

عنوان مقاله:

In-vitro study of cytotoxicity and genotoxicity of nanoamorphous calcium phosphate(NACP) in macrophage RAW264 cell line

محل انتشار:

اولین کنگره بین المللی مهندسی بافت و پزشکی بازساختی ایران (سال: 1397)

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نویسندگان:

Hooman Shafaei - *Dental Research center, Mashhad University of Medical Sciences, Mashhad, Iran*

Fahimeh Farzanegan - *Dental Research center, Mashhad University of Medical Sciences, Mashhad, Iran*

خلاصه مقاله:

ObjectiveThe biological assessment of cultured RAW264 macrophage to nano amorphous calcium phosphate particles by analyzing of cytotoxicity and genotoxicity tests.**Methods**In this study Nanoamorphous Calcium Phosphate particles produced by sol-gel method in Iran polymer center, then particle size and homogeneity was analysed by XRD (X ray Diffraction). Cytotoxicity of nanoparticles was determined on mouse RAW264 macrophage. The cells cultured in 37 c in DMEM medium with 10% fetal calf serum and 1% antibiotic and antifungal under 5% CO₂ atmosphere. the grown cells in 96 part plates with concentration of 10000 cells in each part with 200 micro liter medium cultured in 72 hours, after these time medium removed and the second medium added to cells which contained two different concentrations of nano particle(200&400µg/ml) and the cells which didn't have any nano particle consider as control group. Then the cells were incubated for 24 hours and the cell vitality assessed by MTT assay (colorimetric method use for counting vital cells), cell morphology, cell apoptosis analysis by Annexin V (method for counting apoptotic cells with flow cytometry); were done in BU-Ali immunohistochemical research center. **Results**Results reached from Annexin V assay show that apoptosis increase in macrophages with 200,400µg NACP but it is a few to count; and after 24 hours of incubation, most viable cells were in 200&400µg group. Cytotoxicity measured by MTT assay showed that cell viability in three groups contains of control, 200 µg and 400 µg were 100,107,103 percents and so most living cells were in 200 µg and then 400 µg which were more than control group; exactly similar to result of Annexin V assay that shows that Nanoamorphous Calcium Phosphate has no toxicity. **Conclusion**NACP has no cytotoxicity and genotoxicity, so it can be used as non-toxic and beneficial material for clinical use.

کلمات کلیدی:

Cytotoxicity, Genotoxicity, Nanoamorphous calcium phosphate

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