The hydroxyapatite (HAp) with the formula Ca$_5$(PO$_4$)$_3$(OH) is a similar material to the bone tissue, this is biocompatible material and therefore is used in medicine for creating prosthesis, also as the main component of glue for bones or another function. The purpose of this study is the HAp synthesis to compare properties of this sample (as a ratio of crystallinity: amorphousness) with commercial HAp. The emphasis of the project is about reduction of production cost due to the ease and low cost in obtaining raw material that is commonly dismissed as bio-waste. Eggshell has a composition of 94% of calcium carbonate, 1% of calcium phosphate, 1% of magnesium carbonate and 4% of biological material. The HAp sample was characterized by Raman spectroscopy, Fourier transform infrared spectroscopy (FTIR) and X-ray Diffraction (XRD). In the Raman spectrum was obtained the peaks characteristics of HAp, around 960 cm$^{-1}$ or 970 cm$^{-1}$ for the phosphate group and 3626 cm$^{-1}$ for the OH group, both presents in the compound. From these characterizations was possible the comparison of it with the commercial HAp, which was measured by the same methods. Then, samples obtained meets most of the expected characteristics when compared with commercial samples. Finally, is possible to use the sample obtained for subsequent applications and medical purposes.

Keywords: Hydroxyapatite, Eggshell, Biomaterial

Presenting author's email: nvnaranjoca@unal.edu.co