



Preparation and antimicrobial activity of ZnO coated cotton/starch and their functionalized ZnO-Ag /cotton and Zn(II) curcumin/cotton materials.

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Abstract:

The resistance of microbial activity against classical antimicrobial therapies increased due to increase in the ability of these organisms to develop resistance to virtually all antimicrobial systems. New strategies are recently considered in order to combat bacteria resistance by using various types of inorganic nanometals or nanometal oxides coated textiles to impart their antimicrobial activity. The new materials showed high stability and antibacterial effectiveness even after intensive laundry regimes are employed in hospitals. Recently some inorganic silver, metal oxide (ZnO) NPs and their hybrid metal oxide-silver (ZnO-Ag) nanocomposites coated cotton and starched have attracted attention, due to significant antimicrobial activities against pathogenic bacteria. Special attention has been directed toward the use of antibacterial coated fabrics e.g. medical clothes to minimize the chance of nosocomial infections. The use of starch as adhesive material would decrease the leaching of adsorbates from the surface of cotton substrate. The synergism systems and the curcumin complexes showed effective antimicrobial activities against pathogens.

Biography:

Issa M El Nahhal is a Professor of material science at Al-Azhar University of Gaza-Palestine. He holds a BSc in Chemistry/Physics from University of Al-Alexandria-Egypt in 1980 and PhD from University of Manchester-UK in 1986. Currently he is working at Al-Azhar university of Gaza-Chemistry Department, directing a PhD program in chemistry. He was a Full brighter in Colorado State University-USA for one year in 1993/94. He also had joint research programs With Florence Babonneua, Mohamed Chehimi and Jacques Livage from College De France in the period 1995-2014. He has published over 90 articles plus one book and one chapter, He also has supervised over the 30 MSc and PhD students.



Publication of speakers:

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2. Salat, M., Petkova, P., Hoyo, J., Perelshtein, I., Gedanken, A. & Tzanov, T. Durable antimicrobial cotton textiles coated sonochemically with ZnO nanoparticles embedded in an in-situ enzymatically generated bioadhesive, *Carbohydr. Polym.* 189, 198–203 (2018).
3. El-Nahhal, M.I., Elmanama, A. A., ElAshgar, M. N., Amara, N., Selmane, M. & Chehim, M. M. Stabilization of nano-structured ZnO particles onto the surface of cotton fibers using different surfactants and their antimicrobial activity *Ultrason. Sonochem.* 38, 478–487. (2017).
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