The use of biomaterials for regenerative purposes is widely spread in the field of biomedicine, using synthetic and natural polymers. Bone is formed by minerals immersed in a collagen matrix [1]. The bone mineral components are between 60% and 70% of the dry bone weight, they include calcium phosphate, sulfates and other minerals, and Mg, Na, Zn, K as minor elements. The minerals content is approximately the 30% of amorphous calcium and phosphates, around 70% of crystalline hydroxyapatite [2, 3, 4]. The objective of this study was assessing properties of biomaterial elaborated with mix similar proportion of bone composition, which included casein or collagen, polimethymetacrilate and mineral mix. Material samples were elaborated, according to the Official Norm for biomaterial characterization [5]. Three-point bending method was applied, which involves using a Zwick/Roell model Z005 testing machine at 5 kN of load. After that, Scanning microscope images (SEM) were recorded for microstructure analysis. The results showed, a material with a resistance greater than the elaborated material with collagen, the SEM images of material showed a constant microstructure pattern, characteristic of hybrid materials, in contrast the elaborated with collagen were of amorphous microstructure. The prospect about material obtained is of mass production, in order to use it for purposes of restoration of bone and the manufacture of prosthesis that allows the recovery of any total or partial function of bone tissue. Other uses include the restoration of museum pieces and models of fossil bones, with the advantage of being light and strong.

Acknowledgements: The authors acknowledges the financial support by FOFI-UAQ-2013. Also thanks, to MVZ José Martín García-Servín INB-UNAM, MSc Guillermo Vázquez-Sánchez of Mechanical Testing Laboratory CFATA-UNAM and PhD Marina Vega-Gonzalez of Laboratory of Cortical Fluids Geosciences Center UNAM, for all for their excellent technical assistance.

Keywords: Casein, Collagen, Mineral mix

References:


**Presenting author’s email:**  esther.torrero@uaq.mx