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**Immunohistochemical Expression of Decorin, and
Epidermal Growth Factor Receptor in Induced
Traumatic Oral Mucosal Ulcer Treated with
Leptin in Rats
(Histological and Histomorphometrical Studies)**

A thesis

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ABSTRACT

Background: Injury to the oral mucosa due to trauma or diseases can cause a painful ulcer. This reason makes the searching for a safe treatment that can accelerates tissue healing, and restores its architecture without any complications as concern for many researchers. Although there were many studies mentioned the benefits of topical using of leptin in wound healing whether, it was in the skin or in oral mucosa, but it still needs more profound scientific interpretations.

The study aims that;

- 1- Immunohistochemical localization for epidermal growth factor receptor and decorin in both study and control groups in all healing intervals.
- 2- Histological and histomorphometrical evaluation of the biological effect of leptin on healing of the abrasion ulcer in rats oral mucosa.
- 3- Biochemical analysis of blood sugar level.

Materials and methods: Forty eight male albino rats (*Rattus rattus Norvegicus*) were used in this study, age between 2-3 months with body weight between (200-270 gm).The body weights were recorded and blood samples were collected from each animal to measure the blood sugar level before operation. Both groups were subjected to abrasion ulcer on right side of buccal mucosa with 8mm diameter, by surgical blade (no.15). The animals were divided into two groups as follow:

A. Control group contain (24) rats: The ulcers irrigated daily with 10 μ l distilled water.

B. Study group contain (24) rats: The ulcers treated daily with topical application of 10 μ l of 1 μ g / ml of leptin.

The animals were scarified at the end of three healing intervals: 3,7, and 10 days [16 rat (8 rats from each group),for each period].

At the day of scarification, the bodies weights were recorded, final ulcers sizes were measured by digital caliper of (0.5mm) precision, and

blood samples were taken from each animals in order to measure the final blood sugar level. After that, the specimens were taken and prepare for histological section (H&E stain) for assessment of the number of inflammatory cells and blood vessels account in addition to re-epithelization thickness in ulcer area. Also, immunohistochemical investigation for expression of epidermal growth factor receptors and Decorin were performed on each specimens, for all groups over all periods.

Results: Histological findings of the present study show that the application of leptin as a topical treatment on the ulcer area, reduced the inflammation, accelerated the surface re-epithelization, enhanced the angiogenesis, and promoted remodeling of the extracellular matrix resulting with fast maturation of tissue healing.

Immunohistochemical examination of this study revealed Leptin increased both epidermal growth factor receptors and decorin level in the ulcer area with highly significant differences. The epidermal growth factor receptors expressed strongly in the study group at 3rd day of healing then became negative at 10th day in both epithelial and lamina propria tissue. The decorin expression was detected from the 3rd day after induced ulcer, and then decreased to weak expression at 10th day at epithelium tissue. While showed strong expression in lamina propria.

Conclusion: The present study reveals that using of leptin as a topical treatment will reduce the ulcer diameter and accelerate the healing process in a shorten time and increase the expression of the both epidermal growth factor receptors and decorin in the ulcer area than control.