Clinical Trial Protocol
Iranian Registry of Clinical Trials

01 Jul 2026

The effect of light’s color tempereture 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
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Name of organization / entity
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Iran (Islamic Republic of)
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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 tempereture on antioxidative biomarkers in petrochemicals control room shift workers

Public title
The effect of light’s color tempereture 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
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Sponsors / Funding sources

1

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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
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Assistant professor
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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