

Synthesis of CuO Nanoparticles on nylon Fabric as property upon Staphylococcus aureus and Pseudomonas aeruginosa

zahra keramati*,Dr. Faten Divsar,

Abstract: Introduction: Nosocomial infections are one the main important problems in whole world and controlling distribution of these infection have been reminded huge challenges in our hospitals and healthcare community. Staphylococcus aureus are responsible for various types of clinical infections including like skin and soft-tissue, respiratory, bone, joint, blood stream and endovascular infections and also Pseudomonas aeruginosa is an important opportunistic clinical pathogen causing a variety of health care associated infections such as pneumonia, sepsis, wound, and urinary tract infections. In recent years, S. aureus and P. aeruginosa are becoming a serious clinical concern due to its obvious ability to develop resistance to several classes of antimicrobial drugs therefore developing and finding new ways are essentials for preventing and controlling antimicrobial resistance among these bacteria. The nanoparticles synthesis are relatively new methods to eliminate resistance of bacteria. The aims of this study were to evaluate the effectiveness of silver's Nano- particles anti- microbial activity on the pathogenic and resistant S. aureus and P. aeruginosa. In this research an in situ synthesis of copper nanoparticles on or within polyamide chains of nylon fabric was introduced through a simple chemical reduction method by using ascorbic acid and cetyl trimethyl ammonium bromide (CTAB) and chitosan. The distribution of copper nanoparticles on the fabric surface was shown by scanning electron microscopy images within 75- 95 nm. Further, Energy Dispersive X-ray spectroscopy and X-ray Diffraction confirmed effective assembling of copper nanoparticles on the surface of nylon fibers. The antibacterial activity of the fabric samples were tested. against Staphylococcus aureus and Pseudomonas aeruginosa using the antibiogram and minimum inhibitory concentration methods. MIC of these two bacterials strains Staphylococcus aureus

and *Pseudomonas aeruginosa* were found to be 78 and 4 µg/ml, respectively.

Keywords : **Keywords:** Nano particle CuO, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, Ascorbic acid, Chitosan, CTAB

[Islamic Azad University, Rasht Branch - Thesis Database](#)
[دانشگاه آزاد اسلامی، واحد رشت - سامانه بانک اطلاعات پایان نامه ها](#)