

CORRELATION BETWEEN MMP-1 RESPONSES AND EPITHELIALIZATION OF ACUTE STAPHYLOCOCCUS AUREUS INFECTED WOUNDS TREATED BY COFFEE POWDER, SALINE GAUZE, AND HYDROCOLLOID

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ABSTRACT

Introduction: Wound healing is a complex issue covering a variety of physical responses. It has accepted the optimal wound healing, when the wound is moist and autolytic debridement process of MMP involved here. The correlation between MMP and epithelialization would be proved.

Methods: This was a study of the wound, using Wistar rats infected by Staphylococcus aureus treated in the Groups of coffee powder (Group-1), saline gauze (Group-2 as a control group) and hydrocolloid (Group-3), each group of 9 rats. The degree of MMP-1 and epithelialization would be compared to understand the wound healing process in the three different wounds dressing. ANOVA and Kruskal-Wallis tests were used to calculate the MMP-1 concentration. Chi-square and an Exact Fisher test to analyze the epithelial existence in a wound biopsy. The correlation between the variables examined using the Spearman test.

Results: Blood serum MMP-1 was high after the exposure with Staphylococcus aureus and decreased after wound treatment. The mean of MMP-1 was 2.41 ± 0.935 in Group-1; 5.12 ± 1.149 in Group-2, 3.23 ± 0.867 in Group-3. Epithelialization in Group-3 was 44.4%; in Group-1 was 66.7% and none in Group-2 (control group). The correlation between MMP-1 and epithelialization was -0.724 with $p=0.001$.

Conclusion: Saline-gauze could not decrease the MMP-1 level, which then influenced the delayed epithelialization. Coffee decreased the MMP-1 insignificantly better than hydrocolloid and significant to saline gauze. Coffee was the most efficient to treat an acutely infected wound. Statistically, MMP-1 has an inversely proportional effect on the appearance of epithelium growth rate.

KEYWORDS: Wound Healing, Staphylococcus Aureus, MMP-1, Coffee, Hydrocolloid