

PREVENTION OF AFLATOXIN PRODUCTION ON SOME CEREALS AND OIL-SEEDS BY O-VANILLIN

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AFLATOXINS have received considerable attention in recent years due to their hepato-carcinogenic nature¹ and wide occurrence under natural conditions². These coumarin derivative compounds are the secondary metabolites produced by the toxigenic strains of *Aspergillus flavus* Link ex Fries group of fungi. *A. flavus*, *A. parasiticus* and *A. oryzae* are the main producers of aflatoxins.

Phenolic compounds are well-known for their antimicrobial properties³. These compounds were found to be effective in inhibiting the production of aflatoxins in liquid medium and on some solid substrate⁴. An attempt has, therefore, been made to prevent the production of aflatoxins on some cereals and oil-seeds by a common phenol, O-vanillin.

Twenty-five gram of each of seeds viz., rice (var. Sita), wheat (var. S-308), maize (var. Ganga-2), groundnut (var. AK12-24) and mustard (var. BR-13) were soaked in 500 ppm aqueous solution of O-vanillin for 2 hr in 150 ml Erlenmeyer flask. Control seeds were soaked in distilled water. After decanting extra amount of solution/water, the seed lots were autoclaved. On the following day, the seeds were inoculated with 0.5 ml spore suspension of an aflatoxin producing strain of *Aspergillus parasiticus* (NRRL-3240). The infected seeds were incubated for 7 days at $28 \pm 1^\circ\text{C}$. Aflatoxins were extracted by the method of Jones⁵ and estimated spectrophotometrically⁶.

In order to evaluate the toxic effects of O-vanillin the percentage of seed germination was also recorded (table 1).

Aflatoxin production by *A. parasiticus* was markedly checked by O-vanillin on the cereals and oil-seeds. Maximum inhibition was recorded on rice (85.6%) followed by groundnut (76.25%), wheat (54.2%), maize (52.3%) and mustard (51.1%). O-vanillin did not have any pronounced effect on seed germination. Maximum inhibition in seed germination was 10.6% in the case of mustard.

Production of aflatoxins by *A. parasiticus* has been successfully checked by the aqueous plant extracts in liquid media and on some solid substrates⁷⁻⁹. The results of the present investigations also indicate the possibility of preventing the production of this potent mycotoxin on economically important seeds by using mild phenols like O-vanillin which do not have any

adverse effect on seed germination.

TABLE 1

Effect of O-vanillin on aflatoxin production and seed germination of cereals and oil-seeds

Seeds	% inhibition in	
	Aflatoxin production	Seed germination
Rice	85.63	—
Wheat	54.18	2.22
Maize	52.27	0
Groundnut	76.25	8.24
Mustard	51.06	10.56

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