



## ***In vitro* EVALUATION OF OSTEOBLAST RESPONSE TO HYDROXYAPATITE NANO-PARTICLES DEPOSITED ON SELF-FORMED TiO<sub>2</sub> THIN LAYER ON Ti SURFACES**

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Synthetic hydroxyapatite HA nanoparticles (nHA), that mimic natural hydroxyapatite, are widely used as coatings on materials used in orthopaedic prostheses. However, as a developing country accessibility of these materials are limited due to high cost. Therefore, Wijesinghe *et al.* (2014), has prepared Sri Lankan origin nHA through a novel technique; atomized spray pyrolysis and successfully prepared Ti surfaces with a binder TiO<sub>2</sub> layer coated with nHA layer which makes the overall production process of bone-implant of high economic value, novel and simple. The materials were evaluated for cytotoxicity using MTT assay while proliferation of cells in contact with the materials was determined by Alamar blue assay, quantifying total DNA and total protein contents using human osteosarcoma cells (ATCC, CRL-1543), seeded at 2 x 10<sup>5</sup> cells/ml on sample surfaces and were evaluated for 35 days. The results of this preliminary study demonstrated that the test samples did not elicit any deleterious effects to cells and showed a significant difference to that of the toxic positive control ( $p < 0.05$ ). Furthermore, the materials encouraged initial cell adhesion and long term cell proliferation as results showed a consistent increase in proliferation up to day 14, which reached the maxima by day 28 which was compatible with that of the negative control (Thermanox). Further investigations are being carried out to evaluate the biocompatibility of the materials to be utilized in orthopaedic applications.

**Keywords:** *biocompatibility, Hydroxyapatite, Osteoblasts, orthopaedic prostheses*