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Effect of combined photodynamic therapy and photobiomodulation therapy in the management of recurrent herpes labialis

Submission date
18/01/2025

Recruitment status
No longer recruiting

Registration date
20/01/2025

Overall study status
Completed

Last Edited
02/02/2026

Condition category
Infections and Infestations

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Recurrent herpes labialis (RHL) is a common viral infection in the oral and facial areas. RHL is primarily caused by herpes simplex virus type 1 (HSV1). RHL is a global health problem, occurring in approximately 20 to 40% of young adults. RHL lesions are caused by physical and emotional stress, trauma, ultraviolet light, hormonal changes, and immunosuppression. This study aimed to compare Photodynamic therapy (PDT) combined with Photobiomodulation therapy (PBMT) and PBMT using a laser diode and acyclovir cream for treating RHL lesions by analyzing pain and healing parameters.

Who can participate?
Patients aged 19-50 years with RHL lesions.

What does the study involve?
Patients are randomly divided into three groups:
Group 1 (control): 5% Acyclovir was applied as a topical cream, and a non-activating laser was applied.
Group 2 (PBMT): PBMT was applied using a laser diode and a placebo cream.
Group 3 (PDT + PBMT): PDT using methylene blue with PBMT and a placebo cream.

What are the possible benefits and risks of participating?
Benefits: Participants will receive treatment for RHL.
Risks: There is a risk of an ineffective treatment.

Where is the study run from?
Damascus University (Syria)

When is the study starting and how long is it expected to run for?
June 2024 to January 2025

Who is funding the study?
Damascus University (Syria)

Who is the main contact?
Dr Mawia Karkoutly, mawia95.karkoutly@damascusuniversity.edu.sy, mawiamaherkarkoutly@hotmail.com

Contact information

Type(s)
Public, Scientific, Principal investigator

Contact name
Dr Mawia Karkoutly

ORCID ID
https://orcid.org/0000-0003-0227-1560

Contact details
Mazzeh
Damascus
Syria
Nill
+963 (0)992 647 528
mawia95.karkoutly@damascusuniversity.edu.sy

Additional identifiers

Study information

Scientific Title
Effect of combined photodynamic therapy and photobiomodulation therapy in the management of recurrent herpes labialis: a randomized controlled trial

Study objectives
Combining PDT and PBMT in treating RHL lesions will enhance treatment results

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 13/05/2024, The Biomedical Research Ethics Committee (Mazzeh, Damascus, -, Syria; +963 (11) 33923223; dean.dent@damascusuniversity.edu.sy), ref: N2183

Primary study design
Interventional

Study design
Double-blinded randomized parallel-group active-controlled trial with three treatment arms

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Recurrent herpes labialis

Interventions
Patients referred to the Department of Oral Medicine were evaluated for eligibility. From a total of 73 patients, 60 were randomly assigned into three groups (n = 20):
• Group 1 (control): 5% Acyclovir was applied as a topical cream (Veramed, Medico Labs., Damascus, Syria), and a non-activating laser was applied.
• Group 2 (PBMT): PBMT was applied using a laser diode and a placebo cream.
• Group 3 (PDT + PBMT): PDT using methylene blue with PBMT and a placebo cream.

In the control group, a 5% acyclovir cream was administered to the lesion five times a day over 5 days. A non-activating laser was also used on the lesion to ensure blinding. In the PBMT group, a laser diode emitting light at a wavelength of 650 nm and a power output of 100 mW was applied to each spot for 120 seconds. The laser diode treatment was carried out on the first day and again 48 hours after the initial application. In addition, the patient received a package including a placebo cream to be applied five times daily. In the PDT + PBMT group, the area was treated using a cotton ball dipped in sterile saline (SODIUM CHLORIDE 0.9% MIAMED, Miamed Pharmaceutical Industry, Damascus, Syria). A sterile needle tip punctured the vesicle to facilitate the drainage of its contents. The area was dried with sterile gauze within the lesion's borders, avoiding pressure or traction. The herpetic lesion was treated with a 0.01% methylene blue photosensitizer (Citrate Methylene Blue, 0.01% (w/v) 50mL, White labs., California, United States). After five minutes, the LLLT was applied. Any remaining traces of the photosensitizer were removed with a cotton ball soaked in sterile saline, again without pressure or traction. In addition, the LLLT, without the photosensitizer, was utilized 48 hours after the PDT, and the patient was provided with a placebo cream for application five times a day.

Intervention Type
Procedure/Surgery

Primary outcome(s)
1. Pain intensity
Pain intensity was measured using a visual analog scale (VAS), at the following time points:
• At the baseline (t0).
• After applying the laser in the first session (t1).
• Before applying the laser in the second session, after 48 hours (t2).
• After applying the laser in the second session (t3).
• After 7 days of follow-up (t4).
VAS scores were as follows:
• 0=No pain.
• 1–3=Mild pain.
• 4–6=Moderate pain.
• 7–9=Severe pain.
• 10=Worst pain possible.
2. Lesion healing
The point of healing was considered to be the spontaneous shedding of the crust from the lesion. Patients were followed up, and the day the crust fell off spontaneously was recorded.

Key secondary outcome(s)
There are no secondary outcome measures

Completion date
04/01/2025

Eligibility

Key inclusion criteria
1. Healthy participants.
2. Participants older than 18 years.
3. Participants had a history of RHL.
4. Participants had a current active vesicular infection.

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
19 Years

Upper age limit
50 Years

Sex
All

Total final enrolment
60

Key exclusion criteria
1. Smokers.
2. Pregnant and breastfeeding women.
3. Diabetic patients.
4. Immunocompromised patients.
5. Participants were allergic to the agents used.
6. Patients had skin lesions that affected the course of healing or interfered with the current study.
7. Patients taking antiviral medications over the four weeks before treatment.
8. Patients taking anti-inflammatory drugs or antibiotics over the two weeks before treatment.

Date of first enrolment
02/06/2024

Date of final enrolment

06/12/2024

Locations

Countries of recruitment
Syria

Study participating centre
Damascus University
Mazzeh highway
Damascus
Syria
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Sponsor information

Organisation
Damascus University

ROR
https://ror.org/03m098d13

Funder(s)

Funder type
University/education

Funder Name
Damascus University

Alternative Name(s)
University of Damascus, , DU

Funding Body Type
Government organisation

Funding Body Subtype
Universities (academic only)

Location
Syria

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be available upon request from Dr Mawia Karkoutly (Mawiamaherkarkoutly@hotmail.com). The type of data that will be shared includes anonymised demographic information that will be available after publication. Consent from participants was required and obtained.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		09/05/2025	02/02/2026	Yes	No