Effets de la phytase, de la vitamine C et du cuivre sur la rétention du cadmium chez le porc charcutier

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Effects of microbial phytase, vitamin C and copper on cadmium retention in fattening pigs

From 13.5 kg live weight, 36 female pigs (LWxLD x LWxPiétrain) were assigned to control diets or to experimental diets containing cadmium-contaminated wheat and sunflower meal without phytase (PHOS), or with 1000 FTU/kg phytase (PHYT), or with 1000/kg FTU phytase, 1000 then 700 mg/kg vitamin C and low copper content (44 then 17 mg/kg) (CuVitC). Experimental diets had Cd concentrations ranging from 0.54 to 0.72 mg/kg and were given *ad libitum* for the phase 2 period (27 days of exposure) or the phase 2 and growing periods (69 days) before returning to the control diets, or for the whole fattening period (132 days). All pigs were slaughtered on the same day at an average body weight of 113.1 kg. Cadmium content in the kidney was significantly increased by the contaminated diets ($P < 0.001$) and by the duration of exposure ($P < 0.001$). However, a significant variability was found as the kidney cadmium levels varied on average by a factor of two between individuals given the same treatment. Kidney cadmium concentration was slightly but not significantly lower in PHOS pigs than in PHYT pigs ($P = 0.14$). Pigs fed the CuVitC diets had lower cadmium level in kidney in comparison to the pigs fed the PHYT diets after 69 days ($P < 0.05$) or 132 days of exposure ($P < 0.05$). Management of calcium, phosphorus and phytase levels, reduction in copper content and supplementation with vitamin C could limit cadmium accumulation in the kidneys of exposed pigs.