

CYCLOPIAZONIC ACID TOXICITY IN THE LACTATING EWE AND LAYING HEN

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Cyclopiazonic acid (CPA) is a mycotoxin produced by some fungal species of the genus *Aspergillus* and many species of the genus *Penicillium*. These fungi are ubiquitous in nature and although the natural occurrence of CPA has not been extensively studied the toxin has been found in corn, peanuts and cheese (Cole 1984). Chemically, CPA is classified as an indole tetramic acid which produces tissue degeneration in a wide range of organs. It appears to act primarily as an entero-nephrotoxin in pigs and chickens, and primarily as a hepatotoxin in rats (Dorner et al. 1985). Moreover, the finding of substantial quantities of CPA in skeletal muscle of rats (Norred et al. 1985) and chickens (Norred et al. 1987) after oral dosing demonstrates the possibility of human exposure to this toxin through consumption of animal products. Eggs and milk are food commodities that have not been examined for the presence of this toxin. The present studies were designed to examine effects of CPA in lactating ewes and laying hens given oral doses of the compound.

Lactating crossbred ewes (n=3) were kept in metabolism cages and fed chopped lucerne:rolled barley grain (60:40) to meet requirements. Ewes were milked by hand twice daily and measurements were made before (10d), during (3d) and after (10d) daily doses (5 mg CPA/kg liveweight) of the toxin administered orally in gelatine capsules. Within 24 h of the first dose milk production and feed intake had dropped substantially. By 48 h milk production had fallen to 20% of pre-treatment levels and animals had reduced feed intake dramatically. During this time respiration rate increased (c. 45 v 70 breaths/min) and rectal temperatures also increased (c. 39.0 to 41.5°C). Following the second dosing, treatment was discontinued and recovery of the ewes was monitored. It took 7-10 days for daily milk production to return to pre-treatment levels.

Crossbred laying hens were allocated to five groups of six, maintained in single bird cages and fed a commercial layer ration. Daily doses of either 0, 1.25, 2.5, 5.0 or 10mg CPA/kg liveweight were administered orally in gelatine capsules. All eggs laid by the hens on the two highest levels were either cracked or shell-less and within 72 h of the first dose all hens of these two groups had ceased laying and had died within seven days. Egg production and feed intakes of hens receiving 2.5mg CPA/kg was reduced by 25% during the seven days of the trial. Birds receiving the lowest dose of CPA laid normally during this period but their feed intake was reduced by 10%.

This is the first report of CPA toxicity in laying hens and ruminants and suggests that both classes of stock are highly susceptible to this mycotoxin.

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