

Preparation and Analysis of Chitosan-Honey Films for Wound Dressing Application

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Abstract : Increase in antibiotic resistance bacteria leads to the development of active wound dressings, which absorb any bodily fluid, evaporation of moisture at a certain rate and can be easily removed after healing. Natural materials like chitosan, herbs, and honey have number of active materials present in them to accelerate wound healing and to arrest wound in infections. Hence with the advantages of biomaterials, a film was prepared using chitosan and honey. There are a lot of practical considerations with respect to honey. Honey exerts many beneficial actions on the wound surface only when it remains. The attempts to hold honey on the surface of the wound remain a question because honey becomes a very runny liquid when it comes to body temperature. Hence, this research was focused on development of a new form of wound dressing, by holding honey on the wound surface in different form and also which has a combined effect of manuka (*Leptospermum scoparium*) honey and chitosan. Chitosan-honey film was prepared using casting technique. Films were prepared in different variations; with acetic acid and with lactic acid; with and without honey. In summary, the film produced from 2% chitosan- 1% lactic acid as a solvent, with 10% honey shows optimum inclined values in all the tests, like thickness, folding endurance, weight, water vapor transmission, tensile strength, swelling ratio and antimicrobial activity, with specific reference to wound dressings. The film has water vapor transmission of 1680 g/m²/day, water absorption of 225%, tensile strength of 39.1N/mm² and elongation of 50.3%. There is a notable inhibition zone of 29 mm against *S. aureus* and 24 mm against *E. coli* in the case of chitosan-lactic acid-honey film. The film also arrests, microbes transmitting from the outside environment to wound bed, which can be used as an effective wound dressing material.

Keywords : casting technique, chitosan, honey, film, wound dressings

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