

EFFECTS OF DIETARY MELAMINE AND CYANURIC ACID IN YOUNG PEKIN DUCKS AND WEANLING PIGS

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ABSTRACT

In 2007, melamine (MEL) and cyanuric acid (CYA) were added to feed ingredients in an attempt to artificially increase their crude protein and thus their momentary value. However, once ingested MEL and CYA can form insoluble compounds and precipitate in the kidneys, leading to decreased renal function and in some cases death. To determine the effects of MEL and CYA alone and in combination three experiments were conducted. Two experiments involved young Pekin ducks while the other involved weanling barrows fed contaminated diets for 21 consecutive days. Results indicate that $\geq 1.00\%$ MEL is needed to cause reduced performance in Pekin ducks and decreased body weight gain in barrows. In ducks $\geq 0.75\%$ MEL resulted in renal lesions that were similar to those documented in cats and dogs from the 2007 incident. However, the kidney of pigs was unaffected when up to 1.25% MEL was included in their diet. Inclusion of CYA to a diet contaminated with MEL was able to alleviate the negative effects of MEL in ducks but caused increased toxicity in pigs. It was also determined that up to 1.50% CYA in the diet of a Pekin ducks does not cause changes in performance, serum chemistry values, or microscopic renal appearance. Data also suggest that bile is used as a route to eliminate MEL from the body in both ducks and pigs. Finally, it was determined that MEL can be deposited in the muscle of pigs and ducks that consumed diets contaminated with MEL.