



THE HEALING OF TRAUMATIC ULSER USING COMBINATION OF CHITOSAN AND ALOE VERA GEL (RESEARCH ARTICLE)



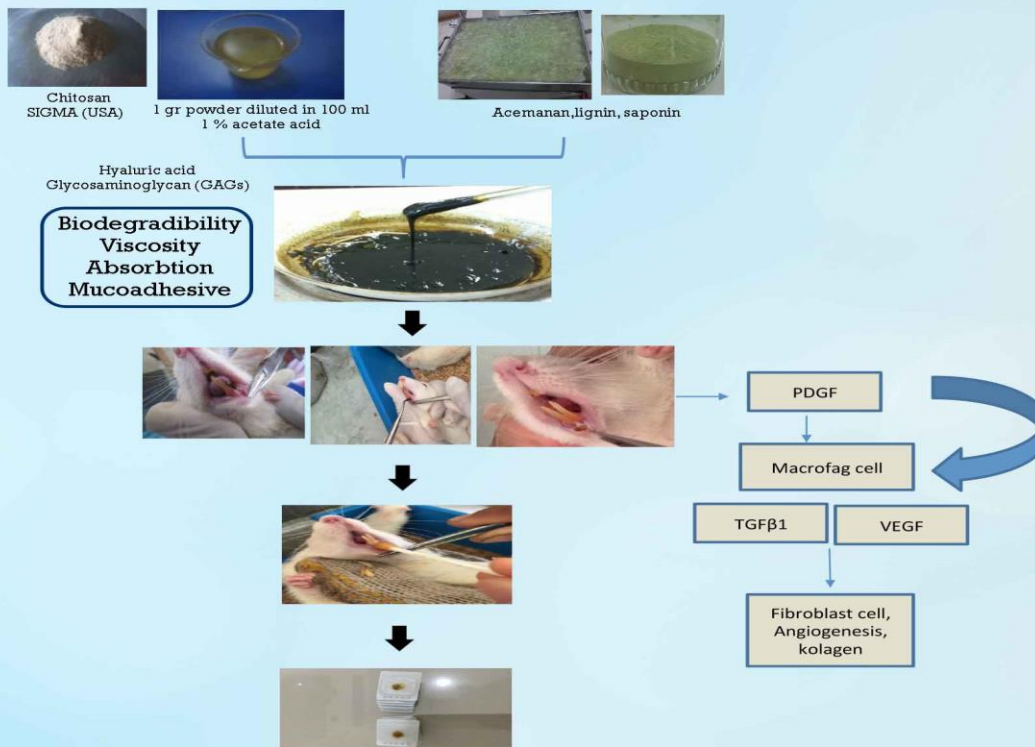
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ABSTRACT

Background: The Combination of chitosan and Aloe vera gel might be promising to be wound dressing materials. It has been promoted for wound healing, which reduces inflammation activity, stimulates TGF β and Vascular endothelial growth factor (VEGF). **Purpose:** The objective of this research was to analyze the proliferation of fibroblast cells and angiogenesis on wound healing process of Traumatic ulcer using combination Chitosan and Aloe vera gel. **Methods:** The research was an experimental laboratory study. *Rattus norvegicus* strain wistar male, aged 8-16 weeks, divided into 2 treatment groups. The group are combination chitosan 1 % -Aloe vera 5% gel and control group. The combination gel were applied into ulcer on lower lips of wistar rat which heated with burnisher. Rat was decapitated 3 and 7 days gel application and the jaw in the treated were cut for histopathology anatomy examination to observe the proliferation of fibroblast cells and angiogenesis. Data were analyzed using ANOVA test. **Results:** The result of this research showed significant differences on proliferation of fibroblast cells and angiogenesis for 3 and 7 days observation ($p < 0,05$). The increasing of proliferation fibroblast cells and angiogenesis were found in the group which given gel combination of chitosan-Aloe vera. **Conclusion:** The combination of chitosan and Aloe vera gel could be enhance the proliferation fibroblast cell and angiogenesis on healing of traumatic ulcer.

Key words: Combination chitosan- Aloe vera gel, healing, Traumatic ulcer

SCHEME CONCEPT



DISCUSSION

The combination of chitosan and aloe vera gel were promoted for wound healing, which reduces inflammation activity, stimulates Platelets derived growth factor (PDGF), Transforming growth factor beta-1 (TGF β 1) and Vascular endothelial growth factor (VEGF). Its N-acetylglucosamine units and acemanan can bind to fibroblast growth factors and therefore stimulate angiogenesis and proliferation of fibroblast cells.

The application of combination chitosan and aloe vera gel was proposed for wound healing of traumatic ulcer which reduced duration of the lesions include keeping the wound moist, increase epithelial cell migration, more rapid maturation of collagen and reduction in inflammation.

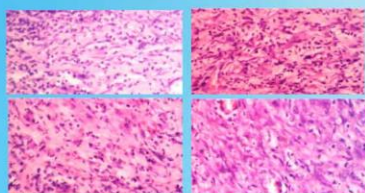


Figure 1. The number of fibroblast cells on 3 days observation, (A) control group, (B) Combination chitosan- aloe vera group. The number of fibroblast cells on 7 days observation, (C) Control group, (D) Combination chitosan-aloe vera group

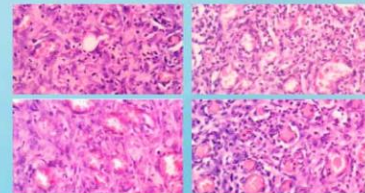


Figure 2. The Angiogenesis on 3 days observation, (A) control group, (B) Combination chitosan-aloe vera group. The Angiogenesis on 7 days observation, (C) Control group, (D) Combination chitosan-aloe vera group



Figure 3. The graphic of fibroblast proliferation and angiogenesis on 3 and 7 days using combination chitosan-aloe vera group and control group

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The increasing of proliferation fibroblast cells and angiogenesis were found in the group which given gel combination of chitosan-Aloe vera

CONCLUSION

The combination of chitosan and Aloe vera gel could be enhance the proliferation fibroblast cell and angiogenesis on healing of traumatic ulcer.

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