**Synthesis, Characterization and Antibacterial activity of silver nanoparticles using Aqueous extract of *Pulicaria odora* roots**

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The nanoparticles (Silver, Gold,) name itself implies a ‘Nano’ particle with a size ranges from 1 nm to 100 nm [1], they can be classified into different classes based on their properties, shapes or sizes. There are numerous ways available to synthesis metal nanoparticles, such as chemical, electrochemical and radiations methods. However, chemical methods produce often toxic chemicals that may results in undesirables’ secondary effects in medical applications. Green chemistry is a better solution as it can decrease or remove the use of hazardous substances. The current trend is to synthesis nanomaterials using aqueous extract of medicinal plants due to their eco-friendly nature and cost effectiveness [2].

In the present study, we synthesized silver (Ag) nanoparticles using aqueous extract of *Pulicaria odora* roots and then estimated their antibacterial activity against five bacteria at different concentrations. Two parameters were considered for nanoparticle synthesis: AgNO3 concentrations (1, 5 and 10 mM) and aqueous extract concentrations of *P. odora* (25, 50, 100 and 200 ppm). According to SEAD results and analysis of TEM, the obtained nanoparticles have spherical shapes and size between 10 to 75 nm.

Results showed that the nanoparticles 10mM exhibited a significant antibacterial activity. In fact, a strong antibacterial activity was observed against *Escherichia coli* BLSE, *Klebsiella pneumoniae* and *Acinetobacter baumannii*. The activity of nanoparticles was similar or higher than those of the standard antibiotics. These results suggest that silver nanoparticles synthesis using *P. odora* aqueous extract can be used as an effective growth inhibitor of various microorganisms, making them applicable to diverse medical devices and antimicrobial control systems.

Keywords: Green Chemistry, Silver nanoparticles, Antibacterial activity and *Pulicaria odora*

**References**

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