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TRICOTHECENE PRODUCTION BY TOXIC *FUSARIUM* SPECIES

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Some species of the fungal genera *Fusarium* are highly toxic to man and animals. The toxic species produce an array of secondary metabolites of which the tricothecenes are the mycotoxins most often associated with diseases characterised by anorexia, vomiting, skin inflammation and diarrhoea (Scott 1990). In thus study, the toxicity and tricothecene production of four species was assessed.

Cultures of *Fusarium* species were isolated from soil samples collected in northern and eastern Australia. Isolates were grown on 85 g of crushed malted whole wheat biscuits, moistened with 50 ml water and grown at 25^{0}C in the dark for two weeks. Cultures were extracted chemically and toxicity assessed in a chick bioassay (Wing et al. 1990). Toxicity was expressed as percentage of chick mortality over 4 days. Toxic extracts of each species were analysed for the main tricothecene groups; nivalenol (NIV), deoxynivalenol (DON), scirpentriol (Sctol), and T-2 tetraol (T-2tol) by gas chromatography with electron capture detection (Lauren and Agnew 1991). The presence of tricothecenes was verified by mass spectrometry for selected isolates and the results are summarised in the Table.

Species	No of isolates	% toxicity	Tricothecenes detected[1]			
			NIV	DON	Sctol	T2tol
F.acuminatum	42	85	-	-	+	+
F.compactum	34	95	-	-	+	+
F.equiseti	114	11	-	-	-	-
F.scirpi	6	58	-	-	-	-

[1] + detected; - not detected

Levels of up to 246 ug and 168 ug of T-2tol per g of media were detected in *F. compactum* and *F.acuminatum* samples respectively. Sctol levels of up to 104 ug/g were also detected in *F.compactum* isolates, while levels of less than 0.5 ug/g of Sctol were detected in F.*acuminatum* isolates. Toxic isolates of *F.scirpi* and *F.equiseti*, produced some unidentified peaks, suggesting the presence of non-trichothecene metabolites which could account for the observed toxicity.

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