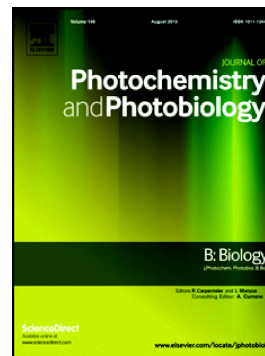


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A Review on Bio-synthesized Zinc Oxide Nanoparticles using Plant Extracts as Reductants and Stabilising Agents

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Abstract

In the age of technology, nanoparticles have proven to be one of the essential needs for development. These nanoparticles have the potential to be used for a wide variety of applications, thereby, development in improving the quality of nanoparticles, to make them more application specific, is still under research. In this regard, an important point to note is that the procedures employed in synthesizing nanoparticles require to be cost-effective and less-steps involved and have an additional advantage, i.e. they should be eco-friendly. This means that the synthesis procedure needs avoiding the use of harmful chemicals, and negligible generation of any noxious by-products. The green synthesis (biosynthesis) method employs simple procedures, easily available raw materials and ambience for the synthesis process, where the precursors used are safe, with minute possibility for the production of harmful by-products. Considering these advantages, the current review includes a brief description on the various chemical and physical synthesis method of zinc oxide ZnO nanoparticles with emphasis on the biosynthesis of ZnO nanoparticles using plant extracts (and briefly microbes), the phytochemicals present in the plant extracts, the plausible mechanisms involved in the formation of ZnO nanoparticles and applications of the as-synthesized ZnO nanoparticles as photocatalysts and microbial inhibitors.

Keywords: Biosynthesis, plant extracts, ZnO nanoparticles, anti-microbial activity, photocatalysts

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