

Diversity of plant growth promoting bacteria in probiotic agricultural products

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Organic farming in recent years is gaining impetus due to realization of inherent advantages it confers in sustaining crop production and also in maintaining dynamic soil nutrient status and safe environment. Organic liquid manures like panchagavya, jeevamruth, and amruthpani are getting adaptive popularity in traditional agriculture both to augment plant growth and suppress pest loads on crop plants. These products are made by using fermented curd, milk, ghee, cowdung, urine. In the present study, an attempt was made to isolate and characterize the probiotic microorganism from Panchagavya, Amruthapani, and Jeevamruth. Isolation was made using different media specific for bacterial and fungal growth. High population of Bacteria (upto 10^9 cfu/g sample) was observed in all the three samples at different time intervals. Surprisingly, fungal population was not observed in any of the three samples. The bacterial isolates were characterized for plant growth promoting traits and selected strains were identified based on 16S rDNA sequence analysis. The results of the investigation revealed the diverse group of bacteria present in these probiotic products including Exiguobacterium, Bacillus, Proteobacterim, Shigella, Acinetobacter, Escherichia, Acinetobacter, Acinetobacter, Cronobacter, Klebsiella,. The selected bacterial isolates also showed multiple plant growth promoting traits such as IAA production, phosphate solubilization, ammonia production, and antagonism against plant pathogenic fungi *Macrophomina phaseolina* and *Sclerotium rolfsii*. This study shows that probiotic agricultural products contain bacteria with multiple plant growth promoting traits which may be responsible for the positive effect of these products on plant growth. These bacteria can be exploited as potential biofertilizers.

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