LIGHT-EMITTING DIODE THERAPY INDUCES ANALGESIA IN CHEMICAL MODELS OF OVER NOCICEPTION IN MICE: THE ROLE OF ADENOSINERGIC SYSTEM IN ITS ANALGESIC EFFECT.

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Introduction and Objectives: The tissue radiation using light fonts like LED (Light Emitting Diode), from the red to infrared spectrum range, is indicated on pain treatment. LED therapy also produces the healing tissue injuries, decreases erythema, edema, and accelerates nerve regeneration. However, there are few studies on the mechanisms action of LEDT in controlling pain. The aim of this study was to evaluate the analgesic effect of LEDT in chemical models of overt nociception in mice, as well as to investigate the involvement of adenosinergic system in its effect.

Materials and Methods: Female mice swiss (25-35 g) were submitted to LED (Anodyne® device, energy density of 20.8 J/cm², 390 mW for 20 min) applications after the nociceptive behaviour caused by acetic acid (0.6% i.p.), formalin (2.5%/i.pl), capsaicin (1.6 μg/i.pl., activator of TRPV1 channels), cinnamaldehyde (10 nmol/i.pl., activator of TRPA1 channels), or acidic saline (pH: 5.0, activator of acid-sensing ion channels, ASIC) administrations was analyzed. To study whether the LED activated the adenosinergic system, mice were pretreated with caffeine (a nonselective adenosine receptor antagonist, 10 mg/kg, i.p.) or saline (10 ml/kg, i.p.) 20 min before the application of LED or adenosine (used as positive control, 100 mg/kg, i.p.). All experiments were previously approved by the UFSC’s CEUA (PP00745).

Results: LED reduced nociception caused by acetic acid, formalin, capsaicin, cinnamaldehyde, or acidic saline; with inhibitions of 39 ± 5%, 66 ± 9%, 40 ± 5%, 59 ± 6% and 35 ± 13%, respectively. In addition, the caffeine significantly (p <0.05) prevented the antinociceptive effect of both LED and adenosine on cinnamaldehyde-induced pain. Conclusions: Our results demonstrate that LED promotes analgesic effect, probably by inhibition of TRPs channels or activation of adenosinergic system. This work reaffirms the importance of LED on the treatment of pain.

Key words: LED, adenosinérgico, TRPs

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