

# Irradiation Effect of Low Energy Laser On Healing of the Socket after Tooth Extraction

(Histological study in rat)

Thesis

Submitted to the college of Dentistry  
University of Baghdad

In Partial fulfillment of the Requirements for  
The degree of Master of Science in Oral Histology  
and Biology

By

Warkaa M.AL-Wattar  
B.D.S

2004 May

1425

## **ABSTRACT**

This study was designed to investigate the histological effect of low energy laser therapy on the healing of bone at the extraction site of maxillary first molar in rat as single and multiple doses in relation to the time of exposure to laser.

In this study (24) male albino rats; 6-8 weeks of age were used and were exposed to extraction procedure of maxillary first molar at the first day of a 7<sup>th</sup> day experiment and these animals were divided into two main groups; the control group and the laser group.

Group (A) was the control group consisted of 4 rats, which were not exposed to any laser irradiation.

Group (B): was divided into 5 subgroups, each of them consisted of 4 rats. These groups were exposed to low energy laser irradiation as follow:

Group B1: single dose of 5 minutes immediately after extraction.

Group B2: single dose of 35 minutes immediately after extraction.

Group B3: 7 doses for 7 days as 5 minutes /day from day 1-7.

Group B4: 3 doses for 3 days as 10 minutes /day in days 1,2,3.

Group B5: 3 doses for 3 days as 10 minutes/day in days 4,5,6.

The specimens were prepared for histological study after fixation, decalcification, processing and staining with Hematoxylin and Eosin, then examined under light microscopy.

The microscopical findings of the extraction site revealed a difference in the rate of bone healing between the control and laser groups. The results of this study showed that multiple doses of low energy laser were effective in enhancing bone formation than the single dose, which had shown retardation in the healing; that may be due to anti-inflammatory effect of low energy laser or due to the stimulation of mast cells which causes an upset to the initial inflammatory response.

The healing of bone in the group that exposed to laser as 10 minutes /day for the last 3 days of the experiment (B5) was much prominent than other groups.

This may be a beneficial use in the practice of oral surgery since enhancement of healing will minimize the infection, reduce the period of patient suffering and incidence of post extraction complication.