Ministry of Higher Education
And Scientific Research
University of Baghdad
College of Dentistry

Effect of local exogenous application of Myrrh and/or Sage oil on incisional wound healing (Histological and Histochemical study on rabbits)

A Thesis
Submitted to the Council of the College of Dentistry at the University of Baghdad, in Partial Fulfillment of the Requirements of the Degree of Master of Science in Oral Histology and Biology

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2018 A.D. 1439 A.H

Abstract

Back ground: A wound can be defined as a loss of the integrity and function of the tissues of the body. Wound healing, which is a normal biological process in the body, is achieved by four precise, strict and highly programmed phases, the process includes: hemostasis, inflammation, proliferation, and remodeling. The herbal medicine is a branch of the complementary and alternative medicine. Herbal therapies had been used since the ancient civilization for caring of wounds and injuries. Myrrh has a beneficial effects as local stimulant and antiseptic properties for wounds and abrasions and it promotes healing and treat infection. Sage has an anti-inflammatory and anti-fungal properties, which deals effectively with throat infections, dental abscesses, infected gums, and mouth ulcers.

Aim of the study: To evaluate the effect of topical application of myrrh oil and/or sage oil on the skin wound healing histologically, histochemically and histomorphometrically.

Material and methods: Forty male White New Zealand rabbits were used in this study. A surgical incision wounds with full skin thickness depth and 2 cm length were done in the skin of the cheek on the right and left side of each rabbit. The incision wound of all animals were randomly divided into four main groups:

1- Control group: 20 right side wound incisions were irrigated with (10µL) distilled water.
2- Experimental group I: 20 left side wound incisions were treated with (10µL) myrrh oil.
3- Experimental group II: another 20 right side wound incisions were treated with(10µL) sage oil.
4- Experimental group III: another 20 left side wound incisions were treated with(10µL) mixture of myrrh and sage oils.

Wound contraction were assessed by ruler-based technique to calculate the wound area. Then all the animals were sacrificed according 4 healing intervals in 1,3,7 and 14 days (10 rabbits for each). After that the specimens prepared for histological section (H&E stain) for assessment of the number of inflammatory cells and blood vessels in addition to epithelization thickness in wound area, and for histochemical examination by Masson's Trichrome stain for assessment of collagen fibers density by image J software.

Results: Wound contraction was accelerated in all experimental group than control group with a lowest mean value was recorded for myrrh group at day14 which was nearly equal to M&S groups and slightly lower than sage groups. Also these oils showed anti inflammatory effect by decreasing the inflammatory cells account with time.

Histomorphometrical study showed that epithelial thickness in all experimental groups was nearly completed at day 7, while in the control group completed at day 14. Also angiogenesis occured earlier in all experimental groups than controls. Histochemical study showed that collagen fiber density was higher in wounds treated with myrrh and/or sage oil than control group with a high significant difference at day 3, 7 and 14.

Conclusion: The present study revealed that myrrh oil and/or sage oil are more effective in accelerating the wound healing than control one .