



ISBN: 978-93-88901-69-7

# RESEARCH TRENDS IN MICROBIOLOGY

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Purna (Jn), Dist. Parbhani

*Bhumi Publishing*

**BHUMI PUBLISHING, INDIA**

**FIRST EDITION: JULY 2023**

## TABLE OF CONTENT

| Sr. No. | Book Chapter and Author(s)  | Page No. |
|---------|---|----------|
| 1.      | <b>BACTERIOCIN PRODUCTION FROM LACTIC ACID BACTERIA-<br/>A REVIEW</b><br>Daiwshala C. Kamthane  | 1 - 7    |
| 2.      | <b>EFFECTS OF DIFFERENT SPECIES OF <i>TRICHODERMA</i> AND ITS<br/>GENES ON PLANTS- HOST MICROBE INTERACTION</b><br>Gitanshu Tarendra Dinkwar  | 8 - 14   |
| 3.      | <b>METHOD FOR DETECTION OF PLANT PATHOGENS- LAMP<br/>(LOOP MEDIATED ISOTHERMAL AMPLIFICATION)</b><br>Sunil Kumar and Mantun Kumar Roy   | 15 - 22  |
| 4.      | <b>MECHANISM OF <i>BACILLUS</i> STRAINS AS DEFENCES AGAINST<br/>BACTERIAL LEAF BLIGHT OF RICE</b><br>Sushma Verma   | 23 - 28  |
| 5.      | <b>IN VITRO ANTIFUNGAL ACTIVITY OF <i>PARTHENIUM<br/>HISTEROPHORUS</i> AGAINST <i>FUSARIUM OXYSPORUM</i> F. SP.<br/>CUBENSE CAUSING PANAMA WILT OF BANANA</b><br>M. S. Desai and A. A. Jagtap | 29 - 31  |
| 6.      | <b>PLANT GROWTH PROMOTING OF <i>ZEA MAYS</i> L. IN<br/>METALLIFEROUS SOILS BY RHIZOSPHERIC BACTERIA</b><br>Swapan Kumar Chowdhury   | 32 - 51  |
| 7.      | <b>A CONTEMPORARY STUDY ON SOME IMPORTANT<br/>STAINING TECHNIQUES</b><br>Chitra Bag   | 52 - 57  |
| 8.      | <b>AN INTRODUCTION TO IMPACT OF MICROBIOLOGY<br/>TOWARDS BIOTECHNOLOGY</b><br>Saikrupa Arun, Gaurav Jadhav and Vaishnavi Gharat   | 58 - 75  |
| 9.      | <b>NANOTECHNOLOGY IN MANAGEMENT OF NEMATODE PESTS</b><br>Basant Deshwal, Vishnu Dadhich,<br>Mukesh Jaiman and Anjali Nagori   | 76 - 84  |

## BACTERIOCIN PRODUCTION FROM LACTIC ACID BACTERIA - A REVIEW

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Corresponding author E-mail: [daiwa.kamthane@rediffmail.com](mailto:daiwa.kamthane@rediffmail.com)**Abstract:**

Bacteriocins are biologically active proteins or protein complexes that display a bactericidal mode of action towards usually closely related species. Numerous strains of bacteriocin producing *Lactobacillus plantarum* have been isolated in the last two decades from different ecological niches including meat, fish, fruits, vegetables, milk and cereal products. Several of these have been characterized and the amino acid sequence determined. Different aspects including isolation and identification of bacterial strains, screening of isolates for antibacterial activity, effect of pH, temperature, NaCl concentration and organic solvents on bacteriocin production, purification and characterization of bacteriocin were studied.

**Keywords:** Lactic Acid Bacteria, Bacteriocins, *Lactobacillus plantarum*

**Introduction:**

A great number of Gram positive bacteria and Gram negative bacteria produce during their growth, substances of protein structure (either proteins or polypeptides) possessing antimicrobial activities, called bacteriocins (Zacharof and Lovitt, 2012). *Lactobacillus* is a diverse group of microorganisms consisting of a number of different species. They are nonspore formers, Gram positive rods ranging from 0.5-1.2x 1-10  $\mu\text{m}$  in size and produce lactic acid as a fermented end product (Aasen *et al.*, 2000; Karthikeyan and Santosh, 2009). The genus comprises over 25 species. Some are homofermentative and some are heterofermentative. Some antibacterial proteins (bacteriocins) from lactic acid bacteria are popular (Nistin). Bacteriocins are bacterial origin proteinaceous compounds lethal to other bacteria. Generally, bacteriocins are named according to the genus or species of the bacterial strain that produces them. For example, plantaricin is produced by *Lactobacillus plantarum* (Joerger *et al.*, 2000; Karthikeyan and Santosh, 2009). To avoid the use of chemical preservatives in food, bacteriocins produced by lactic acid bacteria have received much attention during recent years for their possible application as bio preservatives in food (Karthikeyan and Santosh, 2009). The antimicrobial peptides produced by *Lactobacillus plantarum*, inhibits the growth of number of food spoilage bacteria (Reenen *et al.*, 1998).

In food industry, bacteriocins can be applied in the food industry as natural preservatives. The use of LAB and of their metabolic products is generally considered as safe (GRAS, Grade One). The application of the produced antimicrobial compounds as a natural barrier against pathogens and food spoilage caused by *Gram positive* bacteria has been proven to be efficient (And and Hoover, 2003).