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RECEIVED 25 March 2023

ACCEPTED 31 May 2023

PUBLISHED 10 July 2023

## CITATION

Choudhary N, Dhingra N, Gacem A, Yadav VK, Verma RK, Choudhary M, Bhardwaj U, Chundawat RS, Alqahtani MS, Gaur RK, Eltayeb LB, Al Abdulmonem W and Jeon B-H (2023) Towards further understanding the applications of endophytes: enriched source of bioactive compounds and bio factories for nanoparticles. *Front. Plant Sci.* 14:1193573. doi: 10.3389/fpls.2023.1193573

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# Towards further understanding the applications of endophytes: enriched source of bioactive compounds and bio factories for nanoparticles

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The most significant issues that humans face today include a growing population, an altering climate, an growing reliance on pesticides, the appearance of novel infectious agents, and an accumulation of industrial waste. The production of agricultural goods has also been subject to a great number of significant shifts, often known as agricultural revolutions, which have been influenced by the progression of civilization, technology, and general human advancement. Sustainable measures that can be applied in agriculture, the environment, medicine, and industry are needed to lessen the harmful effects of the aforementioned problems. Endophytes, which might be bacterial or fungal, could be a successful solution. They protect plants and promote growth by producing phytohormones and by providing biotic and abiotic stress tolerance. Endophytes produce the diverse type of bioactive compounds such as alkaloids, saponins, flavonoids, tannins, terpenoids, quinones, chinones, phenolic acids etc. and are known for various therapeutic advantages such as anticancer, antitumor, antidiabetic, antifungal, antiviral, antimicrobial, antimalarial, antioxidant activity. Proteases, pectinases, amylases, cellulases, xylanases, laccases, lipases, and other types of enzymes that are vital for many different industries can also be produced by endophytes. Due to the presence of all these bioactive compounds