

TOXICITY OF AUSTRALIAN ALTERNARIA ISOLATES IN A CHICK BIOASSAY

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Fungi belonging to the genus Alternaria are ubiquitous in nature and many produce secondary metabolites that are toxic to animals (King and Schade 1984). We have shown that sorghum naturally contaminated with Alternaria alternata reduced chick performance when incorporated in broiler diets (Bryden et al. 1984). The purpose of this communication is to report the incidence of contamination of silo wheat with Alternaria and the toxicity of this fungus isolated from different cereal grains.

Wheat samples (1 kg) were collected from grain elevator board silos in New South Wales. All grains were surface sterilised in a 1% sodium hydroxide/10% ethanol solution for 2 min, dried aseptically and plated on half-strength potato dextrose agar. Alternaria alternata (Fr.) Keissler was the most common fungi isolated, being present in 70% of samples. Species of Pyrenophora, Bipolaris, Curvularia, Epicoccum, Fusarium and Penicillium were also isolated with very low frequency.

A total of 141 cultures of Alternaria have been isolated as above, from samples of wheat, barley and sorghum collected in New South Wales. Isolates were incubated for 3 weeks at 25°C on wheat and shaken daily to avoid clumping. Each culture was extracted with 80% acetone, filtered, evaporated to near dryness and the remaining sample lyophilized. The lyophilized sample was taken up in maize oil and 0.5 ml of the maize oil suspension intubated into the crop of day-old chickens. After dosing, the chicks were placed in a brooder, supplied with food and water ad libitum and observed for 14 days. The results of the bioassays showed that 12% of isolates were highly toxic and caused mortality within 3 days of dosing. Most isolates (80%) were chronically toxic and resulted in reduced growth rate and food conversion efficiency.

Alternaria is a common fungal contaminant of Australian grains and a significant proportion of isolates are toxigenic.

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