

Growth and immunity of weaner piglets supplemented with dietary tryptophan, threonine and glutamine

by

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Declaration

I, the undersigned hereby declare that the work contained in the dissertation is my own original word and has not previously in its entirety or in part been submitted at any other university for a degree.

Signature

Date

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Abstract

Post-weaning mortality has a major economic implication for pig producers. Post-weaning stress is influenced by a number of factors, including the piglets' inherent ability and physiological mechanisms to adapt to the new environment. Various amino acids, including threonine, tryptophan and glutamine, have been shown to have a positive effect on the immune system. Higher levels than current commercial standards of threonine, tryptophan or glutamine and different combinations of these, were mixed into a basal weaner diet to create eight dietary treatments. 48 crossbred piglets (Landrace x Large White) were included in a 28 day growth trial shortly after wean, with six piglets per treatment. Body weight gain, feed intake and feed conversion efficiency (FCE) were measured weekly. At the onset of the trial, piglets were injected with a 10% ovine erythrocyte suspension as an immune challenge. Blood samples from each piglet were collected at 7 day intervals to obtain antibody titre values against ovine erythrocytes. In general, amino acid levels included in this study did not result in significant differences ($P>0.05$) between treatments except for a significant decrease in both body weight gain and FCE when observed when higher levels of threonine were fed. However, higher antibody levels against sheep erythrocytes were noted in piglets when they received additional Thr in their feed ($P>0.05$). The results of the trial were not conclusive, but indicated a negative impact of high threonine levels on piglet production. On the other hand, it might also increase the body's capability to produce antibodies against foreign protein molecules, which could support the health of the piglet during the post-weaning period.