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EFFECT OF SOME AQUEOUS PLANT EXTRACTS ON TOXIGENIC STRAIN OF ASPERGILLUS FLAVUS

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The influence of different plant leaf extracts on the toxic strain of *Aspergillus flavus* was studied. Maximum inhibition of *A. flavus* was observed in *Azadirachta indica* (neem) (73.18%) while *Argemone mexicana* stimulated the *A. flavus* growth.

Keywords: Aflatoxin, *A. flavus*, plant extracts.

INTRODUCTION

Aflatoxin the toxic secondary metabolite of *Aspergillus flavus* link ex fries and *A. parasiticus* speare, contaminates the field crops (Anderson et. al. 1975; Sihna 1990) and stored agricultural products (Bilgrami 1984; Sihna 1988) destined for animal and human consumption. It has been recognized as one of the most potent carcinogens, mutagens and teratogens (Asquith 1983, Ranjan 1985). The problem of the natural contamination of aflatoxins in various food commodities is now well established and several attempts to control the growth to casual organisms has also been studied in detailed. Use of plants for their antimicrobial and antifungal properties has been a subject of wide interest. In the present study effect of some plant extracts was studied on toxic strain of *Aspergillus flavus* was undertaken.

MATERIAL AND METHODS

From different locations near to Jodhpur city (Raj.) seventeen plant samples were collected. The plant leaf samples were initially treated with 2% NaOCI and subsequently washed thoroughly with sterile distilled water. Aqueous extracts (2:10 w/v) of the plants were prepared in glass homogenizers. The homogenized liquid was filtered and centrifuged at 30w rpm. The supernatant was used as test extract. 1 ml test extract was mixed with 24 ml of the liquid SMKY medium in 250 ml Erlenmeyer flask. For control 1 ml distilled water was mixed with 24 ml SMKY liquid medium. Each set was run in triplicate. The flasks were sterilized and inoculated with 6 day old culture of a toxigenic strain of *A. flavus*. The flasks were manually shaken twice a day and were incubated at $28 \pm 2^\circ\text{C}$ for 10 days. On the 11th day of the incubation the contents of each flasks was filtered through Whatman filter paper No.1. Mycelial met was dried at 60°C for 48 hrs. and average mycelium weight was determined.

RESULTS AND DISCUSSION

Result of 17 aqueous plant extracts on growth of toxigenic *A. flavus* strain is depicted in Table1. Extract of *Azadirachta indica* (neem) exhibited highest inhibition of *A. flavus* grow over control (73.18%) followed by *Euphorbia hirta* (69.48%), *Ocimum sanctum* (68.04%) *Thuja orientalis* (65.75) *Allium cepa* (61.78%). *Cleome gynandra* (59.36%). *Allium sativum* (52.66%),

Tamarindus indica (51.68%), Ficus religiosa (44.51%), Ficus bengalensis (39.08%) Vinca rosea (38.35%), Emblica officinalis (37.85%), Calotropis procera (36.23%), Ricinus communis (30.44%) & Achyranthus aspera (16.12%). However leaf extract of Argemone mexicana shows increase of A. flavus growth instead of inhibition (+28.95%) over contm Thus the maximum inhibition of A. flavus was observed in Azadirachta indica (neem) and lear in Achyranthus aspera. The mycelial dry weight in control was 795.33 (100%).

The inhibition of aflatoxin producing fungi by plant extracts is obviously due to the presence of certain inhibitory substances in plants (Tripathi and Dixit, 1977; Mishra and Dixit, 1978 Bilgrami et al, 1979;1980 and Singh and Sinha 1986). Thus, the use of aqueous plant extracts is besides being harmless, the cost will be negligible. Direct spray of aqueous plant extract on fungal mycelium met will be convenient and more over, any residual effect is not expected because these can be easily and quickly degradable.

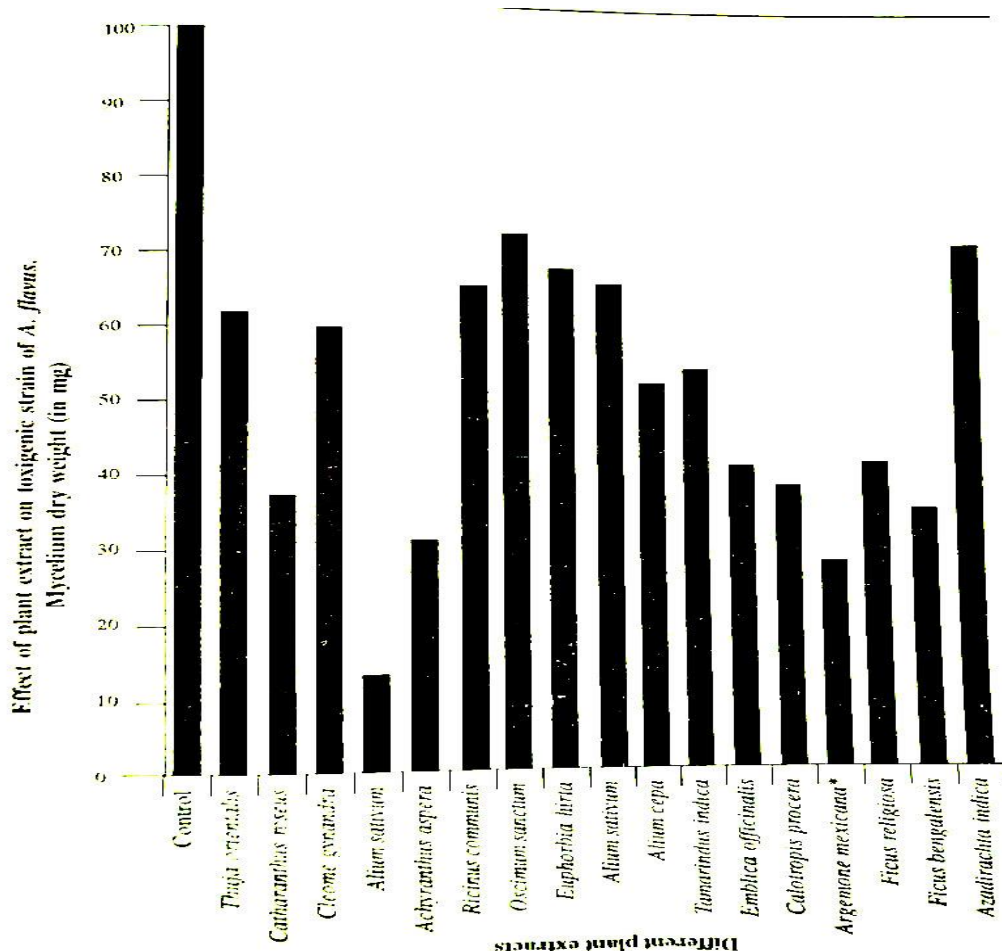
The problem of natural contamination of edible commodities with aflatoxin has been well recognized in pasts and attention towards their control is still continue by using different substances & ways. As these toxins have high boiling point therefore prevention of aflatoxin elaboration is considered to be the best approach towards it's control. The results obtained during study suggest that aflatoxin production on agricultural commodities in storage and standing crops can be prevented by using the extracts of wild plants which are capable of inhibits the growth of casual organism of aflatoxin production. Moreover the use of plants extracts for preventive measures would be very economical. The naturally occurring plants in the region contain some chemicals which acts as a fungicides and thereby reduced the fungal growth

Table 1: Effect of different plant extract on the growth of Aspergillus flavus.

S.No.	Name of the plants species	Mycelium Dry wt. (mg)	Percentage Stimulation/ inhibition over control
1.	Azadirachta indica	231.27	73.18
2.	Ficus bengalensis	484.66	39.06
3.	Ficus religiosa	441.29	44.51
4.	Argemone mexicana *	818.36	+28.95
5.	Calotropis procera	507.14	36.23
6.	Emblica officinalis	494.26	37.85
7.	Tomarindus indica	384.26	51.68
8.	Alium cepa	303.96	61.78
9.	Alium sativum	298.19	62.50
10.	Euphorbia hirta	242.72	69.48
11.	Oscimum sanctum	254.17	68.04
12.	Ricinus communis	553.25	30.44
13.	Achyranthus aspera	667.07	16.12
14.	Alium sativum	376.43	52.66
15.	Cleome gynandra	323.21	59.36
16.	Vinca rosea	490.31	38.35
17.	Thuja orientalis	272.39	65.75

Control mycelium weight = 795.33 mg

- shows stimulations



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