



# AN EVALUATION OF THE WOUND HEALING PROCESS OF GG (OCHAsp) GEL AND INTRASITE™ GEL DRESSING IN WISTAR RATS

Pansawat N<sup>1</sup>, Pulsuksombati D<sup>2</sup>, Pilakasiri K<sup>1</sup>, Janvikul W<sup>3</sup> and Sangjun N<sup>2</sup>

<sup>1</sup> Faculty of Medicine Siriraj Hospital, Mahidol University, <sup>2</sup> Armed Forces Research Institute of Medical Sciences, <sup>3</sup> National Metal and Materials Technology Center

## Abstract

**Background:** The skin is the largest organ of the body. When skin has injury or damage, wound healing is complex process of the replacement or dead tissue in three basic phase; inflammatory phase, proliferative phase and maturation phase. Chitosan is natural biopolymer that is derived from chitin, a major component of exoskeleton of crustaceans. It has advantages in being the wound dressing including hemostatic, biodegradability, biocompatibility and promote wound healing. Prepared chitosan salts from aspartic acid (OCHAsp) are found to be good in antibacterial activities and promote wound healing. GG(OCHAsp) was OCHAsp that are crosslinked with guar gum to yield a hydrogel for use in biomedical applications.

**Objectives:** To evaluate wound healing process of GG(OCHAsp) gel compared with that of the commercial product, Intrasite™ gel.

**Methods:** A total of 12 female Wistar rats were anesthetized. Two full thickness skin wounds (1 x 1 cm<sup>2</sup>) were prepared on the dorsum of each animal and each individual wound was covered with either GG(OCHAsp) gel or Intrasite™ gel. The groups of four animals were sacrificed on day 2, 11 and 17 after wounding. The wound were photographed for calculating by the image analysis program. The wound tissues were processed for routine histological and indirect immunoperoxidase technique.

**Results:** The results showed that the appearances and sizes of wound surfaces dressed for each dressing material showed a progressively well-healing process on all experimental days. The results of histological examination demonstrated more advanced epithelialization, granulation tissue and less inflammation in the wound dressed with GG(OCHAsp) gel than those of Intrasite™ gel. Also, the wounds dressed with GG(OCHAsp) gel displayed significantly higher average percentages of proliferating cell nuclear antigen positive cells than those of Intrasite™ gel on day 2 to day 17.

**Conclusions:** The wounds dressed with GG(OCHAsp) gel show the faster healing rate than those of Intrasite™ gel as well as no remaining dressing materials were found. Thus, the GG(OCHAsp) should be useful as a therapeutic agent for the treatment of full-thickness skin wounds.

*33<sup>rd</sup> Annual conference of the Anatomy Association of Thailand 2010, 28-30 April 2010, Poster 25, Poster presentation*