PRODUCTION OF AFLATOXIN IN CULTURE MEDIA BY *ASPERGILLUS FLAVUS* LINK EX FR. ISOLATES FROM VEGETABLE SEEDS

Seed-borne fungi of vegetables cause damage to the seeds or to the crops raised from such seeds. The nature of damage consists of reduction in seed germination, poor development of plants showing various kinds of disease symptoms or production of toxins. Aflatoxin produced by *Aspergillus flavus* inhibits seed germination and seedling vigour (Lalithakumari *el al.*, 1970) and causes albinism in plants (Kang *et al.*, 1971). It is also known to be toxic to human beings (Shoental and White, 1965). In the present study different isolates of *Aspergillus flavus* obtained from the following common vegetable seeds were tested for aflatoxin production.

Seven isolates of *Aspergillus flavus* obtained from the seeds of amaranthus (*Amaranthus gangeticus* L.), bitter gourd (*Momordica charantia* L.), bhindi (*Abelmoschus esculentus* L.), brinjal (*Solanum melongena* L.), cowpea *(Vigna sinensis* Endl.), cucumber *(Cucumis sativus* L.) and snake gourd (*Trichosanthus anguina* L.) were purified by single spore isolation and used for this experiment. The aflatoxin present in the isolates were extracted by the method described by Thomson and Mehdy (1978). These isolates were grown on Czapek's (Dox) agar medium (taken at the rate of 15 ml per 90 mm petridish for two weeks at room temperature, 28±2°C). Ten grams of the culture and medium were triturated in 30 ml of chloroform and centrifuged. The chloroform phase was evaporated and the residue assayed for the presence of aflatoxin by thin layer chromatography on silica gel G plates. The residue was dissolved in 2 ml of chloroform. Different quantities of the samples viz., 1, 2, 3, 4, 5, 6, 8 and 10 μl were spotted besides 3 μl of standard aflatoxin (supplied by Sigma Chemical Co., St. Loins, USA) by means of a micropipette. The plates were allowed to run in the solvent system of chloroform : acetone : n-haxane (85:15:20 v/v) and scanned under UV light (320-360 nm). The quantity of aflatoxin was estimated using the formula suggested by Pons *et al.* (1971).

Quantity of aflatoxin in the sample in ppm = (Quantity of standard aflatoxin to get minimum fluorescence x volume of the sample x 100)/(Visib!e spot number x weight of the sample)

All the seven isolates of *Aspergillus flavus* obtained from different vegetable seeds tested were found to produce aflatoxin (Table 1). A maximum quantity of 0.133 ppm of aflatoxin was produced by the isolates of *Aspergillus flavus* obtained from cucurbitaceous seeds viz., bitter gourd, cucumber and snake gourd, while the least quantity

Table 1. Aflatoxin production by different isolates of *Aspergillus flavus*

Isolates from	Aflatoxin (ppm)
Amaranthus	0.100
Bhindi	0.067
Bitter gourd	0.133
Brinjal	0.067
Cowpea	0.057
Cucumber	0.133
Snake gourd	0.133

was produced by isolates from bhindi, brinjal and cowpea and the amaranthus isolate was in between these extremes.

Blount (1961), Joffe (1969), Schroeder (1969), Lalithakumari *el al.* (1970), Kang *et al.* (1971) and Thomson and Mehdy (1978) have proved that members of the *Aspergillus flavus* group are the principal producers of aflatoxin. Joffe (1969) reported that aflatoxin produced by *Aspergillus flavus* caused wilting and drying of the shoots of groundnut, peas, beans and tomato. Toxins produced by *Aspergillus flavus* on maize seeds reduced germination (Misra *et al.* 1980) and on beans, cucumber, lettuce and cabbage these toxins caused reduction in seedling vigour (Brodnik and Klemnc, 1976).

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