

PHOTOTHERAPY, PHOTODYNAMIC THERAPY

## DIFFERENCES OF MINIMUM ERYTHEMA DOSAGE (MED) IN FITZPATRICK IV SKIN TYPE ADULTS AND ELDERLY WITH AN EXPOSURE OF NARROWBAND ULTRAVIOLET B (NB-UVB)

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**Background:** The skin of the elderly is different compared to that of an adult due to aging, where such changes could influence the skin's response to ultraviolet exposure, including erythematous response. This difference could lead to MED change, which in turn affects the effectiveness of phototherapy.

**Objective:** This study aims to determine the difference between MED in the elderly and adults with Fitzpatrick IV skin type, and the difference between 24 hours-MED and 48 hours-MED.

**Materials and Methods:** MED calculations were based on skin erythematous responses relative to six different exposure doses of NB-UVB in elderly people (over 60 years) and adults (18-45 years). The irradiation is done with dosages: 300, 500, 700, 900, 1100, and 1300 mJ/cm<sup>2</sup>. Responses were examined at 24 hours and 48 hours post-irradiation.

**Results:** In the adult population, the median of 24 hours-MED and 48 hours-MED are 500 mJ/cm<sup>2</sup> (300 – 900 mJ/cm<sup>2</sup>) and 700 mJ/cm<sup>2</sup> (300 – 900 mJ/cm<sup>2</sup>); while the mean 24 hours-MED and 48-hours MED are 554 ± 182 mJ/cm<sup>2</sup> and 606 ± 167 mJ/cm<sup>2</sup>, respectively. In the elderly group, the median of 24 hours-MED and 48 hours-MED are 550 (300 – 1300) mJ/cm<sup>2</sup> and 700 (400 – 1300) mJ/cm<sup>2</sup> (p < 0.001); while the mean 24 hours-MED and 48 hours-MED are 702 ± 340 mJ/cm<sup>2</sup> and 836 ± 341 mJ/cm<sup>2</sup>, respectively. The 24 hours-MED difference in the elderly group compared to that of the adult group is not statistically significant (p=0.158).

**Conclusions:** The mean of 24 hours-MED in elderly and adults in this study could be applied clinically. Considering the wide range of minimum and maximum value found in this study, determining initial dose for phototherapy based on skin type might not always lead to a uniform result; therefore, it is more recommended to use MED as a reference for initial dose



phototherapy in elderly.

