

# Active Metabolites Produced by Endophytic Fungi and their Application <sup>†</sup>

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**Abstract:** Endophytes are bacteria or fungi, or actinomycetes that live in plant tissues without causing harm to the plant. Their close relationship and likely co-evolution with their plant hosts has resulted in their contributions to various plant growth benefits, including increased growth and biomass accumulation, abiotic and biotic stress tolerance, and nutrient acquisition. The endophytic associations can be mutualistic, parasitic, or commensal. The endophytic bacteria are planted growth-promoting bacteria (PGPB) that increase nutrient availability, host plant resistance to pathogenic microbes, assist with nitrogen fixation, and produce antibiotics in symbiotic conditions with the plant. The paper reviews the active metabolites produced by endophytic fungi and their applications. These include alkaloids, quinones, phenols, polyketides, steroids, peptides and, enzymes, having a great therapeutic value. The toxins produced by endophytic fungi also inhibit the plant pathogenic organisms. Therefore, endophytes are rich sources of natural compounds utilized in agriculture as plant growth promoters and insecticides and with a tremendous therapeutic value.

**Keywords:** endophytes; plant growth-promoting bacteria (PGPB); endophytic fungi.

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## Conflicts of Interest

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