**ID-13-P-2294 Physicochemical characterization by electron microscopy of the hydroxyapatite nanoparticles obtained by co-precipitation in presence of tannic acid.**

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Numerous are the reports in literature on the synthesis of hydroxyapatite (HAP) highlighting characteristics as particle size and morphology, which can be associated with the complexity of the particular method of preparation thereof [1, 2]. Most of the synthesis reports include reactions which must take place at relatively high temperatures and/or longer heat treatment times.

The synthesis of HAP nanoparticles obtained by the co-precipitation method at room temperature in presence of tannic acid, and varying by two different species of calcium, is reported in this work. The electron microscopy characterization was performed using the electron microscopes SEM JSM5600 and JEOL FEG 2010.

The first synthesis reaction was carried out from (CaCl₂•2H₂O) 0.1M, (N(C₃H₇)₄OH), 0.1M and (H₃PO₄) 0.06M using 2.17% tannic acid. The reaction is performed in a round-bottomed flask of three necks maintained in constant reaction stirring of 455 rpm for 30 min. After this, the H₃PO₄ is added with continuous stirring for two hours. The obtained product was washed 3 times with methanol-distilled water (1:1) to maintain a neutral pH.

The procedure is similar for the second synthesis variation. This was carried out using the reagents (Ca(OH)₂) 0.1 M and (H₃PO₄) 0.06M into a concentration of 1.79% tannic acid.

Structural and chemical analysis by scanning electron microscopy (Figure 1) and transmission electron microscopy (figure 2) confirms the obtaining of the HAP particles in nanometer size, with sizes of 20nm approximately. Figure 3 shows the EDS spectrum from the sample shown in Figure 1.


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Fig. 1: Figure 1 SEM secondary electron image of the HAP grains synthesized by co-precipitation in presence of tannic acid.

Fig. 2: Figure 2 TEM bright field image of the HAP grains synthesized by co-precipitation in presence of tannic acid. Note their nanometric size.

Fig. 3: Figure 3. EDS spectrum of the HAP grains shown in figure 1.