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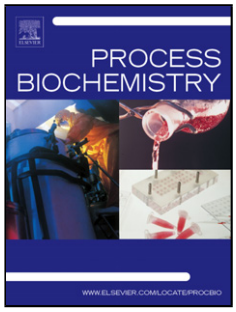

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Authors: G. Yamal, P. Sharmila, K.S. Rao, P. Pardha-Saradhi

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Yeast extract mannitol medium and its constituents promote synthesis of Au nanoparticles

Yamal[1,2], P. Sharmila[1], K.S. Rao[2] and P. Pardha-Saradhi[1*]

[1]Department of Environmental Studies, University of Delhi, Delhi – 110007, India;

[2]Department of Botany, University of Delhi, Delhi – 110007, India;

*Corresponding Author

ABSTRACT

While evaluating the potential of microorganisms to generate Au nanoparticles, we found that inclusion of $HAuCl_4$ in Yeast Extract Mannitol (YEM) medium turns it wine red on autoclaving. UV-Vis spectra and TEM investigations confirmed that alteration in color of medium was due to formation of Au nanoparticles. Yeast extract and mannitol were key components of YEM medium responsible for formation of Au nanoparticles. In general, nanoparticles formed by YEM medium, yeast extract and mannitol were nearly spherical and in the size range of ~4-20, ~4-12 and ~10-20 nm, respectively. PXRD analysis suggested fcc geometry of Au nanoparticles in all cases. These findings caution autoclaving of metal salts along with microbial culture medium for authentic impact assessment studies of trace/toxic metals. Our findings also furnish ideal protocol for green synthesis of Au nanoparticles using yeast extract or mannitol under sterile aqueous conditions, which may find potential application in medicine, cosmetics and engineering.

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