Ag-CuO nanoparticles: biosynthesis by Staphylococcus aureus and Pseudomonas stutzeri bacteria and antibacterial properties

Nasrin Ghasemi^{1, 2} Rova Zekavati3* Farid Jamali-Sheini⁴

- 1. Department of Microbiology, Science and Research Branch, Islamic Azad University, Shiraz, Iran
- 2. Department of Microbiology, Shiraz Branch, Islamic Azad University, Shiraz, Iran
- 3. Department of Microbiology, Islamic Azad University, Ahvaz Branch, Ahvaz, Iran
- 4. Advanced Surface Engineering and Nano Materials Research Center, Department of Physics, Islamic Azad University, Ahvaz Branch, Ahvaz, Iran

*Corresponding author:

rzekavati45@gmail.com

Received date: 2017/01/02 **Reception date: 2017/08/20**

Abstract

The Ag-CuO nanoparticles were synthesized by using biological method. The biosynthesis was performed by using bacteria route. Aim of this study is synthesis and characterization of Ag-CuO nanoparticles and investigation of antibacterial properties. Structure, morphology and the optical properties of the synthesized particles were studied. The xray diffraction (XRD) patterns of the Ag-CuO nanoparticles confirmed the produced materials. Electron microscopies studies showed the size of nanoparticles with homogeneous and uniform surface. Energy dispersive spectroscopy (EDS) confirmed the presence of Ag, Cu and O in the produce materials. Also, all samples were characterized by UV-Vis spectroscopies and the results were confirmed by XRD. Additionally, antibacterial property of nanoparticles in compound system was much better than single system.

Keywords: Biosynthesis, Ag-CuO NPs, Antibacterial activity.