Introduction

The introduction of mwcnts into the hap matrix and dip coating of nanocomposite on titanium alloy (ti-6al-4v) plate was applied by abrishamchian et al. [38] in an attempt to improve the performance of the hap-plasma-coated implants. they noticed that the addition of low concentrations of mwcnts to hap improved the mechanical properties and reduced the surface roughness of the coating. furthermore, biological evaluation revealed normal cell adhesion and growth process on the hap/mwcnt composite coating, comparable with that of pure hap coating.

The in vivo behaviour of plasma-sprayed cnt-reinforced hap coating on titanium alloy implants embedded in rodents' bone was examined by facca et al. [39], who observed no adverse effects or cytotoxicity attributed to the addition of cnt to bone tissues. balani et al. [40] also investigated the non-toxicity of hap-cnt coating on ti-6al-4v implants, and the results of those cell culture studies showed unrestricted growth of human osteoblast hfob 1.19 cells near cnt regions.

The in vitro bioactivity of a hap-tio_2-cnt nanocomposite coating was investigated by zhang and kwok [41], who observed that, after immersion in hanks's solution for 4 weeks, thick layers of apatite were formed on the surfaces of the monolithic hap and hap-cnt and hap-tio_2-cnt nanocomposite coatings. they noted that the addition of tio_2 and cnt in hap did not affect the apatite-forming ability on their surfaces.