This work presents a methodology for the elaboration of polysaccharide based nanocomposite. First the extraction of galactomannan (GM) from mesquite seeds were done and their physicochemical characteristics were studied. The GM was extracted using an autoclave varying time and water ratio. The results showed that the gum extracted it is very similar to other GM. Next a nanocomposite was prepared using zinc sulfate and sodium hydroxide as precursors by in situ precipitation method. The prepared nanocomposite have been characterized by Fourier transform infrared (FTIR) spectroscopy, Raman spectroscopy, X-ray photoelectron spectroscopy (XPS), X-ray diffraction (XRD) analysis, scanning electron microscopy (SEM), Transmission electron microscopy (TEM), Proton nuclear magnetic resonance (RMN ¹H), differential scanning calorimetry (DSC), thermal gravim analysis (TGA) and UV-visible spectroscopy. Finally Antimicrobial test revealed that the nanocomposite exhibits a better antibacterial activity against Escherichia coli than to Staphylococcus aureus.

**Keywords:** Galactomannan, Nanocomposite, Antimicrobial

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