



BIOCOMPATIBILITY OF NANOMETRIC CALCIUM PHOSPHATES

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Introduction. Calcium phosphates need to provide specific requirements if they want to be considered as bone substitutes. They must be biocompatible, osteoconductive, osteoinductive and provide structural support [1]. A biocompatible material is capable of not causing rejection reactions in biological systems [2].

The particle size of the calcium phosphates, nanometric, determines their physical and chemical characteristics that can help in better interaction with the cells [3].

The first stage in a biocompatibility test are the *in vitro* experiments because they have a good sensibility, they can be reproduced and are cheap [4].

The present work presents the result of *in vitro* tests made to nanometric calcium phosphates synthesized in our laboratory.

Methods. Chondrocyte cells were obtained and isolated from a mouse. At the third pass, we selected approximately 1×10^6 cells as control and in another petri plate was collocated the powder of calcium phosphates with the same number of cells as in the control. They stayed in CO₂ stove at 5% and 37°. When the cells were near the confluence the cells were observed in the microscope and were counted in the Neubauer chamber. This was made by duplicate.

Also a study of the pH was made in order to know if it changes and may not be good for the cells. The pH was taken each two hours for four times at the same medium and culture conditions.

Results.

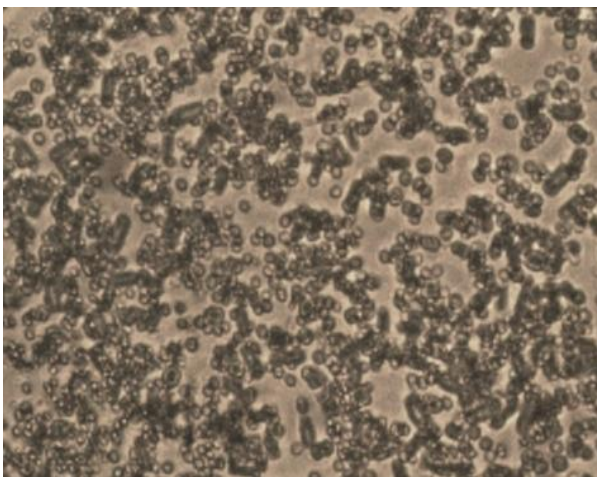


Fig.1 Chondrocyte cells without the calcium phosphates powder, the control.

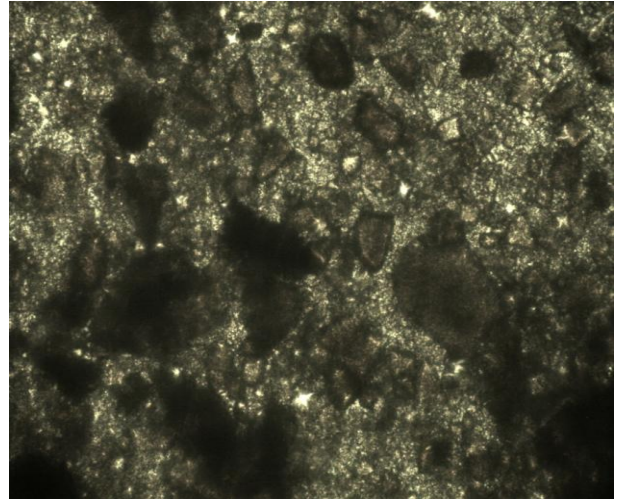


Fig.1 Chondrocyte cells with calcium phosphates powder.

In the Figure 1, can be observed the chondrocytes without the calcium phosphate matrix. We can distinguish the healthy morphology of the cells as their cellular density.

In the Figure 2, is presented the chondrocytes over the calcium phosphate matrix. In the photo, can be appreciate the nanocrystals and over them the cells. A very high density of cells also cells with morphology same as in the control.

Conclusions. Based on the results we determine that the nanometric calcium phosphates have the capability to be support to the chondrocyte cells also as that they don't generate an adverse environment to the living cells.

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