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## Evaluation of osteoblast-like cell response to hydroxyapatite nano-particles deposited on self-formed $Tio_2$ thin layer on ti surface

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Synthetic hydroxyapatite (HA) nanoparticles that mimic natural HA are widely used as coatings on prostheses to repair, reconstruct and substitute human bones. However, for developing countries as Sri Lanka, the accessibility of most of these materials is limited due to the high cost of both raw materials and processing. Therefore, Wijesinghe *et al*. (2014) have prepared Sri Lankan origin HA nano-particles through atomized spray pyrolysis technique and have successfully prepared Ti surfaces with a binder $TiO_2$ layer and HA layer on the $TiO_2$ surfaces, which would be a simple material with high economic value for orthopaedic applications. In order to evaluate the appropriateness to utilize in the production of bone implants, this material was evaluated for cytotoxicity and biocompatibility (i.e.: morphology, proliferation and differentiation) *in-vitro* using osteoblast-like cells (HOS). The results of this study demonstrate that the surfaces of Ti with $TiO^2$ thin layer, coated with HA did not elicit any toxic substance which would bring deleterious effects to HOS cells and have supported cell adhesion once the cells are in contact with the material surfaces (Image 1). Moreover, cells attached to the surfaces retained their typical polygonal morphology and osteoblast phenotype, while undergoing the developmental stages of HOS cells (proliferation and differentiation) successfully, confirming the biocompatibility of the material.

In conclusion, this material will be a promising alternative for the production of synthetic bone substitutes with high potential for future developments in load bearing as well as non-load bearing orthopaedic applications.

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