Biosynthesis of Gold Nanoparticles Using Green Alga *Pithophora oedogonia* with Their Electrochemical Performance for Determining Carbendazim in Soil

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Biosynthesis nanomaterial have constituted a huge attention recently due to its non-toxic process. In this work, we demonstrated the biosynthesis of Au nanoparticles using green algae *Pithophora oedogonia* as reducing agent. The entire synthesis process was rapid and the Au nanoparticles were formed within in 1 h after the Au salt reacted with algal extract. UV-vis spectroscopy and X-ray photoelectron spectroscopy were confirmed the formation of metallic state of Au. The average size of the biosynthesized Au nanoparticles was characterized to be 32.06 nm using scanning electron microscopy and dynamic light scattering machine. The biosynthesized Au nanoparticles were then used for screen printed electrode surface modification and showed an excellent electrocatalytic activity towards determination of carbendazim molecules in soil.

Keywords: Biosynthesis; Algae; Electrocatalysis; Sensor; Carbendazim

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