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Green synthesis of gold nanoparticles using *Croton Caudatus Geisel* Leaf extract and their biological studies

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Abstract

A simple one-pot green approach for the biosynthesis of gold nanoparticles (AuNPs) by reducing chloroauric acid (HAuCl₄) with extract of *Croton Caudatus Geisel* is described. The synthesized new gold nanoparticles were extensively characterized by UV Visible spectroscopy, FT-IR, XRD, SEM-EDAX and TEM analysis. The size, shape and purity were analyzed. The biological profile such as *In vitro* cytotoxicity activity, *In vitro* antimicrobial activity, Free radical scavenging ability and *In vitro* antifungal activity were investigated and shows the significance of their application towards biological activity.

Keywords: Biomaterials, *Croton Caudatus Geisel*, Nanoparticles, Cytotoxicity activity, Antimicrobial activity, Antifungal activity

1. Introduction

In the field of nanomaterials, gold nanoparticles (AuNPs) have attracted considerable attention because of their stability, oxidation resistance, and biocompatibility.¹⁻⁷ AuNPs found to have applications in electronics, catalysis, sensing, biomedicine and imaging. The size, shape, and crystal structure of AuNPs decide their physicochemical properties along with their catalytic activity. In most of the literatures, AuNPs were synthesized by reducing gold ions with reductants such as borohydride, hydrazine, citrate, etc., followed by surface modification with

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