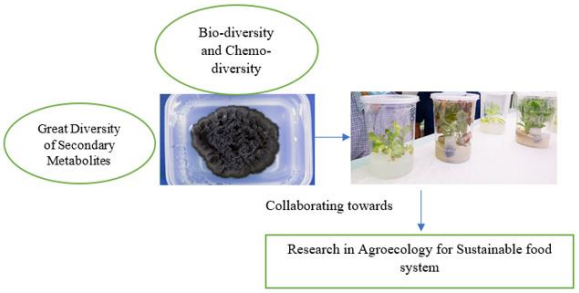
Bioprospecting Endophytic Fungi Cladosporium genus as Source of Bioactive Metabolites

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Abstract

The genus Cladosporium is of great interest to researchers due to its cosmopolitan distribution, large bio-diversity encompassing both phylogenetically and morphologically distinct, and enclosed against numerous morphologically similar but distinct genera. *Cladosporium sp.* is a common fungal endophyte of incredible ecological adaptability with wide applications in the field of agriculture as biocontrol agents, bio-stimulants aiming towards sustainable agriculture with a great diversity of secondary metabolites reported for wide implication in pharmaceutical science as antimicrobial, antineoplastic, and antiviral activities. Thus, better understanding and knowledge of the metabolites and compounds including various groups of human pathogenic species and heat-resistant fungi directs to biotechnological exploitation whether from terrestrial or marine environment towards crop improvement and also as a potential therapeutic agent. This work aimed at studying and analyzing the relationships among biodiversity and chemo-diversity in the context of future bioprospecting of *Cladosporium* genus from genomics to metabolomics with the emerging technologies and use of computational tools. The vast number of taxa comprising about 772 names (valid, invalid, legitimate, illegitimate species) in *Cladosporium* genus needs to be explored for the diverse applications which may lead to the discovery of novel compounds of antimicrobial activity, anticancer potential, Insecticidal activity, and also as a plant growth stimulant. This review comprehensively highlights the bioactive potential and benefits of metabolites produced by *Cladosporium sp.* more specifically novel species isolated from indoor as well outdoor environmental sources. The unique findings of *Cladosporium* species could revolutionize food production on earth as well in the artificial media in spaceflight as strains like TC09 are not known to cause disease in plants, humans, or animals and let plants grow as fast as a weed. The future studies are needed to understand the role of volatiles in *Cladosporium* species that accelerates crop plants' growth, and also to grow food on long-distance space voyages of the future with further research on interactions between the bioactive metabolites of endophytic fungi and host plant is necessary to explore for application in the field of agriculture and medicine by collaborating in context to research on agroecology.

Image



Recent Publications

1. Bhullar, G.R., Bhatia, A. Site Selection criteria and process in a clinical trial. International Journal of Pharmacology and Therapeutics 2020; 10(1): 12-16
2. Bhullar, G.R., Bhatia, A. Socio-Economic and Health Implications Due To Current COVID-19 Pandemic and Mitigation Strategies, 2020:175 SEHCM Conference Proceeding Book E-International Conference ISBN: 978-93-5391-497-4
3. Bhatia, A., Arora, S., Singh, B., and Nagpal, A. (2020). Screening of rhizomes of Rheum emodi Wall. Ex. Meissen for antimutagenic potential employing Ames assay. The Nucleus, 63(2), 167-177
4. Dr. Anjana Bhatia (Ed.).Proceeding of Recent Developments in Science and Technology ISBN: 978-93-837-3071-1
5. Dr. Anjana Bhatia (2018). Increasing the Participation of Women in World of Computing In Edited Book " Wireless and Mobile Computing -2018" Page No.84 ISBN: 978-81-932-6024-1



Biography

Ruby Bhullar Garcha has her experience in research on Biofuels, with skill in CRISPR basics, Advance CRISPR, Medical Coding, Molecular Docking, passion in research, and writing. Her research-oriented, re-skill, up-skill approach, led her to take initiative to learn more on mitigating challenges faced by the World, among them one is sustainable agriculture for an ever-growing population. The revolution in agriculture productivity can be enabled by the use of endophytic fungi that are able to produce bioactive compounds which helps to promote crop growth with far greater yield. Thus, its application in the field of agriculture and medicine to meet the challenges that threaten the way of our life and collaborating the research of endophytic fungi in context to agroecology helps to meet sustainable agriculture.

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