

Green synthesis of silver nanoparticles from the leaves of Citruslimon and itsin vitro α -glucosidase and α -amylase inhibitory activities

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Summary

Nanotechnology is a rapidly growing science of synthesising and utilizing nano-sized particles. A number of approaches are available for the synthesis of silver nanoparticles, such as thermal decomposition, electrochemical, microwave assisted process and green chemistry. Many of the nanoparticle synthesis or production methods of nanoparticles involve the use of hazardous chemicals, low material conversions and high energy requirements. So, there is an urge and need to develop an eco-friendly techniques and methods for nanoparticle synthesis without using any toxic chemicals. Thus, synthesising nanoparticles from plant extracts are gaining importance and also is considered as a simple, economic and viable alternative to chemical synthetic procedure.

Phytomedicine is of using plant's seeds, berries, roots, leaves, bark or flowers for medicinal purposes. Nanomedicine is an integrative, blending modern technology with natural products to reduce toxicity and support immune function and is the present research in the limb of nanotechnology. The current study deals with novel method for biosynthesis of silver nanoparticles (AgNPs) using aqueous extract of Citrus limon leaf as reducing agent. During the visual observation, silver nitrate incubated with leaf extract showed a colour change from yellowish to brownish yellow within 30 min. The appearance of brownish yellow colour in leaf extract treated flask is clear indication for the formation of Ag nanoparticles. These biosynthesized nanoparticles were primarily characterized with the help of UV-Vis spectroscopy, which proved to be a very useful technique for the analysis of nanoparticles. UV-Vis spectrophotometric technique was used to study the primary characterisation of the silver nanoparticles synthesised from the aqueous extract of the leaves of *Citrus limon* which was absorbed at the wavelength between 450 -550nm

The synthesised nanoparticles is also effective in scavenging the free radicals which was confirmed by DPPH and ABTS scavenging activiies. Thus, *Citrus limon* silver nanoparticles may be a promising nanomedicine in the future.