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Antifungal activities of bacteria isolated from soil and their role of antibiosis exhibited towards suppression of fungal phytopathogens, *Fusarium udum, Fusarium oxysporum, Rhizocotnia solani, Rhizoctonia oryzae* infecting paddy and pigeon crops in Andhra Pradesh

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Plant-diseases - Threat to Global food security: Plant diseases need to be controlled to maintain the quality and abundance of food, feed and fibre produced by growers around the world. Different approaches may be used to prevent, mitigate or control plant diseases. Beyond good agronomic and horticultural practices, growers often rely heavily on chemical fertilizers and pesticides. Such inputs to agriculture have contributed significantly to the spectacular improvements in crop productivity and quality over past years but resulted in environmental pollution. Researchers have focused their efforts on developing alternative inputs to synthetic chemicals for controlling pests and diseases. Identifying, understanding and utilizing microorganisms or microbial products to control plant diseases and to enhance crop production are integral parts of sustainable agriculture.

The aim of present work states the role of bacteria in biological control of fungal phytopathogens mediated by specific metabolites of microbial origin as antibiotics, enzymes, volatile compounds or other toxic substances.

Plant pathogens include fungi the most visible threats to sustainable food production. The decreasing efficacy of the fungicides as well as risks associated with fungicides residues on the leaves and fruit, have highlighted the need for a more effective and safer alternative control measures. Biological control of plant diseases can occur through different mechanisms, which are classified as antibiosis, competition, suppression, direct parasitism, induced resistance, hypovirulence and predation. The antagonistic activity has often been associated with production of secondary metabolites. PGPRs possess indirect plant growth promotion traits such as biocontrol of plant pathogens by antibiotic synthesis, secretion of iron binding siderophores, low molecular weight volatile metabolites such as hydrogen cyanide, ammonia, production of Hydrolytic enzymes (Beta-1-3, glucanases, proteases, cellulases, chitinases), which can lyse some fungal cells, secretion of alkaloids (Highly reactive substances in low doses) and phenols Like 2-acetamidophenol and thereby depriving fungal pathogens in the vicinity of rhizosphere Example *Pseudomonas, Bacillus, Serrtia, Enterobacter.*

A variety of fungi are known to cause important plant diseases, resulting in a significant loss in agricultural crops. Damping off – Poor emergence is often the first sign of damping off. Damping off and root, shoot wilt diseases can occur before plant emergence in the young seedling (post emergence damping off). Damping off caused by *Fusarium udum*, *Fusarium oxysporum*, *Rhizoctonia solani*, *Rhizoctonia oryzae* among others causing tremendous losses in rice and pulse crops. It is soil borne and is favoured by no till management due to cooler, wetter soils at spring planting.

Biography

Usha Rani Chappidi completed her PhD from Andhra University and presently pursuing post doctoral studies at JNTU Kakinada, sponsored by DBT Department of Biotechnology, New Delhi.

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