



Green Synthesis of Silver Nanomaterials

Nanobiotechnology for Plant Protection

2022, Pages 391-411

Chapter 14 - Mycosynthesis of silver nanoparticles: Mechanism and applications

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<https://doi.org/10.1016/B978-0-12-824508-8.00002-2>

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Abstract

In the recent years of nanotechnology, the main focus regarding nanoparticles (NPs) synthesis is to follow an ecofriendly process that would yield NPs with the desired physicochemical properties. Since synthetic processes of NP synthesis involve the use of hazardous and toxic chemicals, the use of microbes, plant materials, and biological elements have been explored by researchers worldwide. Among various groups of microbes, fungi tend to offer an economical downstream process in metal NP separation, after metal ions have been rapidly reduced in presence of enormous enzymes produced by the fungal cells. In the present chapter, initially groups of fungi involved in the mycosynthesis of silver nanoparticles (AgNPs) are discussed. This is followed by the methods of AgNP synthesis, mechanism, and myco-elements performing significant roles in the bioreduction of metal ions. Mycosynthesis of NPs has several advantages over other microbial sources of NP synthesis; these are detailed in the chapter. Toward the end, applications of mycosynthesized AgNPs and its future prospects that require understanding of specific areas of mycosynthesis are discussed. Thus, the chapter compiles the significance, existing state of the art, and impediments that exist in the mycosynthesis of NPs, further exploration of which

might lead to an improvised green nanotechnology.

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