ORIGINAL ARTICLE

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Investigation of Inhibitory Effect of β-tricalcium Phosphate on MCF-7 Proliferation

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Abstract

Introduction: Calcium phosphate nanoparticles such as nano hydroxyapatite have shown excellent physical, chemical and biological properties and have allocated special place in regenerative medicine applications. Recently, the inhibitory effect of hydroxyapatite, as a calcium phosphate, on many cancers has been reported.

Methods: In this article β-tricalcium phosphate was synthesized using co-precipitation method and its physicochemical properties were studied (SEM, FTIR and XRD). Inhibitory effect of beta-tricalcium phosphate nanoparticles on the growth and proliferation of breast cancer cell line MCF-7 was investigated.

Results: In vitro MTT assay studies showed that the inhibitory effect was dependent on the concentration of tricalcium phosphate nanoparticles. In addition, the results demonstrated that the inhibitory effect was 78% attributed to 50 mg. L^{-1} concentration of tricalcium phosphate nanoparticles.

Conclusion: In lowest concentrations, the inhibitory effect of tricalcium phosphate nanoparticles was higher than others.

Keyword: Tricalcium Phosphate Nanoparticles, Inhibitory Effect, MCF-7, Breast Cancer, Side Effect.