

symposia on

**fermented foods  
food contaminants  
biofertilizers and  
bioenergy**

**22-24 november 1982**

**organised by**

**AMI, CFTRI & DFRL**

**Symposia on  
Fermented Foods, Food Contaminants,  
Biofertilizers and Bioenergy**

**23rd AMI Annual Conference**

**22—24 November 1982**

**at**

**The Central Food Technological Research Institute, Mysore**

**A TECHNICAL BROCHURE**

**ORGANIZED BY**

**ASSOCIATION OF MICROBIOLOGISTS OF INDIA**

**CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE, MYSORE**

**DEFENCE FOOD RESEARCH LABORATORY, MYSORE**

16. EXTRACTION AND PARTIAL PURIFICATION OF LARVICIDAL TOXIN  
FROM *BACILLUS SPHAERICUS* 1593

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*Bacillus sphaericus* 1593 is an ubiquitous aerobic spore-former which exhibits specific toxicity towards mosquito-larvae without causing any harmful side effects and environmental pollution. The toxin has been isolated from spores of the organism grown on NYSM broth with 0.3% NaCl. Spores released by lysing the mother cells are cleaned by sonication followed by treatments. This is then subjected to ten cycles of freezing-thawing and the suspension is then centrifuged. Toxic components are then precipitated from the 100,000 g supernatant by 0.50% saturation of  $(\text{NH}_4)_2\text{SO}_4$  and are further fractionated by chromatography and gel filtration. The  $\text{LC}_{50}$  values in the crude extract are found to be as low as 70 nanograms/ml when tested against II instar larvae of *Culex pipiens fatigans*.

17. PLANT GROWTH REGULATORY METABOLITES PRODUCED BY FUNGI

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Plant growth regulatory metabolites from about 80 fungal species were investigated. About 41 showed varying degree of growth promoting response as determined by avena coleoptile straight growth test, while 37 species showed growth inhibitory effects and two were ineffective. About 16 fungal culture filtrates showed good growth responses. Culture filtrate of *Aspergillus flavus* induced only shoot growth but caused strong inhibition of root growth in pea seedling test. On the whole culture filtrates of *Botryodiplodia*, *theobromae*, *Curvularia*, *Lunata*, *Fusarium moriliforme*, *Penicillium notatum* and *P. thomii* showed remarkable growth stimulation by both bioassay tests.

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18. PRODUCTION OF RIBONUCLEASE BY *ASPERGILLUS CANDIDUS* M 16a -  
EFFECT OF NUTRITIONAL AND ENVIRONMENTAL FACTORS

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*A. candidus* M16a produces a potent extracellular RNase, by submerged fermentation. Starch and ammonium nitrate were found to be the best carbon and nitrogen sources respectively. Replacement of ammonium nitrate by casein or peptone increases the enzyme by tenfold. The pH optima in a semisynthetic medium were found to be 6.6 and 9.8. The purified enzyme has been characterised to be an endonucleolytic, 3'-nucleotide, forming, cydizing ribonuclease. The enzyme can also find its application in reduction of nucleic acid content in yeast single cell proteins.

19. INFLUENCE OF ADDITIVES AND FOOD THICKENERS ON PELLET GROWTH AND BIOSYNTHESIS  
OF AFLATOXIN BY *ASPERGILLUS PARASITICUS*

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Growth of mold in the form of pellets has been studied with reference to biogenesis of secondary metabolites. The influence of polymeric additives and food thickeners like pectin, agar, carboxy methyl cellulose (CMC), alginic acid and polyvinyl pyrrolidone (PVP) was assessed on pellet growth and aflatoxin producing ability of *Aspergillus parasiticus* NRRL 3145 in shake culture. Pectin, agar and CMC increased the viscosity of the medium and stimulated aflatoxin production. On the other hand, the addition of surfactants such as sodium taurocholate (bile salt), Triton X-100 and tergitol resulted in checking the growth as well as aflatoxin synthesis. Tween-80 stimulated aflatoxin production, though the growth was inhibited at higher concentration. These observations could be explained on the basis of nature of pellet formation and their oxygen diffusion characteristics in shake culture.