

DEVELOPMENT OF A LOW-ZINC PIG MODEL FOR IMMUNOLOGICAL INVESTIGATIONS

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Summary. Zinc is an important component of the immune response and the immunoregulation of parasitic infection. In order to determine whether zinc deficiency can be achieved in pigs by feeding a diet high in phytic acid, thereby producing a model for studying the immune response to parasites, a feeding trial was conducted. The experiment was designed to investigate the effect of phytic acid on elemental zinc and alkaline phosphatase (AP) levels in the blood plasma and livers of growing pigs. Two groups of 4 pigs each were fed for 5 weeks on either a normal diet or the same diet supplemented with extrinsic phytic acid. The amount of zinc and alkaline phosphatase in blood plasma began to decrease markedly 3 weeks after pigs had been fed phytic acid. After 5 weeks, pigs fed the phytic acid ration had blood zinc levels by 35% lower than the control pigs and 44% less AP. In addition, the levels of liver zinc decreased 22% after 5 weeks on the phytic diet. It was demonstrated that the feeding of phytic acid significantly reduced dietary zinc availability and that it can be employed experimentally to zinc-deficient growing pigs for different experimental purposes, and for studying zinc role in the immune response to parasitism.

Keywords: phytic acid, zinc deficiency, growing pigs.