STUDIES ON AEROBIOLOGY OF AFLATOXIGENIC *ASPERGILLUS FLAVUS* IN AIR OVER GUWAHATI (KAMRUP DISTRICT) ASSAM, INDIA

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Introduction

Aflatoxigenic *Aspergillus flavus* and *A. parasiticus* are air borne molds and produce carcinogenic aflatoxin on food and feeds and its exposure through dietary intake in human is a global concern. Experts believe that the problem of mold and mycotoxin in food is likely to increase in future due to climate change. *A. flavus* is found in air, water, soil, agricultural produce and processed foods. Climate of Assam is warm and humid in Summer and cool and dry in winter. Mean annual rainfall is 2340 mm and 92 % of total rainfall recorded during wet moon soon period. Mean maximum and minimum temperature range from 23-31^{0}C and 10-25^{0}C respectively. Soil is predominantly alluvial and acidic (pH-4.2-5.8). Geoclimatic condition of Assam is conducive for growth and survival of *A. flavus* and contamination of food crops by aflatoxigenic *A. flavus* was reported. There is therefore a need to monitor population of air borne aflatoxigenic *A. flavus* in Assam.

Method

In the present investigation population of airborne *A. flavus* over residential areas of Guwahati (Lat 26.1065° N, Lon 91.5860° E) was monitored by conventional gravity exposure method (Turner 1972)for one year (March 2018- Feb 2019).

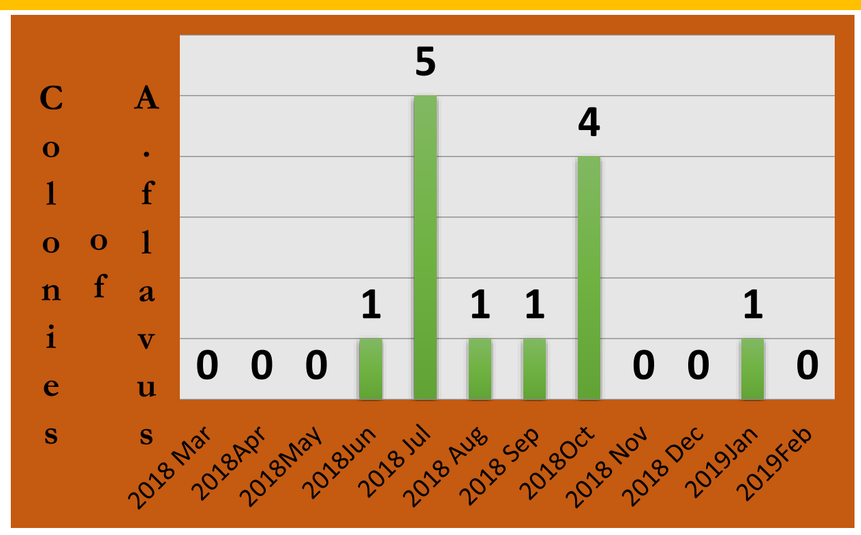
Results

A total of 13 isolates of *A. flavus* were recorded accounting for 1.52% of total population of 580 colonies of fungi and three isolates representing 23 % of total isolates were found to produce aflatoxin. The maximum incidence (five colonies)of *A. flavus* were observed in the month of July. There were four colonies during October and one each in June, August, September and January.

Fungal species	Total CFU/catch
A.flavus	13(1.52)*
A.fumigatus	24(2.82)
A.niger	64(7.52)
A.orchaceous	4(0.47)
Alternaria	5(0.58)
Actinomycetes	68(6.82)
Bipolaris	2(0.23)
Cladosporium	183(21.53
Curvularia	15(1.76)
Epicoccum	1(0.11)
F. solani	3(0.33)
Mucor	10(1.17)
Nigrospora	1(0.11)
Penicillium	56(6.58)
Pestalotiopsis theae	1(0.11)
Phoma	1(0.11)
Rhizopus	6(0.70)
Sterile white Colony	194(22.82)
Sterile brown Colony	59(6.94)
Torula	25(2.94)
Trichoderma	9(1.05)
Thamnidium	1(0.11)
Unidentified	1(0.11)
Yeast (Pink)	106(12.47)
Total	850(100)

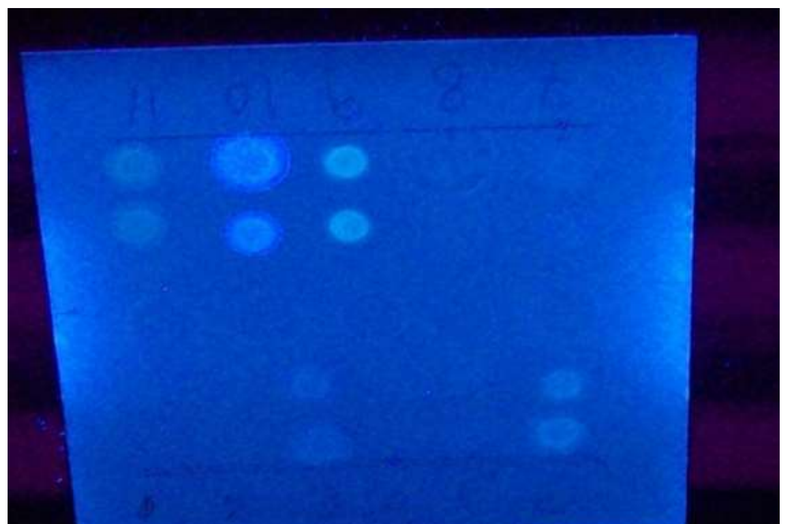
*Figure in brackets =Percent occurrence

Nutrient medium: Rose Bengal chloramphenical agar



Seasonal occurrence of *A. flavus in air*

11 Isolates of *Aspergillus flavus*



Blue fluoresces of metabolites of few *A. flavus* strains

Conclusion

Three isolates of aflatoxigenic *A. flavus* have been recorded. Further ecological management studies involving non toxigenic strains are being planned.