The major properties of multi-wall carbon nanotubes (MWCNTs) and the application of nanotechnology to the biomedical engineering and medicinal chemistry may have an amazing impact in the future developments of microsystems for medicine/drug delivery.\(^1\)-\(^3\) It is important to know the role of CNTs in the treatment of mammalian cells.\(^4\),\(^5\) Herein, we developed UHMWPE-MWCNTs hybrid nanocomposites with various wt% of CNTs using biocompatible UHMWPE. In order to check the influences of MWCNTs on cellular behavior of human dermal fibroblasts, we investigated the cell adhesion, cell spreading and migration on the surface of both UHMWPE and UHMWPE-MWCNTs (0.5%) nanocomposites. An in vitro study of the human dermal fibroblasts showed that the cells were cultivated well on the surface of UHMWPE-MWCNTs; it indicated that the presence of MWCNTs did not interrupt to the cell growth. Further, UHMWPE-MWCNTs composite treatment induced cytotoxicity by arresting the cell cycle in the G1 phase, signifying the DNA synthesis inhibition. The existence of MWCNTs nanocomposites induces the cell physiological functions. These results suggested that these nanocomposites have very good biocompatibility, similar to that of conventional UHMWPE (Figure 1). Based on the biocompatible data, these nanocomposites could be used as promising biomaterial for artificial bone and cranial prosthesis.

![Image](image-url)
Keywords: UHMWPE-MWCNTs, Fibroblasts, Cytotoxicity

References:


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