عنوان مقاله:

Improved Mechanical and Biological Properties of Biodegradable Composites Based on Bioactive Glass and Tragacanth

محل انتشار:

هفتمین کنفرانس بین المللی مواد کامپوزیتی: ساخت، خواص و کاربرد (سال: 1399)

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خلاصه مقاله:

The primary aim of this study was to fabricate bioactive glass-tragacanth composite scaffold with improved mechanical strength using glycidoxypropyltrimethoxysilane (GPTMS) as a crosslinker. Composites were prepared by mixing melt-derived bioactive glass with ۲ and ۴ wt. % solution of tragacanth at a powder to liquid ratio of ۱.۵. Microstructure and compressive strength were evaluated. Weight loss and in vitro apatite formation of samples were investigated after immersion the scaffolds in simulated body fluid (SBF). SEM micrographs revealed that incorporation of GPTMS resulted in a more compacted microstructure. Sample with ۴ wt. % cross-linked tragacanth had the highest compressive strength. Weight loss and leaching were decreased with network compaction from ۱۰.۲ to ۴.۶۳. Moreover, a bone-like apatite layer is precipitated on the surface of scaffolds immersed for ۱۴ days in SBF which indicate their bioactivity. Overall, the produced composite scaffolds may be appropriate for bone tissue replacement.

کلمات کلیدی:

bioactive glass composites, crosslinker, GPTMS, tragacanth

لینک ثابت مقاله در پایگاه سیویلیکا: