

## **Swellable Dressing Materials for Wound Healing**

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Wound healing is an important biological process involving tissue repair and regeneration. The healing process is classified into four distinct stages namely: hemostasis, inflammatory, proliferative and remodeling. The factors which play major roles in wound healing are bacterial infection, nutritional deficiency, drugs, site of wound, and health condition of patients. Common bacterial skin infections include gram positive bacteria e.g. streptococcus, staphylococcus aureus, pseudomonas aeruginosa and fungal species candida. Thus, several topical agents: ointments, creams, lotions are used in wound healings to prevent secondary infection and to aid early healing. Beside application of topical agents on wounds it is required periodic washing, debridement, oxygen permeability and attention on dressing. To make the wound dressing materials more user friendly and comfortable, efforts have been given to develop biopolymer based dressing materials. Hydrogel dressings are polymeric materials gradually becoming more popular than the conventional dressing. Thus, aiming to develop biopolymer based swellable dressing materials without using chemical crosslinking agent. The hydrogels were prepared with gelatin (G), sodium alginate (SA), polyvinyl alcohol (PVA), glycerin, sodium chloride, polyethylene glycol and /or seabuckthron oil (SB) by applying physical stimulation technique under control heat (80 oC), stirring speed (300 -100 rpm). Finally, the hydrogels achieved in dry form after 48-72 hours and designated as G/SA/PVA and G/SA/SB/PVA hydrogels which vary from light yellow to orange, show quite good swelling, antimicrobial as well as viscoelastic properties. As the base materials of hydrogels are natural in origin, it is predicted that these hydrogels could be useful for the application of specific type of drug release or swellable medicated dressings for wound healing.