Carbon nanotubes-induced biological effects

Stefano Bellucci

INFN-Laboratori Nazionali di Frascati, Via Enrico Fermi 40, 00044 Frascati, Rome, Italy

Abstract

Treatment of the human breast adenocarcinoma cell line, MCF-7, with 0.1 mg/ml of MWCNTs, MWCNTs-COOH, or MWCNTs-OH for 72 hours induced both a decrease in cell proliferation and a reduction of the percentage of cells in S-phase of cell cycle. Moreover, all types of MWCNTs induced an increase in apoptotic cells. Overall, these data indicated that the cytotoxic effects of all types of MWCNTs are mediated both from a decrease in the proliferation rate and from an increase of apoptotic cell death. The biological effects of all types of MWCNTs could be explained with their cellular internalization.

Tel/Fax: +39 06 94032883. E-mail address: bellucci@lnf.infn.it (S. Bellucci)

Biography of Dr. Stefano Bellucci

Stefano Bellucci obtained in 1986 his Ph.D. in Physics of elementary particles at SISSA, Trieste. He worked in the USA (1983-1988) as Research Associate at Brandeis Univ., visiting researcher at M.I.T., Univ. of Maryland, Univ. of California at Davis. He returned to Italy as a Tenured Researcher (Research Staff) at INFN (Istituto Nazionale di Fisica Nucleare) Laboratori Nazionali di Frascati (LNF) in 1987. He was appointed as INFN First Researcher (Senior Research Staff) in 2005. He coordinates all LNF theoretical physics activities. His research interests include theoretical physics, condensed matter, nanoscience and nanotechnology, nanocarbon based composites, biomedical applications. He is Series Editor of Springer Lecture Notes in Nanoscale Science and Technology, Associate Editor of Nanoscience and Nanotechnology Letters, and Author of over 400 papers in peer-reviewed journals with h = 39, http://scholar.google.com/citations?hl=en&user=mOq8urEAAAAJ. He is INFN scientist in charge of EU projects “BY-NanoERA—Institutional Development of Applied Nanoelectromagnetics: Belarus in ERA Widening”, “NAmiceMC—Nano-thin and micro-sized carbons: Toward electromagnetic compatibility application”, and “FAEMCAR—Fundamental and Applied Electromagnetics of Nano-Carbons”.