

Supporting Information

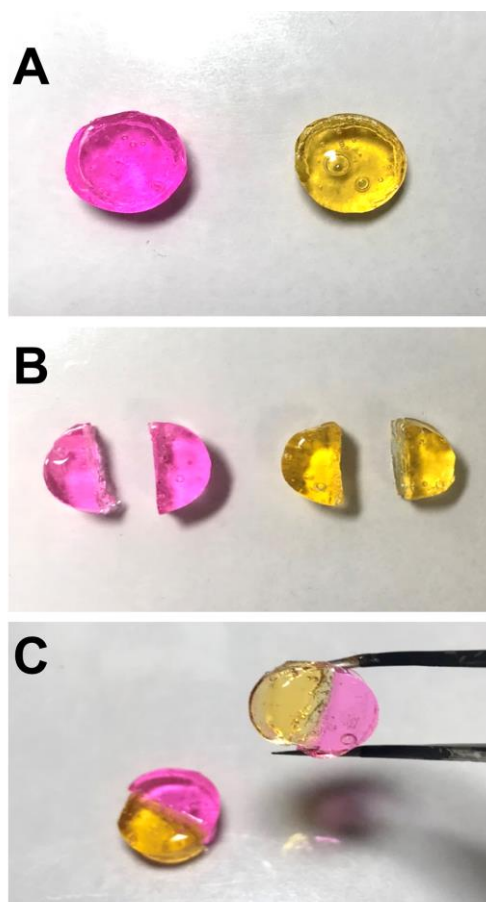


Figure S1. The self-healing property of hydrogels, namely the hydrogels can be reconstituted after being destroyed by external forces.

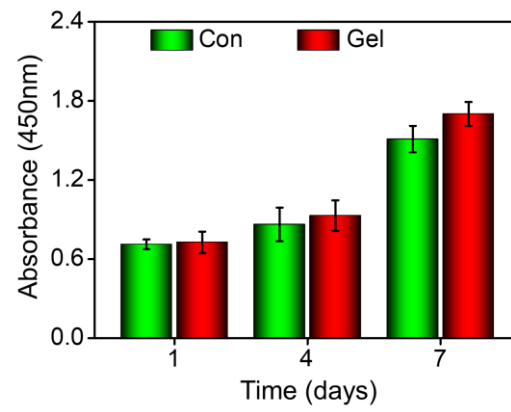


Figure S2. CCK-8 assay was used to assess BM-MSC proliferation when cultured in the hydrogel for 1, 4, and 7 days.

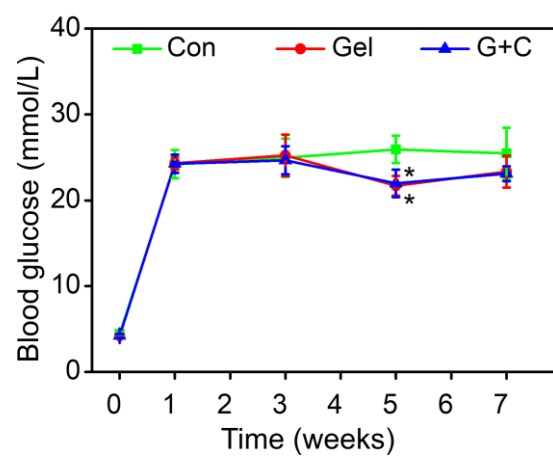


Figure S3. Blood glucose levels across the duration of the experiment (*P < 0.05).

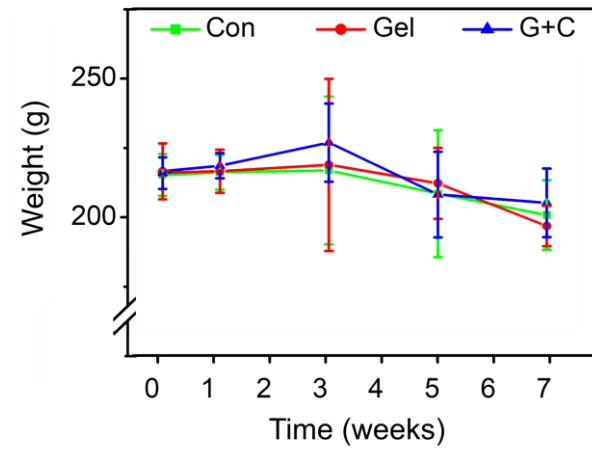


Figure S4. Body weight across the duration of the experiment (*P < 0.05).

Table S1. Scoring system for sub-epithelial matrix maturation.

Score	Characteristics
0–1	None to minimal matrix accumulation. No granulation tissue.
1–2	Granulation tissue dominated by inflammatory cells but with minimal fibroblasts, capillaries, or collagen deposition.
2–3	Moderately thick granulation tissue, moderate inflammation, moderate fibroblast and collagen deposition, but with extensive neovascularization.
3–4	Thick, vascularized granulation tissue dominated by fibroblasts and extensive collagen deposition.
4–5	Thick vascularized granulation tissue dominated by fibroblasts and extensive collagen deposition, demonstrating parallel collagen fiber organization.