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E-BABE- Fabrication and characterization of chitosan/montmorillonite/ZrO₂ nanocomposite scaffold

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Biopolymers have privileges such as biodegradable and similar structural groups to natural extra cellular components. Chitosan considered as an appropriate functional material for biomedical applications because of having great qualities like biocompatibility, non-antigenicity, biodegradability, antibacterial, blood coagulation and high mechanical strength which make it suitable for tissue engineering. To improve mechanical strength, good chemical, dimensional stability and toughness of chitosan, it can be combined with clays such as Na-montmorillonite. In the present study, a novel scaffold containing Chitosan

(CTS), Montmorillonite (MMT) and Nano Zirconia (Nano ZrO₂) was prepared by freeze drying method. The CTS/MMT/ZrO₂ nanocomposite was reinforced by montmorillonite and zirconia and it was characterized by SEM, XRD and FT-IR studies which demonstrated the formation of the nanocomposite scaffold. Thermal stability was shown by TGA method and the surface area, pore volume and the pore size distribution of the CTS/MMT/ZrO₂ were calculated by the BET technique.

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