

ABSTRACT

Synthetic antibiotics are linked to microorganism antimicrobial resistance (AMR) and side effects. Due to poor medicine use and treatment, many bacteria have developed antibiotic resistance. As synthetic antibiotics lose efficacy, illness treatment has gotten more complicated. Antimicrobial resistance (AMR) threatens human health. Synthetic drugs' ineffectiveness against antimicrobial-resistant (AMR) infections drives up treatment costs. Novel medicinal compounds that are resistant to bacterial defense mechanisms could prevent antimicrobial resistance (AMR). The rise of major diseases like Diabetes Mellitus is due to oxidative stress in the body. Oxidative stress disrupts biological processes, causing metabolic problems. Many synthetic antioxidants scavenge free radicals, including reactive oxygen species. However, synthetic antioxidants may cause health issues. Current study focuses on medicinal plant species having antibacterial or antioxidant capabilities. A study found that plant secondary metabolites are antioxidants and antibacterial. However, these metabolites are being thoroughly examined. Plant-derived natural chemicals are better than manufactured treatments for treating antibacterial and antioxidant problems. *Ficus Elastica* leaves were tested for antioxidant and antibacterial activities. This study uses *Ficus elastica* leaf extract to synthesize silver nanoparticles (AgNPs) using microwaves. UV-Vis for analysis, SEM for shape and size, and FTIR for phytochemicals that reduce silver ions confirmed the synthesis of silver nanoparticles (AgNPs). Silver nanoparticles are used in many fields due to their antibacterial properties. Traditional silver nanoparticle (AgNP) synthesis uses toxic chemicals and releases a lot of energy. Environmentally friendly methods synthesize silver nanoparticles. This work describes the ecologically friendly manufacturing of silver nanoparticles using *Ficus Elastica* leaf extract and microwave irradiation.