

A
DISSERTATION THESIS
ENTITLED
**Green synthesis of silver nanoparticles using the aqueous extract of *Piper
longum L.***

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1. ABSTRACT

In recent years, nanotechnology is developing very quickly and gaining more attention. In the field of green nanotechnology, there is a synthesis of nanoparticles using environment-friendly approach which is cost efficient and lesser time required. These properties are shown by plant extract and hence they are used for the synthesis of nanoparticles. Plant extract consists of various phytochemicals like alkaloids, terpenoids, flavones, ketones, aldehydes, amides, and carboxylic acids. These particles are associated in the synthesis of silver nanoparticles as it will serve as reducing and capping agents for the conversion of silver nitrate to silver nanoparticles. The enormous potential has been shown by the medicinal plants in the evolution of the new drug molecules for different types of severe diseases. Nowadays latest medicines are present in the market but herbal medicines still conserve the popularity for historical and cultural reasons [67]. The great potential of medicinal plant is used for various types of experiment observation, and one of the traditional medicinal plant is *Piper longum*. *Piper longum* Linn (Indian long pepper) is one of the common culinary herb and has been extensively used as an important constituent of various indigenous medicines, specifically in traditional Indian medicinal system known as Ayurveda. The main objective of the current work is to synthesize silver nanoparticles in an aqueous medium using a simple, rapid and inexpensive synthetic approach based on green synthesis technique. The effect of 1mM silver nitrate (AgNO_3) solution on *Piper longum* aqueous extract and synthesis of nanoparticles. The reaction mixture turned brownish colored after 3 hours of incubation period, the synthesized nanoparticles were confirmed using UV-Visible Spectrophotometer. The main objective of this paper is to synthesize silver nanoparticles from aqueous leaf extract of *Piper longum*.