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Alginate in Wound Care

Satyaranjan Bairagi and S. Wazed Ali*

Department of Textile Technology
Indian Institute of Technology, Delhi, New Delhi, India

Abstract

Wound is a broken part of the skin due to physical or chemical actions such as friction, rubbing, temperature, etc. Suitable wound management system is necessary for proper wound healing. Commercially available wound-dressing materials like wool cotton, cotton gauge, and different synthetic dressings have some problems in terms of wound-healing rate, the moist environment at the wound, and comfort of the patients. Different existing problems can be overcome by using natural biopolymers (alginate, chitosan, collagen, etc.) based materials for wound dressings. Natural biopolymers have various advantageous properties, including low cost, easy to synthesize, and biocompatibility. Among the different biopolymers, alginate is one of the potential candidates for wound-dressing materials. Alginate is generally categorized as a naturally synthesized polyanionic copolymer, extracted from marine kelps, mainly the brown sea algae. Its advantageous properties (e.g., viscosity, thermostability, sol–gel transformation, hydrophilicity, swelling capacity, and drug release) give rise to different medical applications such as tissue engineering and drug delivery, particularly in wound care. In this chapter, synthesis of alginate, physicochemical properties, biomedical applications of the alginate, and particularly wound care application in the various forms of alginate-based wound dressings have been discussed in various sections.

Keywords: Alginate, biopolymer, biomedical applications, wound dressing, wound care, alginate fiber, alginate hydrogel

**Corresponding author*: wazed@textile.iitd.ac.in

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