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Color Doppler and Histological Evaluation of the Effect of pumpkin seeds and chia seeds oil on skin wound healing on rats

A thesis

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By

Dr. Rana Fawzi Saleh

B.D.S., H.D.D. (Oral Diagnosis)

Supervised by

Assist. Prof. Dr. Enas Fadhil Kadhim

B.D.S., M.Sc., Ph.D. (Oral Histology)

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Abstract

Background

Wound healing can be assessed by histological examination of wound area besides the using of Color Doppler ultrasound, the noninvasive testing of wound healing phases by providing considerable insights into an early angiogenesis and constitutes a helpful test in the detection of neovascularization by using the Color Doppler vascularity index. Pumpkin and chia seeds oil is widely used herbal medicines because of their anti-inflammatory and antioxidant capacity as they considered a good source of polyunsaturated fatty acids.

Aim of study

- To evaluate the role of color Doppler ultrasound in detection of neovascularization in wound healing.
- To evaluate the role of local application of pumpkin seeds and chia seeds oils on wounds healing in skin of rat by using Color Doppler ultrasound and histological examination.

Material and methods

Forty five male rats weighted about (250-300g), aged (2-3month) were used in this study

A surgical horizontal wound with full skin thickness depth and 2 cm length was done in the dorsal skin of the rat then the animals will be randomly divided into:

A-control group contain (15 rats) the skin wound incision on the back was irrigated with one drop of distilled water.

B-Experimental group includes

Group I contains (15) rats the skin wound incision on the back was treated with one drop of pumpkins seeds oil daily

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Group II contains (15) rats the skin wound incision on the back was treated with one drop of chia seeds oil daily

Every single group were studied with color Doppler ultrasound (by using color Doppler vascularity index) and histologically (H&E stain) according to healing periods (3, 7, 10) days (5 rats for each period)

Histological findings: The assessment included (inflammatory cell count, epidermal thickness, wound contraction) wound contraction were assessed by vernea-based technique to calculate wound area. Surgical operation was done then the Doppler ultrasound was performed before the animals were sacrificed according to three healing periods in (3, 7, 10) .Then the specimens were prepared for histological study.

Results

Color Doppler vascularity index findings indicate that angiogenesis occur earlier in experimental groups than in control one, wound contraction was accelerated in all experimental group and in 7 and 10 duration as compared to the control group, there was a marked decrease in the number of inflammatory cells that infiltrated into the wound sites in the experimental group during period of 3 and 7 and 10 days as a compare with control group, The results of control group showed gradual increase in epithelization. At day (3, 7) the control group showed complete epithelial regeneration but thin layers However, pumpkin and chia seeds oil-treated groups have revealed a complete repithelialization with thicker layers.

Conclusion

The present study revealed that pumpkin and chia seeds oil are effective in accelerating wound healing than the control one by means of color Doppler ultrasound and histological findings.