

## GREEN SYNTHESIS OF CHICKPEA WASTE (*Cicer arietinum*)- DERIVED SILVER NANOPARTICLE FOR ANTIMICROBIAL APPLICATION

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**Background:** Nanotechnology is a field of research at nanoscale which involves dimensions between 1 to 100 nanometers. There is a wide scientific interest on the biosynthesis of nanoparticles. Silver nanoparticle have been known to have inhibitory and bactericidal effects. The non-hazardous silver nanoparticle synthesis using the extract of biological organism has gained widespread attention in various field including food sectors. Here, we report on the development of silver nanoparticles by a reduction of aqueous Ag<sup>+</sup> ion with the extract of biowaste *Cicer arietinum* peels.

**Method:** In the present study, a unique stable silver nanoparticles were synthesized by a green route using biowaste of chickpea waste *Cicer arietinum* peel. The presence of biosynthesised silver nanoparticle was confirmed by an analysis of colour variations from pale yellow to reddish brown, as well as the appearance of surface plasmon resonance (SPR) bands at 400-450nm using ultraviolet-visible spectroscopy. Biosynthesised silver nanoparticle was characterized by scanning electron microscopy, transmission electron microscopy, Fourier transform infrared spectroscopy. Biosynthesised silver nanoparticle was evaluated for their significant effect on antimicrobial activity against Gram-positive and Gram-negative bacteria

**Results and Conclusion:** These results indicate the nanobiocomposite films can potentially be used as active packaging material for food packaging and preservative applications. This study highlights innovative development of AgNP with antimicrobial properties from agricultural waste.

**Keywords:** Silver nanoparticle, Antimicrobial properties, Nanotechnology, Chickpea waste