

The Official Publication of the Association of Microbiologists of India



Indian Journal of Microbiology

CONTENTS

Review Article

1. Biodiesel Industry Waste: A Potential Source of Bioenergy and Biopolymers 1
P. Kumar · S. Mehariya · S. Ray · A. Mishra · V.C. Kalia

Original Articles

2. Isolation, Characterization and Assessment of *Pseudomonas* sp. VITDM1 for Electricity Generation in a Microbial Fuel Cell 8
R. Manogari · D.K. Daniel
3. Antioxidant Activity of Bacteria Associated with the Marine Sponge *Tedania anhelans* 13
D. Balakrishnan · A.S. Bibiana · A. Vijayakumar · R.S. Santhosh · K. Dhevendaran · P. Nithyanand
4. Identification and Characterization of *Lactobacillus brevis* P68 with Antifungal, Antioxidant and Probiotic Functional Properties 19
M.V. Arasu · N.A. Al-Dhabi · T.S. Rejiniemon · K.D. Lee · V.A.J. Huxley · D.H. Kim · V. Duraipandiyar · P. Karupiah · K.C. Choj
5. Anthrax Outbreak Among Cattle and its Detection by Extractable Antigen 1 (EA1) Based Sandwich ELISA and Immuno PCR 29
J.J. Kingston · S. Majumder · S.R. Uppalapati · S.S. Makam · R.M. Urs · H.S. Murali · H.V. Batra
6. The Effect of Dextranucrase Gene Inactivation on Mannitol Production by *Leuconostoc mesenteroides* 35
Z. Zhang · W.-Y. Cheng · X.-Y. Ju · H.-X. Jin
7. Membrane Biosynthesis Gene Disruption in Methicillin-Resistant *Staphylococcus aureus* (MRSA) as Potential Mechanism for Reducing Antibiotic Resistance 41
N.M. Alipiah · M.N. Shamsudin · F.M. Yusoff · A. Arshad
8. Structural Features of a Highly Conserved Omp16 Protein of *Pasteurella multocida* Strains and Comparison with Related Peptidoglycan-associated Lipoproteins (PAL) 50
A. Kumar · N.N. Mohanty · N. Chacko · R. Yogisharadha · S.B. Shivachandra
9. Identification of Periplasmic α -Amylase from Cow Dung Metagenome by Product Induced Gene Expression Profiling (Pigex) 57
S. Pooja · M. Pushpanathan · S. Jayashree · P. Gunasekaran · J. Rajendhran
10. Simultaneous Production of Antifungal and Keratinolytic Activities by Feather-Degrading *Bacillus subtilis* S8 66
T.-H. Go · K.-S. Cho · S.-M. Lee · O.-M. Lee · H.-J. Son
11. Role of Lytic Enzymes Secreted by *Lysobacter capsici* YS1215 in the Control of Root-Knot Nematode of Tomato Plants 74
Y.S. Lee · X.H. Nguyen · K.W. Naing · Y.S. Park · K.Y. Kim
12. Dietary *Saccharomyces cerevisiae* Boosts Growth and Immunity of IMC *Labeo rohita* (Ham.) Juveniles 81
P. Bandyopadhyay · S. Mishra · B. Sarkar · S.K. Swain · A. Pal · P.P. Tripathy · S.K. Ojha
13. Pan-Genome of *Brucella* Species 88
J. Sankarasubramanian · U.S. Vishnu · J. Sridhar · P. Gunasekaran · J. Rajendhran

14. Comparative Genome Analysis of *Lactobacillus casei*: Insights into Genomic Diversification for Niche Expansion 102
S. Yu · Y. Peng · Y. Zheng · W. Chen
15. Molecular Diversity and Mating Type Distribution of the Rice Blast Pathogen *Magnaporthe oryzae* in North-East and Eastern India 108
J. Imam · S. Alam · N.P. Mandal · D. Maiti · M. Variar · P. Shukla
- Short Communications*
16. Creation of Functionally Diverse Chimerical α -Glucosidase Enzymes by Swapping Homologous Gene Fragments Retrieved from Soil DNA 114
X. Yin · L. Ma · X. Pei · P. Du · C. Li · T. Xie · L. Yu · L. Yu · Q. Wang
17. Gene Diversity of *H. pylori cagPAI* Genes in Patients with Gastroduodenal Diseases in a Region at High Risk of Gastric Cancer 118
M. Wang · C. Shao · J. Li · X. Wang · S. Wang · S. Shao

CONTENTS

Review Articles

1. Meddling *Vibrio cholerae* Murmurs: A Neoteric Advancement in Cholera Research 121
M. Hema · S. Balasubramanian · S.A. Princy
2. Contemplating 3-Hydroxypropionic Acid Biosynthesis in *Klebsiella pneumoniae* 131
Y. Li · P. Tian

Original Articles

3. Insights into the Origin of *Clostridium botulinum* Strains: Evolution of Distinct Restriction Endonuclease Sites in *rrs* (16S rRNA gene) 140
A. Bhushan · T. Mukherjee · J. Joshi · P. Shankar · V.C. Kalia
4. Phylogenetic Study of Methanol Oxidizers from Chilika-Lake Sediments Using Genomic and Metagenomic Approaches 151
K.K. Meena · M. Kumar · S. Mishra · S.K. Ojha · G.C. Wakchaure · B. Sarkar
5. Antibacterial Activity of Green Synthesized Silver Nanoparticles Using Vasaka (*Justicia adhatoda* L.) Leaf Extract 163
D. Bose · S. Chatterjee
6. Antimicrobial Activities of Silver Nanoparticles Synthesized by Using Water Extract of *Arnicae anthodium* 168
R. Dobrucka · J. Długaszewska
7. Essential Oils, Silver Nanoparticles and Propolis as Alternative Agents Against Fluconazole Resistant *Candida albicans*, *Candida glabrata* and *Candida krusei* Clinical Isolates 175
P. Szweda · K. Gucwa · E. Kurzyk · E. Romanowska · K. Dzierżanowska-Fangrat · A. Zielińska Jurek · P.M. Kuś · S. Milewski
8. Molecular, Physiological and Phenotypic Characterization of *Paracoccus denitrificans* ATCC 19367 Mutant Strain P-87 Producing Improved Coenzyme Q₁₀ 184
P. Tokdar · A. Sanakal · P. Ranadive · S.S. Khora · S. George · S.K. Deshmukh
9. Heterologous Expression and Efficient Secretion of Chitosanase from *Microbacterium* sp. in *Escherichia coli* 194
Y. Sun · J. Zhang · S. Wang
10. Direct Biotransformation of Dioscin into Diosgenin in Rhizome of *Dioscorea zingiberensis* by *Penicillium dioscin* 200
J. Dong · C. Lei · D. Lu · Y. Wang
11. IAA Producing *Enterobacter* sp. I-3 as a Potent Bio-herbicide Candidate for Weed Control: A Special Reference with Lettuce Growth Inhibition 207
J.-M. Park · R. Radhakrishnan · S.-M. Kang · I.-J. Lee
12. Rapid Diagnosis and Simultaneous Identification of Tuberculous and Bacterial Meningitis by a Newly Developed Duplex Polymerase Chain Reaction 213
K.J. Nagdev · S.P. Bhagchandani · S.S. Bhullar · R.C. Kapgate · R.S. Kashyap · N.H. Chandak · H.F. Dagainawala · H.J. Purohit · G.M. Taori
13. Using a Label Free Quantitative Proteomics Approach to Identify Changes in Protein Abundance in Multidrug-Resistant *Mycobacterium tuberculosis* 219
T.Q. Phong · D.T.T. Ha · U. Volker · E. Hammer



Short Communication

14. Development of PCR Diagnostic System for Detection of the Seed-Transmitted *Tobacco Ringspot Virus* in Quarantine

S. Lee · G. Lee · I.C. Choi · J.Y. Rho

CONTENTS

Review Article

1. Challenges and Opportunities for Customizing Polyhydroxyalkanoates 235
M. Singh · P. Kumar · S. Ray · V.C. Kalia

Original Articles

2. Genome Wide Analysis for Searching Novel Markers to Rapidly Identify *Clostridium* Strains 250
A. Kekre · A. Bhushan · P. Kumar · V.C. Kalia
3. Enhancing Degradation of Low Density Polyethylene Films by *Curvularia lunata* SG1 Using Particle Swarm Optimization Strategy 258
S. Raut · S. Raut · M. Sharma · C. Srivastav · B. Adhikari · S.K. Sen
4. Diversity of the Intestinal Bacteria of Cattle Fed on Diets with Different Doses of Gelatinized Starch-Urea 269
Z. Cui · Q. Meng · W. Ma · X. Zhang · Z. Zhou · L. Ren
5. Effect of Direct-Current Electric Field on Enzymatic Activity and the Concentration of Laccase 278
C. Wang · H. Zhang · D. Ren · Q. Li · S. Zhang · T. Feng
6. Mapping of the Interaction Between *Agrobacterium tumefaciens* and *Vanda* Kasem's Delight Orchid Protocorm-Like Bodies 285
P. Gnasekaran · S. Subramaniam
7. Fermentative Production of Pyranone Derivate I from Marine *Vibrio* sp. SKMARSP9: Isolation, Characterization and Bioactivity Evaluation 292
P. Shiva Krishna · B. Sudheer Kumar · P. Raju · M.S.R. Murty · T. Prabhakar Rao · M.A. Singara Charya · R.S. Prakasham
8. Copper(II) Complexes with N,O-Donor Ligands and Ofloxacin Drug as Antibacterial, DNA Interacting, Cytotoxic and SOD Mimic Agent 302
P.S. Karia · P.A. Vekariya · A.P. Patidar · M.N. Patel
9. Functional Identification of OphR, an IclR Family Transcriptional Regulator Involved in the Regulation of the Phthalate Catabolic Operon in *Rhodococcus* sp. Strain DK17 313
K.Y. Choi · B.S. Kang · M.H. Nam · W.J. Sul · E. Kim
10. Molecular Epidemiology of Nontyphoidal Salmonella in Poultry and Poultry Products in India: Implications for Human Health 319
S. Saravanan · V. Purushothaman · T.R.G.K. Murthy · K. Sukumar · P. Srinivasan · V. Gowthaman · M. Balusamy · R. Atterbury · S.V. Kuchipudi
11. Promising Biological Indicator of Heavy Metal Pollution: Bioluminescent Bacterial Strains Isolated and Characterized from Marine Niches of Goa, India 327
N.A. Thakre · A.S. Shanware
12. In Silico Analog Design for Terbinafine Against *Trichophyton rubrum*: A Preliminary Study 333
S. Karumuri · P.K. Singh · P. Shukla

Opinion Article

13. Ethics in Science 341
O.P. Sharma

Short Communication

14. Anti-chlamydial IgG Neutralizing Ability in Nonzoonotic Atypical Community Acquired Respiratory Tract Infections

S. Pignanelli · G. Pulcrano · V.D. Iula · A. Shurdhi

CONTENTS

Review Article

1. Plausible Drug Targets in the *Streptococcus mutans* Quorum Sensing Pathways to Combat Dental Biofilms and Associated Risks
G. Kaur · S. Rajesh · S.A. Princy 349

Original Articles

2. *Thermus parvatiensis* RL^T sp. nov., Isolated from a Hot Water Spring, Located Atop the Himalayan Ranges at Manikaran, India
V. Dwivedi · K. Kumari · S.K. Gupta · R. Kumari · C. Tripathi · P. Lata · N. Niharika · A.K. Singh · R. Kumar · A. Nigam · N. Garg · R. Lal 357
3. Genome Wide Search for Biomarkers to Diagnose *Yersinia* Infections
V.C. Kalia · P. Kumar 366
4. Genome Wide Analysis for Rapid Identification of *Vibrio* Species
V.C. Kalia · P. Kumar · R. Kumar · A. Mishra · S. Koul 375
5. Identification of Recombination and Positively Selected Genes in *Brucella*
U.S. Vishnu · J. Sankarasubramanian · J. Sridhar · P. Gunasekaran · J. Rajendhran 384
6. Phylogenetic Profiling and Diversity of Bacterial Communities in the Death Valley, an Extreme Habitat in the Atacama Desert
F. Piubeli · M. de Lourdes Moreno · L.T. Kishi · F. Henrique-Silva · M.T. García · E. Mellado 392
7. Molecular Detection of New Delhi Metallo-Beta-Lactamase-1 (NDM-1) Positive Bacteria from Environmental and Drinking Water Samples by Loop Mediated Isothermal Amplification of *bla_{NDM-1}*
P. Rathinasabapathi · D.S. Hiremath · R. Arunraj · M. Parani 400
8. A Greenhouse Assay on the Effect of Applied Urea Amount on the Rhizospheric Soil Bacterial Communities
S. Shang · Y. Yi 406
9. Bioconversion of Raw Glycerol Generated from the Synthesis of Biodiesel by Different Oleaginous Yeasts: Lipid Content and Fatty Acid Profile of Biomass
F. Spier · J.G. Buffon · C.A.V. Burkert 415
10. Probiotic Strains Influence on Infant Microbiota in the In Vitro Colonic Fermentation Model GIS1
V.I. Moroeanu · E. Vamanu · G. Paun · E. Neagu · O.R. Ungureanu · S.A.V. Eremia · G.-L. Radu · R. Ionescu · D.R. Pelinescu 423
11. Microbial Variants from Iron Ore Slimes: Mineral Specificity and pH Tolerance
Abhilash · A. Ghosh · B.D. Pandey · S. Sarkar 430
12. Strain Improvement of *Streptomyces xanthochromogenes* RIA 1098 for Enhanced Pravastatin Production at High Compactin Concentrations
V.V. Dzhavakhiya · T.M. Voinova · E.V. Glagoleva · D.V. Petukhov · A.I. Ovchinnikov · M.I. Kartashov · B.B. Kuznetsov · K.G. Skryabin 440
13. Improvement in Oil Production by Increasing Malonyl-CoA and Glycerol-3-Phosphate Pools in *Scenedesmus quadricauda*
A.E. Gomma · S.-K. Lee · S.M. Sun · S.H. Yang · G. Chung 447

Opinion Article

14. The Tussle Between Mycobacteria and Host: To Eat or Not To Eat 456
A. Bhaduri · R. Misra · N. Dhamija

Short Communications

15. A Method for Cell Culture and Maintenance of Ammonia-Oxidizing Archaea in Agar Stab 460
Y.-J. Chu · J.-Y. Lee · S.-R. Shin · G.-J. Kim
16. The Incidence of Non-tuberculous Mycobacterium Lung Disease in Patients with Suspected Pulmonary Tuberculosis 464
M.H. Kim · Y.H. Kim · S.Y. Kang · W.I. Lee