



## Low Level Laser Therapy & Brain Injury

### clinical research

Low-Level Laser Therapy Applied Transcranially to Mice following Traumatic Brain Injury Significantly Reduces Long-term Neurological Deficits

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Low-level laser therapy (LLLT) has been evaluated in this study as a potential therapy for traumatic brain injury (TBI). LLLT has been found to modulate various biological processes. Following TBI in mice, we assessed the hypothesis that LLLT might have a beneficial effect on their neurobehavioral and histological outcome. TBI was induced by a weight-drop device, and motor function was assessed 1 h post-trauma using a neurological severity score (NSS). Mice were then divided into three groups of eight mice each: one control group that received a sham LLLT procedure and was not irradiated; and two groups that received LLLT at two different doses (10 and 20

mW/cm<sup>2</sup> ) transcranially. An 808-nm Ga-As diode laser was employed transcranially 4 h post-trauma to illuminate the entire cortex of the brain. Motor function was assessed up to 4 weeks, and lesion volume was measured. There were no significant changes in NSS at 24 and 48 h between the laser-treated and non-treated mice. Yet, from 5 days and up to 28 days, the NSS of the laser-treated mice were significantly lower ( $p < 0.05$ ) than the traumatized control mice that were not treated with the laser. The lesion volume of the laser treated mice was significantly lower (1.4%) than the non-treated group (12.1%). Our data suggest that a non-invasive transcranial application of LLLT given 4 h following TBI provides a significant long-term functional neurological benefit. Further confirmatory trials are warranted.

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