

Activity of Bromelain incorporated in a Hydrogel Matrix composed of Galactomannan and κ -Carrageenan in the wound healing

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Introduction and objective: The application of bromelain as a topical wound healing compound has been difficult to be managed due to its instability. Although it has beneficial properties for wound healing process, the use of bromelain for a long time of application, without losing its activity, is still a challenge. Healing enhancement and pain control are critical issues on wound management. So far, different wound dressings have been developed. Among them, hydrogels are the most applied. Herein, a hydrogel composed of galactomannan and κ -carrageenan was produced through a direct aqueous system for the incorporation of bromelain. **Material and methods:** The performance of the hydrogel with or without bromelain in the wound healing process was evaluated through *in vivo* assays, during 14 days. Forty five male rats (Wistar) were randomly divided into three groups (n = 15) according to the treatment: (C) Control, 0.1 ml of 0.9% (w/v) NaCl; (H) hydrogel and (HB) hydrogel containing bromelain. Five animals from each group were sacrificed after 3, 7 and 14 days for collection of skin fragments to perform the histological and immunohistochemical analysis. **Results and conclusions:** Results of the present study demonstrated that the bromelain was incorporated with success in the hydrogel matrix and remained active during 45 days with 82% of its proteolytic activity. The HB treatment has a better wound healing property and has following advantages: (i) it helps in faster wound healing, i.e., in 10 days, (ii) it reduces the inflammation, (iii) it increases the fibroblasts mobilization and collagen deposition and (v) it reduces scar formation. The system presented in this work can be considered an innovative approach and a practical contribution of advanced solutions for challenging epidermal regenerative processes in compromised situations, as wound of difficult healing of immunocompromised and diabetics. **Acknowledgments:** CAPES and CNPq. **Key-words:** bromelain, hydrogel, galactomannan, κ -carrageenan, wound healing.