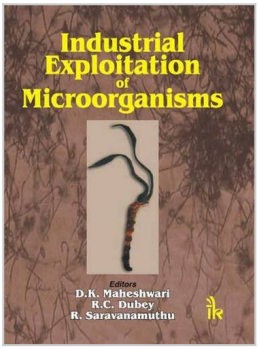

Industrial Exploitation of Microorganisms

By D.K. Maheshwari, R.C. Dubey, R. Saravanamurthu

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This book embodies 21 review articles contributed by subject experts of various areas of industrial microbiology. The articles are devoted to pharma industries, food and enzyme industries, textile industry, agro-industry and cottage industry.

Yeast is one of the important microorganisms which have been used to produce beverages, alcohols and fermented food commodities for a very long time. In recent years, it has been the first choice among eukaryotes to use in recombinant technology. Yeast and Spirulina are being used and marketed as Single Cell Protein (SCP). Mushrooms have been used by humans down the ages. In addition to a rich source of mycoprotein, they have medicinal values also against many ailments. Number of bioactive novel compounds is increasing with the discovery of microbial species and newer groups of microorganisms.

Some chapters are devoted to microbial bioinoculants used as biofertilizers because they are rich source of nitrogen and phosphorus for both legumes and non-legumes. They are being manufactured and sold in market with different trade names. In addition, several microbial enzymes have been produced and commercialized by various industries, but highly active and potential enzymes produced through recombinant DNA technology hold much importance. For example, microbial proteases find application in detergent leather, food and pharma industries and provide eco-friendly technology for bioremediation. Laccase has been worked out to be a good tool for bioremediation of non-degradable wastes and xenobiotic chemicals. Besides, laccase-based biosensors have also been constructed which can be used for phenol determination, monitoring of lignin and plant flavonoids.

Various microbial phytases as feed supplemented have been used in freshwater and marine aquaculture for improving the growth performance of fishes. Nowadays aquaculture is growing rapidly to meet increasing food demand throughout the world for high quality fish. More than 16,000 bioactive compounds have been isolated from actinomycetes alone including antibiotics, enzymes, vitamins, amino acids, siderophores and nanoparticles. Biosynthesis of nanoparticles by bacteria, actinomycetes and algae has been reported and work is being done nationally and internationally.

Contents: Biotechnological Potential and Industrial Application of Yeast /

Probiotics Microorganisms / Spirulina: Its Role in Food Industry / Microbial Biopesticides / Biotechnological Potentials of Cyanobacteria and their Industrial Applications / Biotechnological Potentialities of Higher Fungi / Cordyceps sinensis (Yarha gamboo): A High Value Medicinal Mushroom / Biotechnological Application in Textile Industry Antimicrobial Textiles / Applications of Streptomyces sp. in Pharmaceutical Industry / Microbial Proteases and their Applications / Proteases: Significance and Applications / Electrocatalytically Active Laccases: Application for Biosensor Development / Potential Applications of Microbial Phytases in Aquaculture / Laccase Regulation and Laccase-Dependent Bioremediation / Biotechnological, Genetic Engineering and Nanotechnological Potential of Actinomycetes / Strategic Synthesis of Nanoparticles by Mycetes / Discovery of Bioactive Molecules from Plants and Microorganisms / Agro-industrial Bioprocessing of Tropical Root and Tuber Crops - Current Research and Future Prospects / Pharma-active Compounds of Microbial Origin and their Diversity / Industrially Useful Microbial Bioresources / Antimicrobial Properties of Essential Oils and their Potential Applications in Pharmaceutical Industries / Index.

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