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ABSTRACTS**

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Effects of saline solution and simulated body fluid on ion substituted hydroxyapatites EPR spectra

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Hydroxyapatite (HA, $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$), a calcium orthophosphate, due to its similarity to the inorganic part of human's hard tissue, is among the most frequently used hard tissue regeneration biomaterial [1]. As such, the effects of HA ageing in media similar to blood plasma need to be studied, specifically after sterilization with γ -radiation, to better understand the possible structural changes it would undergo in the human body. Moreover, such changes in ion substituted HAs are particularly interesting since so called biological HA is in fact non-stoichiometric poorly crystalline, calcium deficient, Na-, Mg- and carbonate substituted HA (Dorozhkin, 2012) [2].

In this study, HA and 3 different substituted HAs were irradiated to 25 kGy with Co-60 γ -rays and their electron paramagnetic (EPR) spectra were recorded 1, 14 and 28 days after treatment with saline solution and simulated body fluid (SBF) [3]. The ion substituted HAs were doped with Mg and Si: 2% Mg; 2% Mg + 0.4% Si and 2% Mg + 1.25% Si. EPR spectra were analysed, and the most pronounced peaks assigned. The effects of ageing in the two media are presented and discussed.

References

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