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Carbon nanofibers: alternative weapons against multidrug-resistant pathogens

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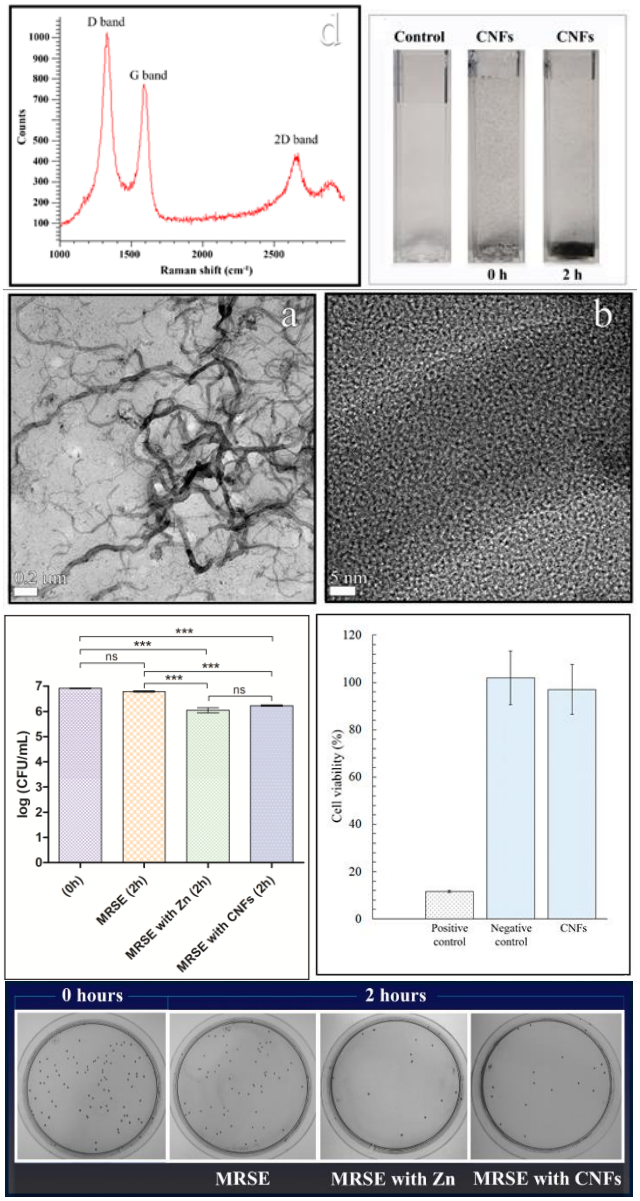
Graphical Abstract



Abstract.

Due to the current global health problem of antibiotic resistant recently announced by the World Health Organization, there is an imperious necessity of looking for new alternative antibacterial materials able to treat and impede multidrug-resistant infections which are cost-effective and non-toxic for human beings. In this regard, carbon nanofibers (CNFs) possess currently much lower cost than other carbon nanomaterials such as graphene oxide, and exhibit excellent chemical, mechanical and electric properties. Thus, here, we show the antibacterial activity of CNFs against a globally spreading multidrug-resistant pathogen, the methicillin-resistant *Staphylococcus epidermidis* (MRSE). This Gram-positive bacterium is becoming one of the most dangerous pathogens due to its abundance on skin. In this study, these hollow filamentous materials, in direct contact with cells showed no cytotoxicity for human keratinocyte HaCaT cells, which render them very promising for biomedical and bioengineering applications. The CNFs used in this work were characterized by Raman spectroscopy and observed by high-resolution transmission electron with energy-disperse X-ray spectroscopy. (*Read complete study in detail in reference [2]*)

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