Short Communication

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EFFECT OF SOME PLANT EXTRACTS ON GROWTH AND CITRININ PRODUCTION BY *PENICILLIUM CITRINUM*

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The effect of aqueous extracts of 23 plants common in Godavari belt on growth and citrinin production by *Penicillium citrinum* was studied in SMKY liquid medium. The production of citrinin was completely inhibited by leaf extracts of *Lycopersicum esculentum*, *Lantana camara* and *Coriander sativum*, *Eucalyptus globulus* and *Mentha arvensis* were responsible for partial inhibition, but *Helianthus annus* and *Ferula foetida* stimulated the citrinin production.

Key Words : Citrinin production, *Penicillium citrinum.*

Antifungal action of plant extracts has got great potential as they can be handled easily. They lack residual effect, systemic in their activity, easily biodegradable and stimulate host metabolism. In recent times the anti-microbial properties of some plant constituents are being exploited in protecting man from moulds and mycotoxicosis. (Bilgrami *et al.*, 1980). Powders and extracts of different plants (Nicollas, 1970; Dubey *et al.*, 1990) are reported to be an effective anti-microbial natural products. Bilgrami *et al.* (1980) and Surekha and Reddy (1992) reported the efficacy of some wild and medicinal plant extracts on gliotoxin and Penitram A production respectively. In the present investigations plant extracts common in this region were screened for their efficacy against *penicillium citrinum* growth and to citrinin production inhibition.

Aqueous extracts of plants was prepared as suggested by Misra & Dixit (1977). Erlenmayer conical flasks (capacity 250 ml) containing 5,10,15,20, ml. of crude extract and 45, 40, 35 and 30 ml. of SMKY medium were sterilized, cooled and inoculated with monosporic cultures of *Penicillium citrinum* under aseptic conditions. Medium without plant extract served as control. The inoculated flasks were incubated at 27-29°C for 15 days. At the end of incubation, pH, biomass and citrinin produced was extracted with chloroform and estimated by the method suggested by Damodaran *et al.* (1973). From table 1 it is evident that out of 23 plants tried, leaf extracts of *Lycopersicum esculentum, Lantana camara* and *Coriander sativum* completely inhibited citrinin production with meagre biomass of fungus at 300 mg/ml concentration. The stem extracts of *Vinca rosea,* and *Azhadirachta indica,* the leaf extracts of *Carica papaya, Eucalyptus globulus* and *Hyptis sualensis* were also inhibitory to the growth and citrinin production. The unprocessed turmeric corm (fresh from field) extract was responsible for total inhibition of citrinin production at 400 mg/ml concentration. Rest of the plant extracts exhibited moderate inhibition both on citrinin and biomass production. The pH of the medium varied with the extract used. Extracts of *Helianthus annus, Allium cepa* and *Ferula foetida* were stimulatory. In case of rhizome of turmeric (fresh from field) the inhibitory activity may be attributed to the presence of curcumin and oil containing zinziberine both of them have antifungal nature. Like this the presence of nimbin, nimbidine and nimbinin in bark of neem, citral, cineole, gingerol in case of ginger rhizome, cineole in callistemon leaves, camerene, iso camerene, lantanin, and Landene A & B in leaves of *L. camara,* citronellol in leaves of *M. arvensis,* gluco alkaloides, tomatine and tomatidine in leaves of *L. esculentum,* ursdic acid and variety of alkaloids in *V. rosea* may be responsible for inhibition of biomass and mycotoxin production by *P. citrinum.* Curcuma longa too was effective inhibitor of citrinin production.

Callistemon lanceolatus, Lawsonia inerms, Hibiscus canabinus and *Helianthus annus* were found to lack fungitoxic principle and caused minimum inhibition of citrinin production. Rest of the plants showed intermediate degree of fungitoxic principle. The extracts of the plant bearing antifungal pro-

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perties may be used in protection of different agricultural commodities from mould and mycotoxin production. However, more detailed investigations are desirable for the method of their applications.

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