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Patent Search

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Abstract:

Provided herein is a pH-sensitive topical wound healing hydrogel comprising a crosslinked polymer of poly-aspartic acid, polyvinyl alcohol and collagen impregnated with silver nanowires to maintain an optimal exudate based on the wound pH and reduce the microbial growth and bacterial infection and accelerate the wound healing process with scarless skin. Figure 5

Complete Specification

Claims:

1. A pH-sensitive topical wound healing hydrogel comprising a crosslinked polymer of poly-aspartic acid, polyvinyl alcohol and collagen; said polymer impregnated with silver nanowires, wherein the hydrogel has a swelling ratio of 731% at pH 3 to 1405% at a pH 10.
2. The hydrogel as claimed in 1, wherein the collagen is a fish collagen.
3. The hydrogel as claimed in 1, wherein the hydrogel has a swelling ratio of about 1168% at pH 8 to 1405% at pH 10.
4. A method of preparing pH sensitive wound healing hydrogel comprising:
 - a. mixing 750µL of 20% poly aspartic acid, 3mL of 8% polyvinyl alcohol, and 3 mL of 0.75mM ethylene glycol dimethacrylate to form a solution;
 - b. adding 4.5 mL of 1mg/mL collagen solution and 500 µL of 10000 ppm silver nanowires added into said solution; and
 - c. polymerizing the solution by free radical polymerization in presence of an initiator (APS, 188 mg) at 80°C forming hydrogel, wherein the hydrogel has swelling ratio of 731% at pH 3 to 1405% at a pH 10.
5. The method as claimed in claim 4, wherein comprises washing the hydrogels with distilled water until the water reached neutral pH.
6. The method as claimed in claims 4 to 5, wherein comprises freeze-drying the hydrogels.
7. The method as claimed in claim 4 wherein the collagen is a fish collagen

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