

## An In Vitro Study to Evaluate the Genotoxicity of Value Added Hydroxyapatite as a Bone Replacement Material

Type:

Article

Abstract:

Hydroxyapatite (HA) used for bone replacement is one of the most active areas of ceramic biomaterials research currently. It has been used clinically for the last 20 years due to its excellent biocompatibility, osseointegration and osseointegration. Many modifications have been done to develop a stronger, tougher and biocompatible ceramic biomaterial because pure HA is brittle. Researchers in Universiti Sains Malaysia had developed this value added HA that is stronger and less brittle compared to pure HA. The objective of this in vitro study was to evaluate the genotoxic characteristic of the value added HA based material by using Bacterial Reverse Mutation Assay (Ames test). The Bacterial Reverse Mutation Assay of HA was performed on Salmonella typhimurium strains TA98, TA100, TA1535, TA1537 and Escherichia coli strain WP2 uvrA using the preincubation method in the presence and absence of an exogenous metabolic activation system. All the bacterial tester strains treated with and without S9 Mix showed no increase of revertant colonies with increase in concentration of test substance for both the dose finding test and the main test. The number of revertant colonies was less than twice that of the solvent control for all the five bacterial strains and this was reproducible for both the dose finding test and the main test. The numbers of revertant colonies in the negative and positive controls were within the background data of our laboratory. In conclusion the results of the tests showed that the value added HA was considered to have no reverse mutagenic potential under the present test conditions.

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