

RESPONSE OF CHICKENS TO SORGHUM CONTAMINATED WITH ALTERNARIA

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Moulds belonging to the genus Alternaria are major contaminants of cereal grains in Australia (Burgess 1984, unpublished). Although these fungi produce toxic metabolites (Harvan and Pero 1976) which have been implicated in disease episodes in poultry (Forgacs et al. 1958), very little research has been conducted on the effects of these mycotoxins in domestic animals. In the present experiment, the effect of feeding sorghum naturally contaminated with Alternaria metabolites to broiler chickens was examined.

Day-old, male and female broilers were allocated to groups of 8 chickens. Five groups of each sex were fed an experimental diet until 5 weeks of age. The control diet contained uncontaminated sorghum (700 g/kg), and this was replaced by mouldy sorghum in the experimental diets. Only two mycotoxins were detected in both batches of mouldy sorghum: alternariol (AOH) and alternariol monomethyl ether (AME). The results for the males are shown in the table.

Production responses and organ weights of male chickens fed diets containing different batches of sorghum
(Mean \pm SEM; n=5)

	Control Sorghum	Mouldy sorghum 1	Mouldy sorghum 2
AOH (mg/kg)	0	10.0	7.2
AME (mg/kg)	0	3.6	7.2
Body weight at 35 d (g)	1368 \pm 16	1162 \pm 30	1248 \pm 15
Food conversion (g food/g body wt gain)	1.94 \pm 0.04	2.05 \pm 0.05	2.12 \pm 0.04
Liver weight†	27.7 \pm 1.00	38.9 \pm 3.20	34.3 \pm 1.70
Spleen weight†	2.04 \pm 0.20	2.46 \pm 0.30	2.53 \pm 0.30
Pancreas weight†	2.76 \pm 0.17	3.29 \pm 0.20	3.31 \pm 0.10

† g/kg body weight.

The birds appeared clinically normal throughout the experiment although growth rate and food conversion efficiency were adversely affected ($P < 0.05$). At necropsy liver, spleen and pancreas weights were found to be increased, while the bursa was regressed ($P < 0.05$). Histopathology of affected organs demonstrated changes that were not typical of a known mycotoxicosis. Similar responses in all parameters were noted for birds of both sexes. The results of this study suggest that metabolites of Alternaria can produce adverse effects in poultry. Further research, to delineate the biological and toxicological effects of these toxins, is necessary to explain the results observed in this study.

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