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Impact of Different Wave Lengths of Low Level Laser Therapy on Bone Repair: Histological Study in Rats

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Abstract: This study was conducted to determine the effect of different wave lengths of low level laser therapy (LLLT) on bone repair in rats. Seventy two female rats were assigned randomly into three groups, **group (A)** consisted of twenty four rats whose bone fracture didn't receive laser therapy, **group (B)** consisted of twenty four rats whose bone fracture received He-Ne laser (632.8 nm) and **group (C)** consisted of twenty four rats whose bone fracture received Ga-As laser (905 nm). Each group was subdivided into three subgroups according to their sacrificing day on 15th, 30th and 45th post- operative days. Assessment of bone fracture healing was done through radiological analysis and histopathological analysis. The results of this study revealed that group (C) showed more complete bone regeneration on 15th and 30th post-operative days when compared with groups (A&B) according to the radiological findings. On 15th and 30th postoperative days, there was no statistically significant difference between groups (A&B) ($p > 0.05$) in newly formed blood vessels, fibroblasts, osteiod and bone formation scores. While, there was a significant difference between groups (A&C) and (B&C) in favor of group (C) (p value < 0.05). So, it could be concluded that infrared laser showed a biostimulating effect on bone repair by stimulating the modulation of the initial inflammatory response and anticipating the resolution to normal condition at the earlier periods. However, there were no differences between groups on 45th post-operative day.
Key words: low level laser therapy- bone repair.

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