

Clinical Trial Protocol

Iranian Registry of Clinical Trials

01 Jul 2026

The effect of light's color temperature on antioxidative biomarkers in petrochemicals control room shift workers

Protocol summary

Study aim

Determination of the effect of light blue reinforcement intervention on oxidative stress biomarkers in petrochemicals control room shift workers

Design

This is a pre and post-interventional study and is designed in three phases.

Settings and conduct

The present study population included all individuals in the control rooms of a petrochemical industry. The exclusion criteria of the study were suffering from underlying diseases, such as diabetes, cardiovascular disease, and hypertension, and doing heavy sports. The participants were required to sign written informed consent forms and complete the demographic characteristics questionnaire. Saliva samples were collected from the participants at the end of the work shifts before and after the intervention. Then, oxidative damage parameters, including total antioxidant capacity of saliva, thiol groups, and catalase enzyme, were measured using FRAP (12), HU (13), and Abi (14) methods, respectively. The intervention involved changing the color temperature of the work environment, which was performed by replacing the conventional fluorescent lamps (3000 °K) with fluorescent lamps with a color temperature of 17000 °K. The effect of the intervention was assessed after one month.

Participants/Inclusion and exclusion criteria

Age under 45 years old; having general health

Intervention groups

Intervention in this scheme is a change in brightness and is used for lighting with different color temperatures. The use of any type of lighting system is one week for each time.

Main outcome variables

Total antioxidant capacity of saliva using FRAP and thiol groups by HU and catalase enzyme by ABI

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180925041131N1**

Registration date: **2018-10-12, 1397/07/20**

Registration timing: **retrospective**

Last update: **2018-10-12, 1397/07/20**

Update count: **0**

Registration date

2018-10-12, 1397/07/20

Registrant information

Name

reza kazemi

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 71 3725 1002

Email address

reza_kazemi2007@yahoo.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-06-22, 1397/04/01

Expected recruitment end date

2018-09-23, 1397/07/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of light's color temperature on antioxidative biomarkers in petrochemicals control room shift workers

Public title

The effect of light's color temperature on antioxidative biomarkers

Purpose

Prevention

Inclusion/Exclusion criteria**Inclusion criteria:**

Having general health Being under the age of 45 years

Exclusion criteria:

Metabolic diseases Exercise and heavy activity 24 hours before study

Age

To **45 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

N/A

Randomization description**Blinding (investigator's opinion)**

Not blinded

Blinding description**Placebo**

Not used

Assignment

Single

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics committee of Shiraz University of Medical Sciences

Street address

Shiraz University of Medical Sciences, Zand St.

City

Shiraz

Province

Fars

Postal code

71645111

Approval date

2018-05-09, 1397/02/19

Ethics committee reference number

IR.SUMS.REC.1397.141

Health conditions studied**1****Description of health condition studied**

Oxidative stress

ICD-10 code**ICD-10 code description****Primary outcomes****1****Description**

Total antioxidant capacity of saliva

Timepoint

Before intervention and after a month of intervention

Method of measurement

The total antioxidant capacity of saliva is measured using the FRAP method

2**Description**

Thiol groups

Timepoint

Before intervention and after a month of intervention

Method of measurement

HU method

3**Description**

Catalase enzyme

Timepoint

Before intervention and after a month of intervention

Method of measurement

ABI method

Secondary outcomes

empty

Intervention groups**1****Description**

Intervention group: the type of intervention in this study is a light source with a color temperature of 17,000 Kelvin and 6500 Kelvin. The duration of the intervention for each light source is one month. Before intervention and after a month of intervention, total antioxidant capacity of saliva, catalase enzyme and thiol groups are measured and compared.

Category

Prevention

Recruitment centers

1

Recruitment center

Name of recruitment center

Zagross petrochemicals

Full name of responsible person

Mohamad Zahedi

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

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Full name of responsible person

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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

No

Title of funding source

Vice chancellery for research affairs of Shiraz University of Medical Sciences

Proportion provided by this source

100

Public or private sector

Public

Domestic or foreign origin

Domestic

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

Academic

Person responsible for general inquiries

Contact

Name of organization / entity

Shiraz University of Medical Sciences

Full name of responsible person

Reza Kazemi

Position

Assistant professor

Latest degree

Ph.D.

Other areas of specialty/work

Ergonomics

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

Undecided - It is not yet known if there will be a plan to make this available

Study Protocol

Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan

Not applicable

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Not applicable

Analytic Code

Not applicable

Data Dictionary

Not applicable