Pigs consuming CP also had greater full gut (445 v. 554 g, P=0.026), empty gut (356 v. 463 g, P=0.008), stomach (42.2 v. 54.4 g, P=0.001), small intestine (222 v. 275 g, P=0.025) and large intestine (63.7 v. 98.0 g, P=0.005) weights. Plasma IGF-I (99 v. 150 ng/ml, P<0.001) and IGF-II (265 v. 406 ng/ml, P<0.001) were higher in pigs fed CP.

Conclusions- To compensate for decreases in the growth factor content of sow's milk with advancing lactation, an efficacious method of incorporating growth factors into the diet of neonatal pigs is by dietary supplementation with a colostrum protein isolate.