

# Rhinitis phototherapy prototype with timer based on light energy

## Abstract

The set of timers in using phototherapy is major problem which has to be resolved to get a good performance of rhinitis phototherapy. This research aims to develop a prototype of phototherapy for allergic rhinitis, incorporating a timer based on light energy. The prototype utilizes a laser diode as a visible light source, specifically with a wavelength of 650 nm. The recommended safe and effective dose of light energy ranges from 1 to 10 Joules, which has been converted into minutes. Measurement tests indicate an average wavelength of 652.40 nm for the right laser, with a measurement uncertainty of  $\pm 0.11$ , and 653.23 nm for the left laser, with a measurement uncertainty of  $\pm 0.05$ . The laser diode source has an average voltage of 1.91 volts and an average current of 1.89 milliamperes, with a measurement uncertainty of  $\pm 0.00$  and  $\pm 0.01$ , respectively. Additionally, the average discrepancy in the timer is 0.082 minutes for the 10-minute setting and 0.082 minutes for the 20-minute setting. These results confirm the effectiveness and suitability of the developed tool for practical use. The proposed method was useful for rhinitis therapy by using light energy.

## Keywords

Allergic rhinitis; Laser diodes; Light energy; Teraphy; Wavelength