Synthesis of Silver Nanoparticles Using Three Marine Macro Algae from the Persian Gulf

Rahimi, Zohreh¹; Yousefzadi, Morteza²*; Noori, Ahmad³; Akbarzadeh, Arash⁴

¹- Department of Fisheries, Faculty of Agricultural and Natural Resources, University of Hormozgan, Bandar Abbas, Iran. Email: zohrehrahimi66@yahoo.com
²- Department of Marine Biology, Faculty of Sciences, University of Hormozgan, Bandar Abbas, Iran. Email: morteza110110@gmail.com
³- Department of Fisheries, Faculty of Agriculture and Natural Resources, University of Hormozgan, Bandar Abbas, Iran. Email: nooryahmad@gmail.com
⁴- Department of Fisheries, Faculty of Agriculture and Natural Resources, University of Hormozgan, Bandar Abbas, Iran. Email: akbarzadeh@alumni.ut.ac.ir

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Abstract

The development of ecofriendly and non-toxic process for synthesis of silver nanoparticles is a great concern in the field of nanotechnology. In the present study, a reliable approach for the synthesis of Ag-NPs was investigated using the aqueous extract of three marine macroalgae, Ulva flexuosa (Chlorophyta), Colpomenia sinuosa (Phaeophyceae) and Gracilaria persica (Rhodophyta). The complete reduction of silver ions was observed after 24 h of reaction at 25°C. The formation of Ag-NPs was analyzed by UV-Vis spectrum, Transmission Electron Microscopy (TEM), Scanning Electron Microscopy (SEM) and X-ray diffraction (XRD). Our finding demonstrated that U. flexuosa, C. sinuosa and G. persica have the potential of silver nanoparticles production in a media containing AgNO3 at room temperature.

Keywords: Scanning Electron Microscopy, Transmission Electron Microscopy, X-ray diffraction, Spectrum.