

9.4.1.1 *Pure Alginate Polymer-Based Wound Dressing*

Sayaq *et al.*, [22] performed a comparative performance study on alginate-based wound dressings compared to a control dressing. These wound dressings have been applied on 92 patients to treat the full-thickness pressure ulcer disease. With alginate dressing, 40% reduction in wound area has been explored in 74% of the patients, while 42% of the patients responded properly for dextranomer dressing. Four and eight weeks have been taken for alginate-based wound dressing and dextranomer dressing, respectively. The wound reduction surface area in the case of alginate-based dressing has been found to be 2.39 cm², wherein the same was recorded for 0.27 cm² in the case of dextranomer dressings. Therefore, they concluded that alginate-based wound dressing is the best option in the case of wound care compared to other wound dressings.

9.4.1.2 *Intercellular Mediators Incorporated Alginate Polymer-Based Wound Dressing*

Alginate-based wound-dressing materials have drawn great attention in wound care applications. Different intercellular mediators have been used in the alginate-based matrix for suitable proliferation and migrations of wound cells. Balakrishnan *et al.*, [23] studied dibutylryl cyclic adenosine monophosphate (DBcAMP)-incorporated alginate-based wound-dressing materials. DBcAMP lipophilic analog of cyclic adenosine monophosphate (cAMP) and cAMP have been used as a strong regulator of human keratinocyte proliferation. DBcAMP was released very slowly from the alginate matrix during application in the wound dressing, and gradually, it was found to release firstly at a later time. Researchers observed that a complete re-epithelialization of wounds has been taking place within 10 days in the case of DBcAMP-incorporated alginate-based wound-dressing materials, wherein 15 days was required for the complete re-epithelialization in the case of control wounds. They have mainly evaluated the wound-healing capacity of the DBcAMP-incorporated alginate-based dressing on full-thickness wounds in a rat model. In another study, the cytocompatibility and proangiogenesis function in the wound has also been investigated by strontium (an inorganic angiogenesis factor)-incorporated silk fibroin (SF)/sodium alginate (SA)-based blended films [24]. The silk fibroin has some beautiful properties in terms of medical treatment, mainly in wound healing. It has good biocompatibility, blood compatibility, stability, and better water permeability, which are among the most important and desirable properties