

**COMPARISON OF THE EFFECTIVITY OF GIVING TOPICAL
LOW MOLECULAR WEIGHT HYALURONATE WITH POVIDONE IODINE
ON HEALING THE FULL THICKNESS WOUNDS COLONIZED BY
PSEUDOMONAS AERUGINOSA IN WHITE RATS**

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Objective : This study aimed to compare the effectiveness of topical low molecular weight hyaluronate (LMWHA) with povidone iodine on the healing of full thickness wound which colonized by *Pseudomonas aeruginosa* in white rats.

Study Design : Experimental study, the randomized post test only control group design

Methods : 24 male white rats at about 40-60 day old weighing 200-300 g were used. A full thickness wound sized 0.5 x 0.5 cm were made on each left and right rat's back and then be inoculated with *Pseudomonas aeruginosa* 10⁵ CFU until colonization occurs. The rats were divided into two groups: first group (n=12) – the left wounds on were treated with 10% *povidone iodine*, the right wounds as control were not treated; second group (n=12) – the left wounds were treated with 1% LMWHA, the right wounds as control were not treated. Each treated wounds were taken on the 1st and 3rd days for swab cultures. Six specimens were taken from each group by sacrificing the rats on the 3rd and 7th days for histopathological examination.

Results : The amount of cultures with >10⁵ cfu/mm² *Pseudomonas aeruginosa* colonies on observation day 1 and 3 did not differ significantly in the treatment of full thickness wounds that are colonized by *Pseudomonas aeruginosa* with LMWHA and povidone iodine topical on white rat (p>0.005) with statistical tests using the Fisher exact. The mean of epithelial layer thickness on the observation day 3 and 7 in the treatment with LMWHA are 28.57 ± 6.55 and 63.21 ± 22.93 microns, while in the treatment with povidone iodine are 31.11 ± 10.26 and 43,09±15,75 microns. From the results of statistical analysis using paired t-test, there were no significant differences in the mean of epithelial layer thickness in the treatment of full thickness wounds that are colonized by *Pseudomonas aeruginosa* in the white rat between the topical administration of LMWHA and povidone iodine (p>0.005).

Conclusion : LMWHA treatment can decrease the amount of *Pseudomonas aeruginosa* colonies and accelerate epithelialization in full thickness wounds. However, it still needs antimicrobial therapeutic role in wound management which suspected with high bacterial colonization.

Keywords : wound healing, *Pseudomonas aeruginosa*, LMWHA, povidone iodine