

## Effect of the essential oil of *Cymbopogon nardus* on *Aspergillus flavus* Link isolated from Sri Lankan paddy and rice

P. A. Paranagama, K. H. T. Abeysekera

Department of Chemistry, University of Kelaniya, Kelaniya

K. P. Abeywickrama

Department of Botany, University of Kelaniya, Kelaniya

L. Nugaliyadda

Rice Research and Development Institute, Bathalagoda, Ibbagamuwa

---

### ABSTRACT

*Aspergillus flavus* Link is a prominent pest of stored rice. Previous reports suggest that the essential oils could be used to control stored grain pests. The effect of *C. nardus* oil on the mycelial growth, sporulation and aflatoxin production was studied with the view of using this essential oil as a stored paddy/rice protectant against fungi.

*Aspergillus flavus* was isolated from paddy and rice samples obtained from the Kurunegala district. The frequency of occurrence of *A. flavus* was 2.4% - 83.5% and 0.22% - 1.3% in rice and paddy respectively.

The fungicidal efficacy of the oil of *C. nardus* evaluated in SMKY liquid medium indicated an increase in the inhibition of mycelial dry weight from 50% to 95% with the increase in the concentration of oil from 1.0 - 1.8 mg/ml. Minimum Inhibitory Concentration and Minimum Lethal concentration of the oil were 2 and 4 mg/ml respectively. No aflatoxin could be detected at or above 0.6 mg/ml of test oil in medium although the mycelial growth was not completely inhibited ( $p > 0.05$ ).

*Aspergillus flavus* grown on Potato Dextrose Agar in McCartney bottles was subjected to the vapour action of oil (0.13 - 2.8 mg/ml) added to the sponges inserted underside of the lids. Complete fumigation effect on spores was noted at 2.8 mg/ml. Therefore a potential exists in utilizing volatiles of *C. nardus* as a fungicide to control *A. flavus* stored paddy / rice. Investigations on the toxic and organoleptic aspects of oil treated grain samples are being carried out.

Financial assistance of National Science Foundation, National Research Council and Third World Academy of Science are acknowledged.