Dr. Chitra N

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RARS(SZ). Vellavani

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Summary

My research experience started during my post-graduation years under the guidance of eminent scientists like Dr. A. N. Balakrishna and Dr. Bhagyaraj D. J. During this period, I worked on plant growth-promoting microorganisms and mycorrhiza. My curiosity to work in an entirely different group of microorganisms opened a new area of research on cyanobacteria during my Ph D. program. I worked on a project entitled "Cloning, sequencing and characterization of gene(s) coding for biocidal property from *Calothrix elenkinii*" at the Division of Microbiology, Indian Agricultural Research Institute, New Delhi, one of the premier institutes of agricultural research and education. After joining Kerala Agricultural University, I have been pursuing my research on cyanobacteria. Along with this, I am also working on plant growth promoting microorganisms and biocontrol aspects. My current research interest is developing novel microbial inoculants for plant growth promotion.

Research Highlights

- Isolated and characterized the gene responsible for antifungal activity of the cyanobacteria *Calothrix elenkinii*.
- Contributed to the development of *in-vitro* screening methods for testing antagonism of more than one bacterial isolates against multiple fungal phytopathogens in a single agar plate

Experience

Joined Kerala Agricultural University as Assistant Professor (Microbiology) in the year 2019

Education

- Graduated in Agricultural Science from Kerala Agricultural University (2001)
- Post Graduation in Agricultural Microbiology from University of Agricultural Sciences, Bengaluru (2005)
- Ph.D in Microbiology from Indian Agricultural Research Institute, New Delhi (2010)

Area of Specialization

Cyanobacteriology, Biofertilizers, Microbial inoculants

Awards & Recognitions

- ICAR Junior fellowship for doing M. Sc in Agricultural Microbiology
- IARI Senior fellowship for doing Ph. D in Microbiology

Research Projects/ Revolving funds

Ongoing

1. Working as Assistant Professor in All India Network Project on Soil Biodiversity – Biofertilizers, funded by Indian council of Agricultural Research
2. Biotech Keralam Revolving fund project - for production of biofertilizers and biocontrol agents

Completed

1. Nil

Publications

Journal Articles
(Scopus indexed)

1. Nysanth, N.S., Sivapriya, S.L., Natarajan, C. and Anith, K.N., 2022. Novel in vitro methods for simultaneous screening of two antagonistic bacteria against multiple fungal phytopathogens in a single agar plate. *3 Biotech*, 12(6):1-7.
2. Anith, K.N., Nysanth, N.S. and Natarajan, C., 2021. Novel and rapid agar plate methods for *in vitro* assessment of bacterial biocontrol isolates' antagonism against multiple fungal phytopathogens. *Letters in Applied Microbiology*, 73(2): 229-236.
3. Resmi A.R., Lovely B., Jayapal A., Suja, G. and Chitra N. 2020. Effect of inoculation of plant growth promoting rhizobacteria (PGPR) Mix I formulations on plant growth, yield, disease incidence and disease severity of *Rhizoctonia* leaf blight of Amaranthus (*Amaranthus tricolor* L.) *Indian J. Agri. Res.* **DOI:** 10.18805/IJARe.A-5684
4. Chitra N., Vishal G., Kanika K. and Prasanna R. 2013. Molecular characterization of fungicidal endoglucanase *Calothrix elenkinii*. *Biochem. Genet.* 51 (9-10): 766-779. (NAAS 7.5)
5. Chitra N., Prasanna R., Vishal G., Dureja P. and Nain. L. 2012. Characterization of fungicidal activity of *Calothrix elenkinii* using chemical methods and microscopy. *App. Biochem. Microbiol.*, 48 (1): 51-57. (SRJ 0.707)
6. Vishal G., Chitra N., Kanika K. and Prasanna R. 2011. Identification and characterization of endoglucanases for fungicidal activity in *Anabaena laxa* (Cyanobacteria). *Journal Appl. Phycol.*, 23 (1): 73-81. (NAAS 8.62)
7. Prasanna R., Anjali S., JaiswalP., Nayak S., Vishal G., Chaudary V., Monica J. and Chitra N. 2010. Rediscovering cyanobacteria as a valuable source of bioactive compounds. *App. Biochem. Microbiol.*, 46 (2): 119-134. (SRJ 0.707)
8. Prasanna R., Vishal G., Chitra N. and Chaudhary V. 2010. Bioprospecting of genes involved in the production of chitosanase and microcystin-like compounds *Anabaena* stains. *World Journal Microbiol. Biotechnol.*, 26(4): 717–724. (NAAS 7.66)
9. Vishal G., Prasanna R., Chitra N., Srivastava A. K. and Sharma. J. 2010. Identification, characterization and regulation of a novel chitosanase gene (cho) in *Anabaena* spp. *Appl. Environ. Microbiol.*, 76 (9): 2769-2777. (NAAS 9.81)
10. Chaudhary V., Prasanna R.,Vishal G., Singh S. B., Chitra N. and Nain L.. 2010. Development of microtiter plate - based assay for evaluation of fungicidal potential of cyanobacterial metabolites. *Arch. Phytopath. Plant Prot.*, 43 (14): 1435 – 1444.

Articles not indexed in Scopus

1. Chitra N. and Balakrishna A. N. 2007. Interaction between Arbuscular Mycorrhizal Fungus *Glomus macrocarpum* and different plant growth promoting rhizomicroorganisms in *Stevia rebaudiana* Bertoni. *J. Soil Biol Ecol.,* 27 (1&2): 62-68 (NAAS 3.43)
2. Chitra N. and Balakrishna A. N. 2006. Response of *Stevia rebaudiana* to different Arbuscular Mycorrhizal Fungi. *J. Soil Biol Ecol.,* 26 (1&2): 104-108 (NAAS 3.43)

Popular Articles

1. Nysahth N.S., Chitra N. and Meenakumari K.S. (2019) '*Jaivamalinya samskaranathinu inoculum'* Krishi Jagaran,3(7):.
2. Chitra N. and Meenakumari K.S. (2020) '*Roganiyanthranathinu mithrasookshmaanukkal'* Kerala Karshakan.
3. Berin P., Smith M.S., Radhika N.S., Chitra N. Reshmi V. (2021)'Sookshma jeevikal: Krishiyidathil kaavalal' 41(1): 41-45.

Books/Chapters in Books

1. Radha Prasanna, Monica Joshi, Vishal Gupta, Chitra Natarajan and Vidhi Chaudhary. (2009) Diversity analyses of cyanobacteria using polyphasic approaches – phenotyping, biochemical aspects and molecular tools. In: Prasanna R., Lata, Saxena A. K. And Dhar D. W. (eds) Bioprospecting microbes for agriculture pp 238-250. Division of Agricultural Microbiology, Indian Agricultural Research Institute, New Delhi. (ISBN 978-81-88707-52-9)
2. Sugitha T.K.C., Anil Saxena, Vishal Gupta, Chitra Natarajan and Radha Prasanna (2009) Metagenomic library construction and cloning. In: Prasanna R., Lata, Saxena A. K. And Dhar D. W. (eds) Bioprospecting microbes for agriculture pp 299-301. Division of Agricultural Microbiology, Indian Agricultural Research Institute, New Delhi. (ISBN 978-81-88707-52-9).
3. Sugitha T.K.C., Anil saxena, Vishal Gupta, Chitra Natarajan and Radha Prasanna (2009) Allele mining in soil metagenome. In: Prasanna R., Lata, Saxena A. K. And Dhar D. W. (eds) Bioprospecting microbes for agriculture pp 302-304. Division of Agricultural Microbiology, Indian Agricultural Research Institute, New Delhi. (ISBN 978-81-88707-52-9)

Student Guidance (**Major Advisor/ Advisory Committee member**)

M. Sc. : Within KAU: Completed: 3 Outside KAU: Completed : 2

Ph. D : Within KAU: 1

Other Institutional Responsibilities

1. Currently acting as student Advisor/faculty mentor to 10 Undergraduate students.
2. Currently Chairman of committee to monitor "Prevention of Caste-based Discrimination in Higher Education Institutions" at College of Agriculture, Vellayani campus.

Membership in Professional Associations

1. Annual membership in the American Phytopathological Society
2. Annual membership in Indian Phytopathological Society
3. Three Year full Global Outreach membership in International Symbiosis Society