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Original Article

Biogenic fabrication of gold nanoparticles using *Camellia japonica* L. leaf extract and its biological evaluation

Tata Sanjay Kanna Sharma[a], *Karuppaiah Selvakumar*[b], *Kuo Yuan Hwa*[a,c,*], *Ponnusamy Sami*[d], *Murugan Kumaresan*[d,*]

[a] *Department of Molecular Science and Engineering, National Taipei University of Technology, Taipei 106, Taiwan, Republic of China*
[b] *Nanomaterials Laboratory Department of Chemistry, International Research Center, Kalasalingam Academy of Research and Education (Deemed to be University) Krishnakoil, Virudhunagar 626126, Tamil Nadu, India*
[c] *Center for Biomedical Industry, National Taipei University of Technology, Taipei 106, Taiwan, Republic of China*
[d] *Department of Chemistry, V.H.N.S.N. College (Autonomous), Virudhunagar 626001, Tamil Nadu, India*

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ABSTRACT

Development of green technique for the fabrication of noble metal nanoparticles is of great importance in order to avoid the usage of toxic chemicals. In this strategy, gold nanoparticles (AuNPs) are synthesized at room temperature by using *Camellia japonica* leaf extract under room temperature. The successful formation of AuNPs was confirmed by various spectroscopic techniques including UV, FTIR, XRD and SEM studies. The resulting antimicrobial activity of the synthesized AuNPs stabilized in *C. japonica* is tested against seven different microbial strains such as *Bacillus subtilis*, *Staphylococcus aureus*, *Streptococcus faecalis*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Candida albicans*. The present study opens a new window for future synthesis of AuNPs *via* green technique.

1. Introduction

Nanotechnology has recently advanced as a great interdisciplinary area of research, developing new nanoscale structures, properties, particle size and morphology. Metal nanoparticles have unique physical and chemical properties that are significantly different form bulk properties. Noble metal nanoparticles such as Ag, Au, Pd and Pt possess great advantages in the field of physics, chemistry and biological aspects [1–6]. Among them, gold nanoparticles (AuNPs) have been considered for many applications in biomedical science including drug delivery, tissue/tumor imaging, photothermal therapy, catalysis and biochemical sensors due to their extraordinary physicochemical properties [7–13]. Therefore, various researchers [14–18] have developed different methods for the synthesis of AuNPs by using different chemicals (sodium citrate, elemental hydrogen, $LiAlH_4$, *etc.*), which act as reducing agents.

* *Corresponding authors.*
E-mails: kyhwa@ntut.edu.tw (K.Y. Hwa), kumaresanvnr2015@gmail.com (M. Kumaresan).
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