

# Materials sciences And Engineering, (MSE'22)

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**Abstract :** This work presents a study on the elaboration and characterization of Hydroxyapatite obtained from bovine bone calcined at 900°C for 3 hours with a particle size of around 125  $\mu$ m and sintered at 1100°C. A prepared biological solution (Simulated Body Fluid, SBF), to study the biological response of our elaborated powder. We carried out a characterization by scanning electron microscopy (SEM) in order to observe the formation of the apatite layer during the immersion time.

**Keywords :** hydroxyapatite, SBF, Biological response, Osteoconductivity