

# New Phototherapy of Acne-Blue Light Therapy and Dye Laser Therapy

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## Introduction

Topical antibiotics, Isotretinoin or systemic antibiotics are usually used for acne therapy. But Isotretinoin can not be used during pregnancy, because it causes significant birth defects. Systemic antibiotics have also adverse effects of gastrointestinal irritation or photosensitivity (Tetracycline) and so on.

Recently several devices for acne phototherapy are marketed. We describe a comparison study for these devices. One device is ClearLight (Lumenis, Israel), high- intensity, narrow- band, blue light system, and it is considered for targeting *p.acnes* in follicles. Another device is N-Lite (SLS Photonics, UK) and it is already known as the non-ablative wrinkle reduction laser. N-Lite induces mild inflammation, and it also induces collagen replenishment.

## Material and method

28 adult healthy volunteers (mean age 28.1 years, range 16-56 years) for ClearLight and 12 adult healthy volunteers (mean age 29.6 years, range 22-31 years) for N-Lite were recruited for this study. The ClearLight study group was treated a total of eight biweekly 14 minutes treatment session. The N-Lite group was treated once at 3.0 J/cm<sup>2</sup>, with a pulse duration of 350  $\mu$ s.

Clinical count of acne at the start of the study, 4 times after the therapy and 8 times after the therapy was measured for ClearLight therapy. And The count of acne at the start of the study and 1 month after the therapy was measured for N-Lite therapy. Ultrastructural changes were observed after 4 times of ClearLight therapy and immediately after N-Lite therapy.

## Results

Clinically acne was improved significantly with statistically differences ( $p < 0.05$ ) by ClearLight therapy (64.7%) (Figure 1) and N-Lite therapy (54.5%). These improvements showed no different shape of pattern with statistic analysis (Ridit analysis).

By ultrastructural observation, Damaged *p. acnes* was observed by ClearLight therapy (Figure 2). Stagnant capillaries and inflammatory cell migration were observed by N-Lite therapy (Figure 3).

Figure 1.

Clinical count of acne during ClearLight™ therapy

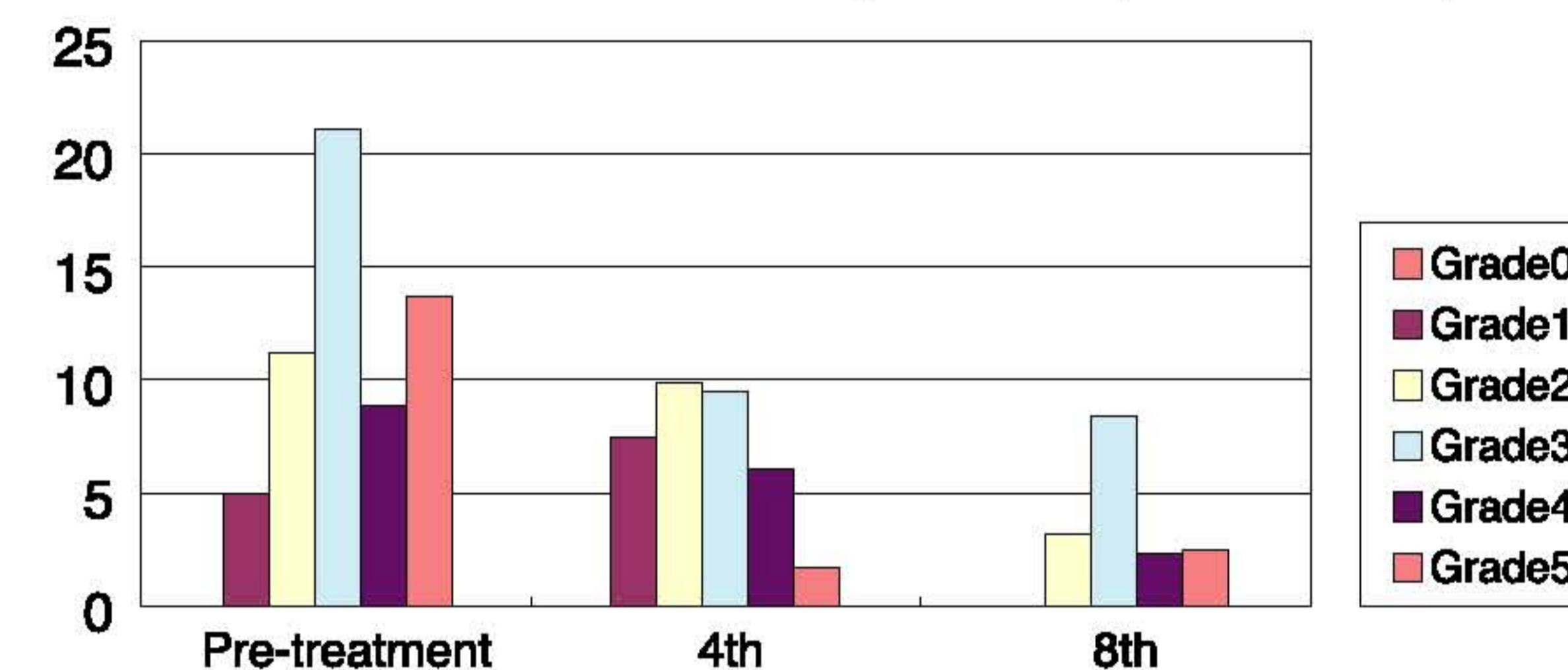


Figure 2.

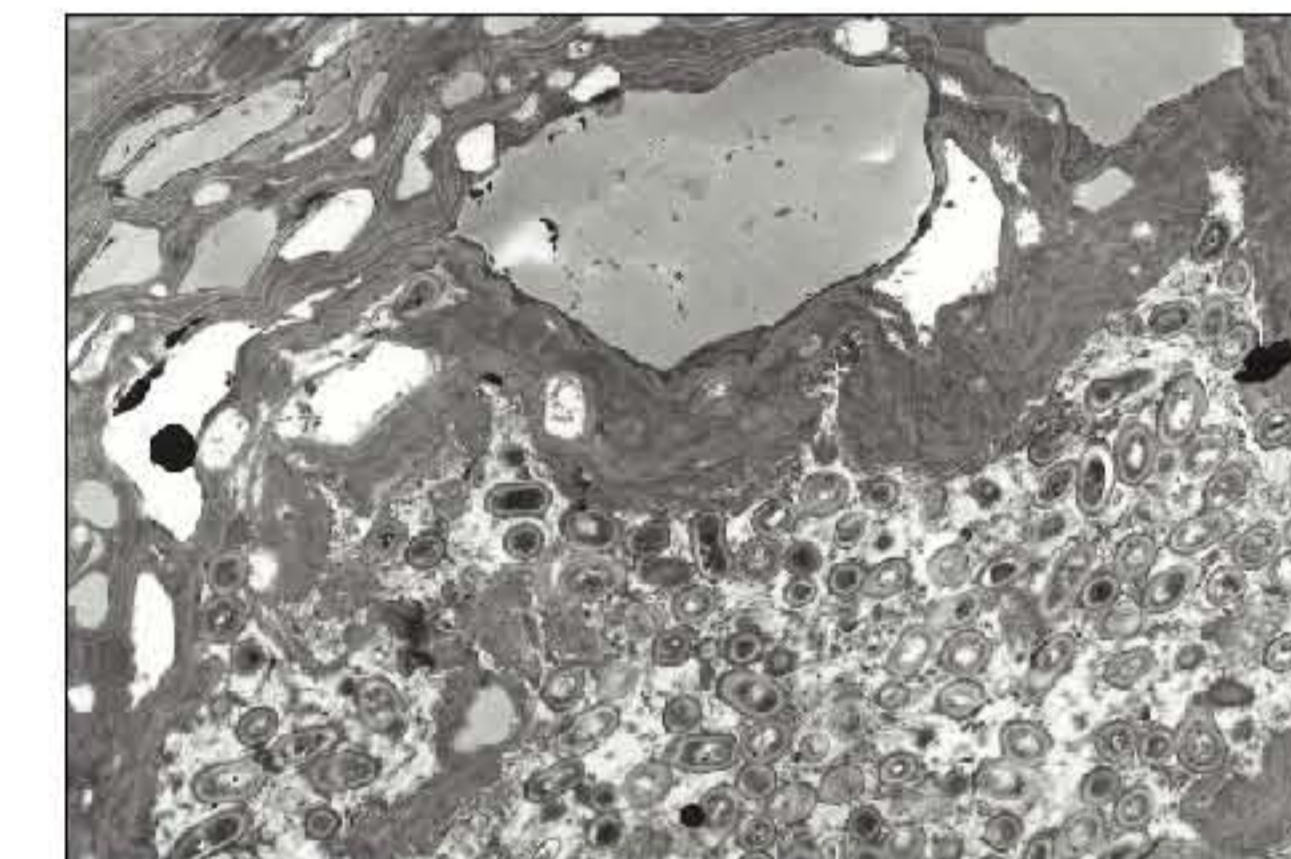


Fig.2. Bacterial severe damage was observed in follicles.

Figure 3.



Fig.3. The capillaries were stagnant (C), and marked edema was observed. Inflammatory cell migration (M: mast cell) was also observed.

## Conclusions

It is considered that the effectiveness of irradiation with ClearLight and N-Lite are both almost equivalent to the oral administration of antibiotics. ClearLight therapy takes 8 times, but the effectiveness is better compared to N-Lite therapy.

Further investigation will be needed to elucidate the mechanism of action of phototherapy, including whether the effects are achieved via *P. acnes* or by light itself.