

Using light therapy at home to improve dental hygiene: a study on healthy adults

Submission date 13/03/2025	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 28/03/2025	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 14/03/2025	Condition category Oral Health	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Toothbrushing, whether with an electric or manual toothbrush, often leaves 35–50% of plaque behind. Regular use of antibacterial photodynamic therapy has emerged as a promising method to enhance oral hygiene at home. This study aims to evaluate the effectiveness of the antibacterial Lumoral® light-activated treatment in reducing dental plaque as part of daily dental care in healthy volunteers.

Who can participate?

Healthy adults who do not have fixed orthodontic appliances, fixed partial dentures, advanced periodontitis, significant pathology in the oral cavity, or restorable caries lesions. Participants should not have used antibiotics within the last month, should not smoke, and should not have had recent professional dental cleaning or participated in other oral health examinations.

What does the study involve?

Participants will be randomly assigned to one of two groups. One group will receive oral hygiene instructions and use Lumoral® as an additional plaque control method twice a week. The other group will receive oral hygiene instructions alone. Dental plaque will be measured at the start and after four weeks using the Rustogi-modified Navy Plaque Index. Researchers who do not know which group participants are in will conduct the measurements.

What are the possible benefits and risks of participating?

Participants may benefit from improved dental hygiene and reduced plaque levels. Risks are minimal but may include mild discomfort from using the Lumoral® device.

Where is the study run from?

Koite Health Ltd. (Finland)

When is the study starting and how long is it expected to run for?

August 2022 to March 2023

Who is funding the study?

The study was performed in collaboration with the Metropolia University of Applied Sciences

and Koite Health Ltd.

Koite Health Ltd. provided the investigational devices for the study. No direct financial contributions to the researchers or the study center were made.

Who is the main contact?

Mikko Kylmänen, mikko.kylmanen@koitehealth.com

Contact information

Type(s)

Public

Contact name

Mr Mikko Kylmänen

Contact details

Karaportti 5

Espoo

Finland

02610

+358 407245934

mikko.kylmanen@koitehealth.com

Type(s)

Scientific

Contact name

Dr Tommi Pätilä

ORCID ID

<https://orcid.org/0000-0003-2219-4689>

Contact details

Stenbäckinkatu 9

Helsinki

Finland

00290

+358 440130770

tommi.patila@gmail.com

Type(s)

Principal investigator

Contact name

Ms Saira Pakarinen

Contact details

Myllypurontie 1

Helsinki

Finland

00790
+358 75167956
pakarinen.saila@metropolia.fi

Additional identifiers

Study information

Scientific Title

Regularly home-applied dual-light photodynamic therapy on dental hygiene- a prospective randomized study in healthy adults

Acronym

SHINE

Study objectives

The Lumoral® treatment, when used twice a week as an adjunct to regular oral care, improves oral hygiene in healthy individuals.

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 31/01/2023, The Human Sciences Ethics Committee of the Helsinki Region Universities of Applied Sciences (Myllypurontie 1, Helsinki, 00920, Finland; +358 401937758; eettinen.toimikunta@metropolia.fi), ref: § 8/2023

Study design

Interventional randomized controlled trial

Primary study design

Interventional

Study type(s)

Efficacy

Health condition(s) or problem(s) studied

Dental plaque

Interventions

At baseline and at 4-week follow-up (+/- 1 week), the biofilm of the subjects' mouths is stained using plaque dye, and clinical plaque index measurements is obtained.

After the baseline visit, study subjects are given comprehensive oral self-care instructions including mechanical biofilm removal from free tooth surfaces and interdental spaces.

Those randomized in the Treatment group are given a Lumoral® Treatment device and thorough verbal and written instructions to perform dual-light aPDT at home in addition to the comprehensive oral self-care instructions.

The participants are randomly assigned to the test and control groups using a sealed envelope technique.

Intervention Type

Device

Phase

Not Applicable

Drug/device/biological/vaccine name(s)

Lumoral

Primary outcome(s)

Dental plaque levels measured using the Rustogi-modified Navy Plaque Index from clinical plaque staining and scoring at Baseline and Week 4 (+/-1 week)

Key secondary outcome(s)

Subjective experience of using the Lumoral® Treatment device measured using a structured questionnaire at Week 4 (+/-1 week)

Completion date

31/03/2023

Eligibility**Key inclusion criteria**

Subjects had to be from 18 to 70 years' age and good general health assessed by study participants themselves.

Participant type(s)

Healthy volunteer

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Upper age limit

70 years

Sex

All

Total final enrolment

15

Key exclusion criteria

1. Oral health-related issues, including fixed orthodontic appliances, fixed partial dentures, advanced periodontitis, significant pathology in the oral cavity, or restorable caries lesions.
2. Medication-related issues, including use of antibiotics within one month.
3. Other factors, including smoking, participation in other oral health examinations, and recent professional dental cleaning.

Date of first enrolment

15/02/2023

Date of final enrolment

03/03/2023

Locations

Countries of recruitment

Finland

Study participating centre

Metropolia University of Applied Sciences, Myllypuro Campus

Myllypurontie 1

Helsinki

Finland

00920

Sponsor information

Organisation

Koite Health Ltd.

Funder(s)

Funder type

Industry

Funder Name

Koite Health Ltd.

Results and Publications

Individual participant data (IPD) sharing plan

No plan to share IPD.

IPD sharing plan summary

Not expected to be made available