عنوان مقاله:

Characterization and synthesis of hardystonite (HT) as a novel nanobioceramic powder

محل انتشار:

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خلاصه مقاله:

Objective(s): Hardystonite (HT) has been successfully prepared by a modified sol-gel method. We hypothesized thatnano-sized (HT) would mimic more efficiently the nanocrystal structure and function of natural bone apatite, owing to the higher surface area, compare to conventional micron-size (HT).Materials and Methods: The hardystonite nanopowder was prepared via a modified sol-gel method.Optimization in calcination temperature and mechanicalball milling resulted in a pure and nano-sized powder which characterized by means of scanning electron microscopy(SEM), X-ray diffraction (XRD), transmission electron microscopy (TEM) and fourier transform infrared Spectroscopy(FT–IR). Results: Pure (HT) powders were successfully obtained via a simple sol-gel method followed by calcination at1150 °C. Mechanical grinding in a ceramic ball mill for 6 hours resulted in (HT) nanoparticles in the range of about 32-55nm.Conclusion: Our study suggested that nanohardystonite (NHT) might be a potential candidate by itself as a nanobioceramic filling powder or in combination with other biomaterials as a composite scaffold in bone tissue regeneration.

کلمات کلیدی:

Hardystonite (HT), Nanobioceramic powder, X-Ray diffraction, TEM, SEM, FTIR