Short Communication

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DETOXIFICATION OF AFLATOXIN IN OIL SEEDS BY UV LIGHT AND COMMON SALT

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The exposure of aflatoxin contaminated of *Brassica, Linum* and *Sesamum* to UV irradiations and treatment with common salt resulted in detoxification of aflatoxins.

Key Words : Aflatoxin, UV light, Common salt.

The hazards connected with consumption of aflatoxin infected food and feed are well known. Many workers have shown concern towards the control of this toxic metabolites (See : Bilgrami *et al.*, 1992) but still control of aflatoxin is of great importance as no single method appears to be perfect for controlling aflatoxins.

The oil seeds of *Brassica compestris, Linum usitatissimum* and *Sesamum indicum* show the presence of aflatoxins in more than the permissible level fixed by World Health Organisation *i.e.* 20 µg/kg. Consumption of oil and oil cakes extracted from such contaminated seeds can cause irreversible damage to health, therefore, to evolve suitable method for control of aflatoxin are desire.

Aflatoxin positive samples of oil seeds were broken and exposed to UV light (15 minutes). Seeds were also shaken for half an hours on a mechanical shaker in 10, 20 and 40% solutions of common salt and then kept stationary for 24 hours. Unexposed and untreated seeds were used as a control. Aflatoxin was extracted from treated and controlled seeds (Pons *et al.*, 1966). Qualitatively aflatoxin was tested on thin-layer chromatoplate (TLC) and quantity was determined spectrophotometrically.

The quantity of AFB_1 (61.2 µg/kg) and B_2 (25.0 µg/kg) present in *Brassica* seeds was reduced to 2.0 µg/kg and 0.7 µg/kg respectively when exposed in UV light. In Linum seeds AFB_1 (80.0 µg/kg), G_1 (24.0 µg/kg) and G_2 (15.4 µg/kg) was detected. After exposure AFG_2 was detoxified while AFB_1 and B_2 was reduced to 4.5 and 1.0 µg/kg respectively. In sesamum seeds AFB_2, G_1 and G_2 was detoxified and B_1 (28.0 µg/kg) was reduced to 0.9 µg/kg after exposure (Table 1).

Table 1. Effect of UV light exposure on aflatoxin in oil seeds.

Substrate	Aflatoxin (µg/kg) detected in the substrate	Treatment given	Quantity of aflatoxin (µg/kg) after treatment
Brassica compestris	B_1 - 61.2 B_2 - 25.0	Exposed in UV light for 15 minutes	2.0 0.7
Linum Usitatissimum	B_1 - 80.0 G_1 - 24.0 G_2 - 15.4	-do-	4.5 1.0 Nil
Sesamum indicum	B_1 - 28.0 B_2 - 06.0 G_1 - 16.0 G_2 - 04.0	-do-	0.9 Nil Nil Nil

20 and 40% solutions of common salt completely destroyed aflatoxin B_1 in *Brassica* and *Sesamum* seeds. In the former seeds the quantity of AFB_1 (41.2 µg/kg) was reduced to 4.0 µg/kg by 10% common salt, 10 and 20% solution reduced AFB_1 (81.2 µg/kg) present in linum seeds to 19.0 and 8.1 µg/kg respec-

Table 2 Effect of common salt on aflatoxin B_1 in oil seeds.

Substrate	Aflatoxin B_1 (µg/kg) detected in substrate	Treatment	Concentrations in %	Quantity of aflatoxin B_1 (µg/kg) after treatment
Brassica compestris	41.2	NaCl	10 20 40	6.2 Nil Nil
Linum usitatissimum	81.2	-do-	10 20 40	19.0 8.1 Nil
Sesamum indicum	22.0	-do-	10 20 40	4.0 Nil Nil

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tively, whereas 40% solution completely removes aflatoxin from the seeds (Table 2).

Present study reveals that the quantity of AFB_1, B_2, G_1 and G_2 present in oil seeds of *B. compestris*, *L. usitatissimum* and *S. indicum* can be reduced to permissible level fixed by WHO when exposed to UV light and treated with common salt. UV light gave more promising result in case of *L. usitatissimum* and *S. indicum* as it destroyed aflatoxin. 40% common salt has also been found to be effective in destroying aflatoxin in oil seeds. Further common salt has the advantage of being commonly available nontoxic compound which has no residual effect.

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