WOUND-HEALING ACTIVITY OF A PROTEOLYTIC FRACTION FROM

Calotropis procera (AIT.) R. BR. LATEX IN MICE


1Departamento de Bioquímica, Universidade Federal do Ceará, Ceará, Brazil; 2Departamento de Farmacologia, Universidade Federal do Ceará, Ceará, Brazil; 3Núcleo de Biologia Experimental, Universidade de Fortaleza, Ceará, Brazil;

The latex of Calotropis procera (Ait.) R. Br. possesses various biological activities in traditional systems of medicine acting as an anti-inflammatory agent, antiseptic, analgesic and in the treatment of dermal disorders. Previously our laboratory has demonstrated stimulatory capacity of fibroplasia and collagenesis of latex proteins of C. procera in wound healing. Based on these findings we designed this time-course study to evaluate the effect of the proteic fraction (PII) of C. procera latex in experimental model of healing. Hydrogels of Calotropis procera latex proteases (PII), at concentrations of 0.2% and 0.5% w/v were prepared. Enzyme assay with azocasein as substrates were performed to determine the proteolytic activities of hydrogels on pH 5.0 e pH 6.0. Excisional wounds (1 cm²) were performed with a tissue punch on the dorsal surface of mice under anesthesia and aseptic conditions. The topical application of hydrogels was once daily for 14 days. Control animals received the vehicle without PII in a similar form. On alternate days following the surgery, wounds were macroscopically evaluated by the presence of flogistic signs, wound area size and presence of crust. Moreover, wounds were removed for histopathological evaluation. The proteolytic activity of both formulations was higher in pH 6.0. Wounds treated with PII healed significantly faster than control group, as indicated by the significant improved rate of wound contraction, a higher percentage of re-epithelialized wound area and percentage of absence of crust (P<0.05). These results were also supported by histological examinations. Studies show that latex pharmacological properties are associated with the presence of particular proteins with proteolytic activity as the proteases. Our findings provide a biochemical basis for the role of laticifers proteins in the enhancement of wound healing.

Acknowledgements

We thank the Brazilian agencies CAPES and CNPq for the financial support.

Key Words: Calotropis procera, Laticifers proteases, Wound healing activity