

Response of PGPR and AM fungi toward growth and secondary metabolite production in medicinal and aromatic plants

ABSTRACT

Plant growth-promoting rhizobacteria (PGPRs) are a group of naturally occurring beneficial soil bacteria that colonize with the plant root system and promote growth by triggering the production of growth-regulating substances and facilitate the plants in the uptake of essential nutrients from the surrounding environments. Similarly, arbuscular mycorrhizal (AM) fungi also enhanced the growth, water and nutrient uptake, and especially available phosphate through their specialized hyphae. In addition, PGPR and AM fungi are known to stimulate the accumulation of secondary metabolites in plants. For several years, they are commonly employed to increase the plant yield and productivity especially in agricultural practices. The medicinal and aromatic plants are gaining popularity worldwide due to high therapeutic properties with negligible toxic side effects. To fulfill the global demand and supply gap for medicinal and aromatic plants and their products, farmers are encouraged to cultivate these plants on a large scale. However, there is a need to understand and implement a better cultivation practices in order to improve the quality of medicinal and aromatic plants. In this regard, the utilization of PGPRs and AM fungi as biofertilizers instead of chemical fertilizers could be a promising approach to the development of medicinal and aromatic plants under the sustainable production system. The aim of this chapter is to describe the potentiality of PGPRs and AM fungi to improve growth and development of medicinal and aromatic plants and accumulation of secondary metabolites having high therapeutic worth and also pave a way in the development of new biotechnological products as biofertilizers.

Keyword: Plant metabolites; Rhizobacteria; Bioinoculants; Crop productivity; Signal molecules