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Efficacy of glutamic acid on cutaneous wound healing in rats

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Wound healing occurs as a fundamental response to tissue injury. Amino acids play a key role in augmenting wound healing process. The role of some of the amino acids like arginine and proline has been well established. In this study, we have investigated the efficacy of a non-essential amino acid, glutamic acid, on cutaneous wound healing in rats. Male Wistar rats, weighing between 180 and 200 g were chosen for the study. Open excision wounds were made on the back of rats. The rats were divided into two groups comprising six rats in each group. Group I, control rats, treated with 200 µl of phosphate buffered saline (PBS), and group II rats were treated with glutamic acid (200 mg dissolved in 200 µl of PBS) topically, once daily, until complete healing. Wounds treated with glutamic acid healed much faster as indicated by improved rates of contraction and decreased period of epithelialization. The biochemical analyses such as collagen, uronic acid and hexosamine were determined in the wound tissue. An increase in cellular proliferation and collagen synthesis was evidenced by significant increase in total collagen and uronic acid content. Histological evaluation was also carried which further substantiated the results. A marked increase in tensile strength (80%) and shrinkage temperature (24%) was observed in the wound tissues of glutamic acid treated rats. These results obviously substantiate that the topical application of glutamic acid enhance the rate of healing.

Biography

Vilvanathan Sangeetha Priya has completed her Master's degree in Biochemistry from University of Madras, Chennai. She has three years of experience as Project Assistant. Currently, she is doing her Ph.D. at University of Madras in the Department of Biochemistry, CLRI.

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