



Biosynthesis, characterization and potential antifungal activity of magnetite nanoparticles using coriander (*Coriandrum sativum*) leaf and seed extract

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Magnetite nanoparticles (Fe_3O_4 -NPs) are widely applied for their biocompatibility, high magnetic susceptibility, chemical stability, innocuousness, environmentally friendly and low cost. A sustainable green chemistry approach was established to fabricate magnetic Fe_3O_4 -NPs using the leaf and seed extract of coriander (*Coriandrum sativum*). It will be characterized by multiple techniques including scanning electron microscopy, transmission electron microscopy, fourier transformed infrared spectroscopy, X-ray diffraction, nuclear magnetic resonance, and ultraviolet-visible spectroscopy. The purpose of this research is to determine the efficacy of Fe_3O_4 -NPs using plant extract as an antifungal agent for various fungi on plant diseases, such as *Fusarium oxysporum*, *Phytophthora infestans*, *Rhizoctonia solani*, and *Colletotrichum* spp. The antifungal effect will be determined by agar well diffusion assay and minimum inhibitory concentration (MIC) assay. The expected result of this research is that the synthesized Fe_3O_4 -NPs could be effectively utilized as an alternative antifungal agent against diseases on plants caused by multiple drug-resistant pathogens.

Keywords: Antifungal activity, characterization, coriander, green synthesis, magnetite nanoparticles

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