

EVALUATION OF FLUORESCENT LIGHT ENERGY FOR THE TREATMENT OF ACUTE SECOND-DEGREE BURNS

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INTRODUCTION

Halting burn conversion is a critical aspect of medical intervention in burn treatment. In this study, the effects of Fluorescent Light Energy (FLE) therapy in prospective observational trials (Investigator Initiated Trials [IITs]) on the initial treatment of superficial and deep second-degree burns in 18 patients divided in 2 IITs were evaluated (IIT1 France, IIT2 Italy). Moreover, a preliminary *ex vivo* investigation on human skin model to give perspective on the cellular mode of action behind promotion of wound healing and tissue regeneration mediated by FLE was performed.

RESULTS AND DISCUSSION

- Satisfactory healing results were achieved without the need of surgery in all 18 patients within 1 to 3 weeks (**Fig. 1**).
- An increased dermal collagen I after FLE treatment was noticed (**Fig. 2**) without affecting the integrity of the skin barrier or inducing inflammation.
- FLE potentially hampers activation of the adaptive immune response in the wound healing process.

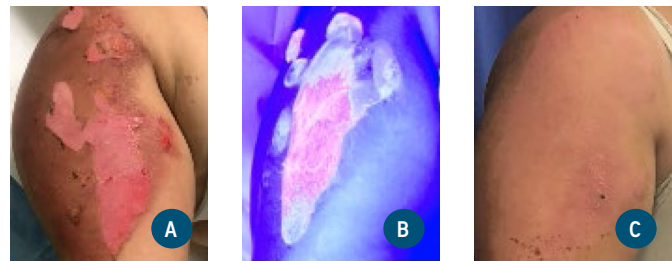


Fig. 1. IIT2 patient's upper arm wound. (A) Day 1, before FLE. (B) During FLE treatment. (C) Day 10, after 3 FLE treatment sessions.

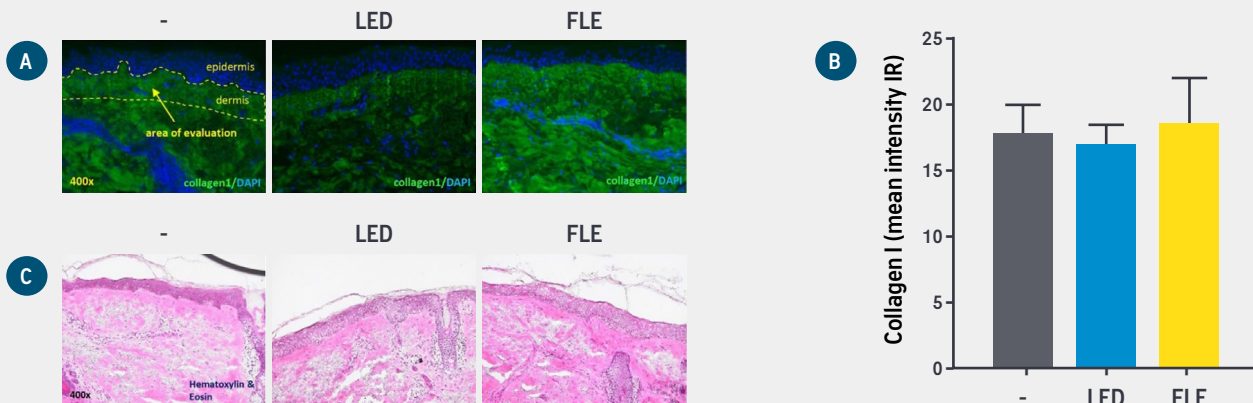


Fig. 2. Comparison between FLE and LED on *ex vivo* human skin model. (A) Staining for Collagen I (green) and DAPI (blue) in dermal tissue. (B) Quantification of Collagen I in dermal tissue. (C) Hematoxylin and eosin staining of tissue.

SAFETY

In all patients no adverse events related to the FLE treatment were reported. No patient developed an infection.

CONCLUSIONS

FLE should be considered for wound healing treatment for burn wounds, possibly as an alternative to surgery or in combination with surgical interventions such as skin grafting.

For more information and figures, visit the original [publication](#).