



Novel conductive textile fabric based on polyaniline and CuO nanoparticles

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Abstract : In this study, a novel conductive fabric in view of polyaniline/CuO (PANI/ CuO) has been successfully obtained. Different sequence of treatment was applied by aniline to obtain different fabric. The polymerization of aniline on cotton fabric happened in situ to prepare polyaniline (PANI) sample in presence of ammonium persulfate. CuO nanoparticles were formed on cotton fabric via ultrasound-assisted template method. Three cotton fabric samples obtain by different method of treatment .First sample obtained when polyaniline treated sample exposure to CuO nanoparticles on the CuO nanoparticles solution, second one obtained when CuO treated cotton fabric undergo polymerization reaction by aniline monomer .the third samples obtained when cotton samples is treated with PANI/CuO nanocomposite. The morphology the novel garment samples was characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD), and Fourier transform infrared (FT-IR) analyses. .The electric conductivity of the obtained samples was investigated, the most extreme interaction between CuO and polyaniline happens for lower CuO nanoparticles loading, as the electric conductivity reach maximum. The antibacterial activity of the obtained samples was also examined against Gram positive bacteria *Staphylococcus aureus* (*Staph. aureus*) and Gram negative *Escherichia coli* (*E. coli*) as well as fungus (*Candida albicans*) *C. albicans* using disk diffusion method. The aforementioned study demonstrated that, all fabric samples have a very good antibacterial activity and *were found to be effective against two bacteria.*

Key word: CuO nanoparticles, electric conductivity, polyaniline, antibacterial activity.

S.Sharaf *et al* / International Journal of PharmTech Research, 2016,9(6),pp 461-472.
