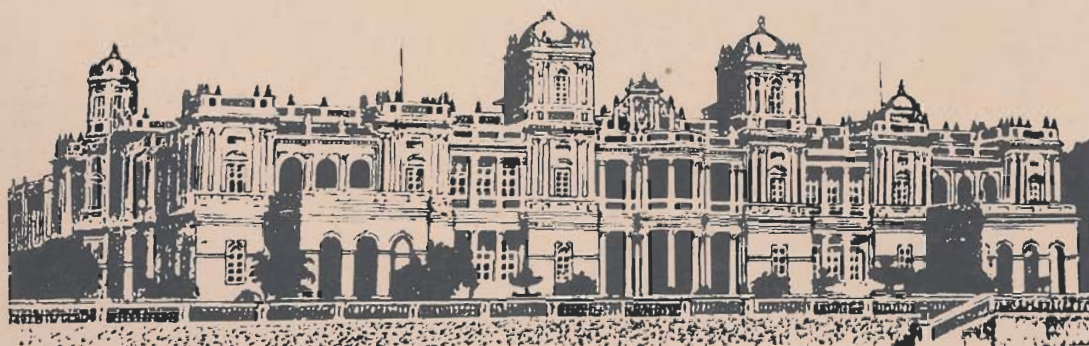


BRAINSTORMING SESSION ON FOOD BIOTECHNOLOGY

MAY 7-8, 1993

Sponsored by
Department of Biotechnology
Ministry of Science and Technology
Government of India
NEW DELHI



केन्द्रीय खाद्य प्रौद्योगिक अनुसंधान संस्थान मैसूर

Central Food Technological Research Institute
(Council of Scientific and Industrial Research)
Mysore - 570 013

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1. NAME OF PRINCIPAL INVESTIGATOR : **Dr. A.A.M. KUNHI**
2. AFFILIATION AND ADDRESS : Dept. of Microbiology & Bioengineering, CFTRI, Mysore - 570 013.
3. DATE OF BIRTH : December 24, 1948
4. NAME OF CO-INVESTIGATORS : Dr. Khadar Valli
5. TITLE OF THE PRE-PROPOSAL : **Biodegradation of pesticide residues and other hazardous organic wastes.**

6. SUMMARY OF RESEARCH PLAN PROPOSED:

Accumulation of alarming levels of toxic residues of pesticides and other recalcitrant chemicals in human body has been reported in India and other developing countries. They reach human body from the cultivated soil and irrigation water biomagnified through the food chain. Production and use of pesticides and other hazardous chemicals are on the increase leading to the accumulation of their residues in the environment. If the escalating onslaught of these toxic chemicals on the environment goes unabated the earth will soon become unsuitable for inhabitation. Elimination/abatement of these xenobiotic compounds by microbial processes is considered to be potentially more efficient. However, it has been shown that laboratory developed microbial strains often fail in the field conditions, mainly due to the presence of heterogeneous mixtures of structurally related compounds, which, as a result of metabolic incompatibility, 'pickle' the applied strains. Hence, it is imperative that microbial consortia consisting of strains endowed with abilities to degrade a large number of compounds that are likely to be present in the 'toxic soup'. We have isolated very potent microbial strains that can degrade high levels of mono-chlorobenzoates (*Pseudomonas aeruginosa* strain 3 mT), phenol, cresols, xylenols, mono-chlorophenols (*Pseudomonas* sp. strain CP4 and strain CPC-1 and CoPC-1) as well as microbial consortia that can degrade -HCH, -HCH and technical-HCH. In the proposed project it is envisaged to test these consortia and individual strains in the soil beds containing various toxic chemicals with a view to make suitable formulations of microbial consortia that could effectively clean up the soil of the toxic chemicals. Attempts also will be made to isolate more strains that could degrade higher chlorinated compounds as well as to improve the strains genetically.

7. TOTAL ESTIMATED COST OF THE PROJECT(RS. IN LAKHS)

a. Pay and allowances	Rs. 20.0
b. other recurring expenditure	Rs. 25
c. Equipment	: Rs. 25.
Total	Rs. 70

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8. LIST OF EQUIPMENT COSTING ABOVE ONE LAKH AND APPROXIMATE COST (RS. IN LAKHS)

1. Gas chromatographic with ECD, FID etc.
2. HPLC
3. Dissolved oxygen meter
4. Cl meter
5. Deep freezer (-70oC)

Total foreign exchange component of about 70,000 US \$.

9. MANPOWER REQUIRED

1. Research Associate : 2
2. Junior Research Fellows : 2
3. Technical Assistants : 2

10. OTHER PROJECTS WITH THE PI: No Grant In Aid Project

11. LIST OF PI'S IMPORTANT PUBLICATIONS IN THE AREA

1. Kunhi, A.A.M. (1991) *Pseudomonas* an efficient system for gene cloning and manipulation. In. H. Polasa (Ed.) Microbial gene Technology. South Asian Publishers, New Delhi, pp. 31-59.
2. Ajith Kumar, P.V. and Kunhi A.A.M. Isolation and characterization of Chlorobenzoic acid degrading strain of *Pseudomonas*. Abstract No. MFT-25, IX ICFOST. Proc. Natl. Symp. Assoc. Food Sci. Technol. (India) June 10-12. 1991, CFTRI, India, p. 91.
3. Ajith Kumar, P.V. and Kunhi A.A.M. Isolation and characterization of microorganisms degrading chlorinated aromatic compounds. Abstract no. CP-5, 1990. Osmania University, Hyderabad, India.
4. Kunhi A.A.M. Biotechnological approach to abatement of recalcitrant xenobiotics from environment - the problems and prospects. CSIR - Technical Advisory Committee organized brain storming sessions on biotransformations. June 8-9, 1991. Indian Inst. of Petroleum, Dehradun, India.
5. Sudhakar Babu K., Ajith Kumar P.V. and Kunhi A.A.M. Simultaneous degradation of 3-chlorobenzoate and phenolic compounds by defined mixed cultures of *Pseudomonas* spp. Abstract No. BC 03 Proc. 33rd Ann. Conf. Assoc. Microbiol. India, Nov. 5-7, 1992, Goa University, Goa, India p. 69.

12. ANY OTHER INFORMATION : Nil