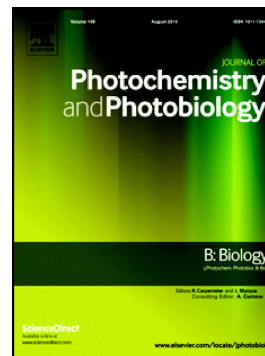


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## Surface Active Gold Nanoparticles Biosynthesis by New Approach for Bionanocatalytic Activity

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### ABSTRACT

In the present day, nanotechnology is one of the most promising leading scientific and potentials areas in modern key technology development toward to the humankind. The synthesis of noble metal nanoparticles (NPs) is an expanding research area due to the possible applications for the development of bio-medical applications. Eco-friendly approach for the biosynthesis of gold nanoparticles (AuNPs) using the aqueous extract from *Ruellia tuberosa* and *Phyllanthus acidus* (leaf and twig) for the first time. Surface active AuNPs were characterized by UV–Vis spectroscopy, FTIR (Fourier transform infrared) spectroscopy, DSC (differential scanning calorimetry), DLS (dynamic light scattering) and environmental SEM (scanning electron microscope) analysis at room temperature (RT). Enhanced surface plasmon resonance (SPR) absorbance UV visible optical spectra were detected in the range of 552, 548, 558 and 536 nm. SEM and DLS (transmission mode) analysis confirmed the morphology of the nanoparticles to be spherical with the average size in the range of 88.37, 94.31, 82.23 and 81.36 nm. Further they have enhanced the enzyme activity on  $\alpha$ -amylase, cellulase, and xylanase. The results suggest that the phyto-fabricated AuNPs from *R.tuberosa* and *P.acidus* is simple, less expensive, eco-friendly, green synthesis and also can be exploited for the potential future industrial and bio-medical applications.

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