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### **Effect of hydroxyapatite nanoparticles on liver enzymes**

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Global demand for bone grafts is always very high. Nano-scaled hydroxyapatite (HA) has displayed unique functions in bone grafting than microscale HA. Nanoparticles (NPs) will interact with proteins present in biological fluids. For the assessment of biological responses to NPs, protein adsorption onto NPs in the biological medium can be considered as an important factor. HA NPs can be distributed in the body with blood circulation and mainly accumulated in the lungs, liver, and spleen. Enzyme compatibility of HANPs was evaluated using the liver enzymes such as alanine aminotransferase (ALT), aspartate aminotransferase (AST), and alkaline phosphatase (ALP). The enzyme extractions were mixed with the laboratory synthesized HANPs in 7 different weights (0, 0.005 g, 0.010 g, 0.020 g, 0.030 g, 0.004 g, and 0.050 g) separately. The activities of ALT, AST and ALP were measured according to the guidelines provided along with the kit, BIOLABO with using a goat liver as a model for a human liver sample. Data were analyzed using SPSS (Version 23 for Windows). A two-sample t-test was carried out for the determination of significant differences ( $p \leq 0.05$ ) between the means. Since no statistically significant difference ( $p < 0.05$ ) was observed between the mean activity of enzymes AST, ALT, and ALP with and without HANP (control), it is concluded that HANP does not affect the activity of all three enzymes significantly. Increasing amounts (g) of HANP however, resulted an increase in the activity of the liver enzymes.

**Key words:** Hydroxyapatite nanoparticles, Biological responses, Liver function, Enzyme activity

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