



PHOTOBIO-MODULATION IN PRESSURE INJURIES AND IAD: A MULTICENTRIC STUDY IN INSTITUTIONALIZED ELDERLY PEOPLE

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Declaration of Financial Interests or Relationships

Speaker's name: Roberto Cassino

I have no financial interests or relationships to disclose with regard to the subject matter of this presentation.



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INTRODUCTION

Among the wound care treatments that use biophotonics, Blue Light PhotoBioModulation (PBM) is the most recent and has shown its effectiveness on ulcers of the lower limb and diabetic foot¹. However, there are no validated data on pressure injuries (PI) and Incontinence Associated Dermatitis (IAD).

The aim of this work is to demonstrate the effectiveness of Blue Light PhotoBioModulation in the treatment of geriatric lesions (PI & IAD)².



1. Dini V et al. *Blue light emission in the management of hard-to-heal wounds*. Giornale italiano di dermatologia e Venereologia 2020;155 doi: 10.23736/S0392-0488.20.06691-2
2. Cassino R, Kopniak A. (2021) *Onde d'urto, Elettrostimolazione e Fotobiomodulazione: microbiota e biofilm*. Best Presentation Award at the XVI A.I.U.C. (Italian Cutaneous Ulcers Association) National Congress - Rome Italy)



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PHOTOBIOMODULATION (PBM)

PhotoBioModulation uses specific wavelengths of visible light in the blue range, absorbed by enzymes of the electronic transport chain and flavoproteins, modulating inflammation, reducing pain and stimulating tissue regeneration. The wavelengths emitted by PhotoBioModulation are included in the absorption spectrum of some blood and skin chromophores such as Protoporphyrin IX; the photochemical effect creates interaction with Cytochrome C and Flavins; Cytochrome C contributes to the cellular respiration process, increasing the production of ATP, while Flavins stimulate the production of ROS, (Reactive Oxygen Species) which induce a limited increase in inflammatory factors sufficient to stimulate the tissue reaction.



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Therapeutical effects of PBM

- Modulation of inflammation
- Increase in the metabolic phase of fibroblasts
- Stimulation and modulation of fibroblasts proliferation
- Inhibition of fibroblastic hyperactivity (modulation of the scarring process)
- Morphological reorganization of collagen

Contraindications of PBM

- Total absence of side effects
- No contraindications





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METHODS

We set up a polycentric study involving only Nursing Homes to evaluate the performance of PBM on typically geriatric lesions (Pressure Injuries & Incontinence Associated Dermatitis).

INCLUSION CRITERIA	EXCLUSION CRITERIA
Pressure Injuries and/or IAD	Any other aetiology
Clean or critically colonized* wounds *Cutting & Harding Criteria	Necrotic or infectious* wounds *Cutting & Harding Criteria
WBP score: A - B	WBP score: C - D
Not ischemic wounds	Ischemic wounds
Patients \geq 65 years old	Patients < 65 years old
	Terminal and/or neoplastic patients
	Patients in therapy with immunosuppressive drugs

METHODS

10 patients with pressure injuries and 5 patients with IAD have been enrolled.

The treatment with “Blue Light” PhotoBioModulation* was 2 minutes for every 25 cm² of lesion twice a week for up to 10 weeks.

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METHODS

We used the same dressings for all patients: stable ozonides for PI and ionic silver spray powder for IAD.

Wound Area Reduction (WAR) and the reduction of signs of infection, if present, have been evaluated.

Weekly evaluation using the Visitrak™ System.

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METHODS

END OF THE STUDY

- Reaching 10 weeks of treatment
- Healing before the observation time
- Adverse reactions/Allergies
- Onset of infection and/or necrosis
- Drop out by the patient's will





RESULTS

All patients achieved significant improvement or complete healing within the observation time

- The mean wound area reduction of the pressure injuries was 75.8% (3 patients completely healed within the observation time)
- The depth reduction was 74.8% (6 out of 10 patients)
- All patients with IAD achieved healing within the observation time (3 in 21 days and 1 in 1 week) with a mean healing time of 17.5 days

No adverse events, no allergies, no induced pain





Wound Area: 4.1 cm² Depth: 20 mm

Wound Area: 1.3 cm²

Depth: 10 mm



Sacral pressure injury: beginning of the study and ten weeks later (end of the study)

	PRESSURE INJURIES	IAD
Wound Area Reduction	- 75.8%	100%
Depth Reduction	- 74.8%	

Wound Area: 58.1 cm²

Fungal colonization



No fungi - Complete healing

IAD with fungal colonization: beginning of the study and three weeks later



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Female, 88 y.o. - Pressure injury of the heel



10.08.2021

AREA: 0.9 cm²

...on stand by for seven weeks...



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Female, 88 y.o. - Pressure injury of the heel



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...complete healing after two applications!



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CONCLUSIONS

“Blue Light” PhotoBioModulation has shown highly significant efficacy in the treatment of pressure injuries and IAD³. The mean healing time of IAD (less than 3 weeks) is significantly lower than that of treatment with zinc oxide (about 140 days) and this means a reduction in time, costs and patient suffering.

3. Cassino R et al. *Photobiomodulation in pressure injuries and IAD: preliminary results of a new therapeutic approach*. 32nd EWMA (European Wound Management Association) Conference, May 2022 - Paris (France)

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CONCLUSIONS

This work has also shown that PhotoBioModulation can improve both pressure injuries and IAD very rapidly; the most significant finding is that fungal colonization, very frequent in IAD, can be eradicated within 2-3 weeks of treatment (investigated with Wood's lamp) without the use of drugs.



17.08.2021



07.09.2021

IAD with fungal colonization in 92 y.o. female

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