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## THE EFFECT OF COMBINED PHOTOBIOMODULATION AND METFORMIN ON OPEN SKIN WOUND HEALING IN A NON-GENETIC MODEL OF TYPE II DIABETES

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This study intended to examine the combined influences of photobiomodulation (PBM) and metformin on the microbial flora and biomechanical parameters of wounds in a non-genetic model of type II diabetes mellitus (TII DM). We induced a non-genetic model of TII DM in 20 rats by feeding them a 10% fructose solution for 2 weeks followed by an injection of streptozotocin (STZ, 40 mg/kg). After 21 days from the injection of STZ, we induced one full-thickness skin wound in each of the diabetic rats. We randomly divided the rats into four groups: i) placebo; ii) pulsed wave laser (890 nm, 80 Hz, 0.324 J/cm<sup>2</sup>); iii) metformin; and iv) laser + metformin. Rats received daily intraperitoneal injections of metformin (50 mg/kg). On days 7 and 15 we inspected the microbial flora of each wound. On day 15 we obtained a standard sample from each healing wound for biomechanical analyses. PBM significantly decreased colony-forming units (CFUs) 7 days after wound infliction compared to the placebo group (LSD test,  $p = 0.012$ ). Metformin significantly enhanced the biomechanical property (stress high load) of the wounds compared to the placebo group (LSD test,  $p = 0.028$ ). We observed the same significant result for PBM compared to the placebo group (LSD test,  $p = 0.047$ ). PBM significantly accelerated the wound healing process and significantly reduced CFUs of bacteria in a non-genetic rat model of TII DM.

### Biography

Ali Kanonisabet is studying medicine at Shahid beheshti University of medical sciences at Tehran, Iran. He is very much interested in doing research on complications of diabetes mellitus and healing wounds of patients suffering from diabetes mellitus. So he started his study with too many pilot studies in about a year to get the best results.

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