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POLYMER-BASED BIOCOMPOSITES ENRICHED WITH GLYCOSAMINOGLYCANS FOR REGENERATIVE MEDICINE-SYNTHESIS AND CHARACTERIZATION

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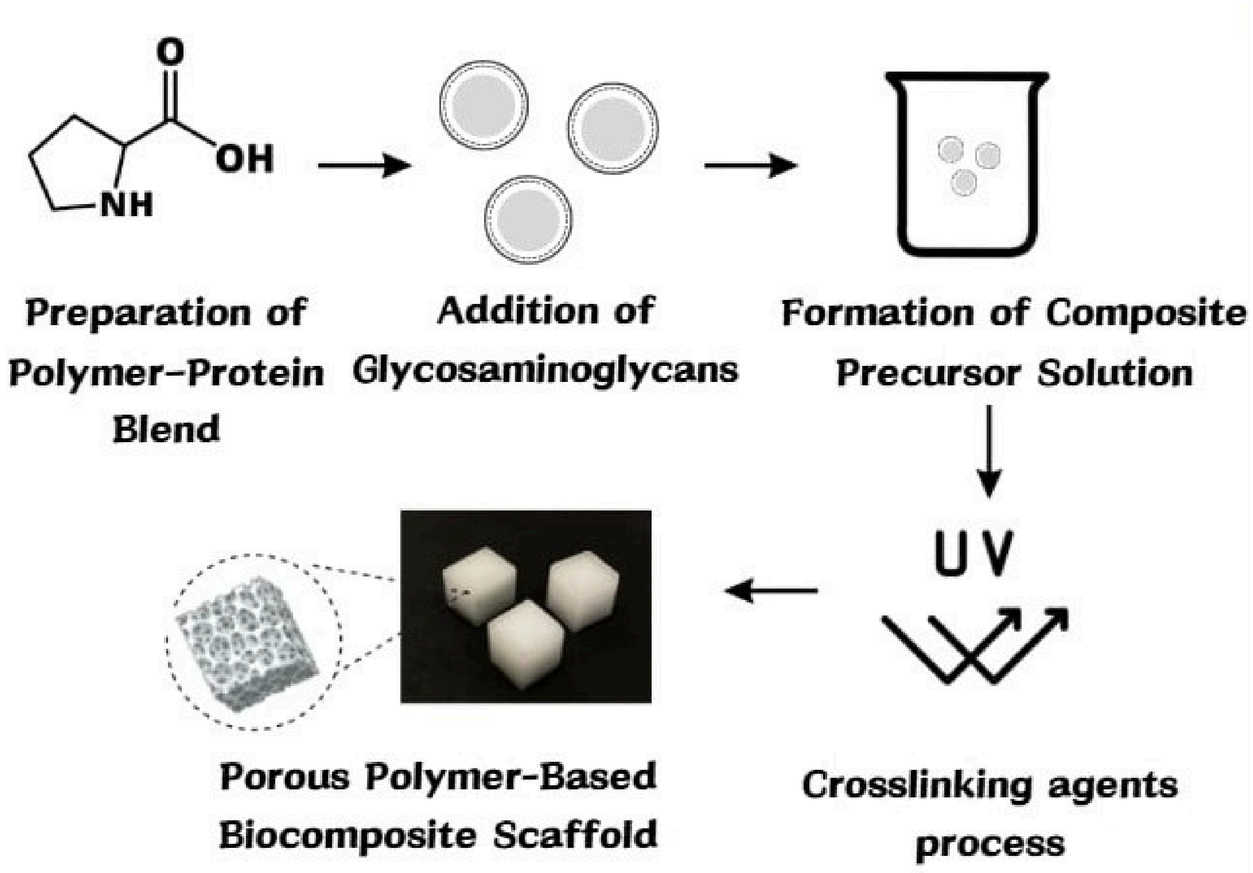
INTRODUCTION & AIM

The study developed and characterized innovative polymer-based biocomposites for applications in regenerative medicine.The materials were obtained by combining synthetic polymers with natural components such as collagen and gelatin, and further enriched with bioactive additives from the glycosaminoglycan group. The resulting composites exhibited structural and mechanical properties comparable to natural tissues, making them suitable candidates for scaffolds supporting tissue regeneration.

METHOD



RESULTS & DISCUSSION

Comprehensive characterization was performed, including analysis of morphology and porosity, stability under conditions mimicking physiological environments, and evaluation of fundamental physicochemical parameters. The average porosity of the materials was 21 ± 2%. The biocomposites exhibited a swelling ratio of 2.8 ± 0.3 g/g after 24 hours of incubation in PBS (pH 7.4), while maintaining structural stability for at least 14 days. During incubation in phosphate-buffered saline, the pH of the medium remained stable in the range of 7.2–7.5, indicating the absence of acidic or alkaline degradation of the material.

CONCLUSION

The findings indicate that the developed polymer-based biocomposites represent a valuable alternative to conventional biomaterials currently applied in tissue engineering. They provide a promising platform for the advancement of regenerative strategies aimed at the repair and restoration of both soft and hard tissues.

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