

Clinical Trial Protocol

Iranian Registry of Clinical Trials

30 May 2026

Evaluating the Therapeutic Effect of Theophylline and Zinc Sulfate Co-administration in Infertile Men

Protocol summary

Study aim

The aim of this study is to investigate the impact of co-administration of Theophylline and Zinc sulfate on oxidative stress, apoptosis, and inflammation, sperm capacitation and parameters in infertile men.

Design

Clinical trial with placebo-control group, parallel groups, double-blind, randomized

Settings and conduct

This study will perform on infertile men referred to Rastak infertility treatment center in Sina hospital (Markazi Province-Arak city). In this study Both participants and researchers or evaluators of the outcome are unaware of the allocation of study groups.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Infertile men referred to the infertility treatment center who, have had at least one year of unprotected intercourse, Natural fertility has not happened in their spouse. These men will all be married These men will be between the ages of 20 and 50. According to WHO criteria, Sperm parameters abnormalities should be observed in at least two spermogram within 2 weeks. Exclusion criteria: Single men Men with varicocele or any other specific disease Men who have taken a particular drug for the past three months

Intervention groups

.1. Control group: they take placebo for 3 months. 2.They take Theophylline (200 mg/day) for 3 months. 3. They take zinc (zinc sulfate) (220 mg/day) for 3 months. 4. They take Theophylline (200 mg daily) and Zinc (Zinc sulfate) (220 mg daily) for 3 months.

Main outcome variables

Semen analysis and sperm parameters (Spermogram); Levels of LH, FSH and Testosterone; Malondialdehyde Level; TNF- α and Interleukin 10; DNA Fragmentation; Sperm viability; Total antioxidant level of semen; Expression of Caspase 3, BAX, BCL2 genes; Caspase-3, BAX, BCL2 proteins; Sperm maturation; Evaluation of

sperm capacitation All of the aforementioned analyzes were measured in two stages before and after the study.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20190714044209N1**

Registration date: **2020-02-06, 1398/11/17**

Registration timing: **registered_while_recruiting**

Last update: **2020-02-06, 1398/11/17**

Update count: **0**

Registration date

2020-02-06, 1398/11/17

Registrant information

Name

Atena Sadat Azimi

Name of organization / entity

Arak University

Country

Iran (Islamic Republic of)

Phone

+98 86 3277 7300

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-12-22, 1398/10/01

Expected recruitment end date

2020-12-21, 1399/10/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date
empty

Scientific title
Evaluating the Therapeutic Effect of Theophylline and Zinc Sulfate Co-administration in Infertile Men

Public title
Evaluating the Therapeutic Effect of Theophylline and Zinc Sulfate Co-administration in Infertile Men

Purpose
Treatment

Inclusion/Exclusion criteria
Inclusion criteria:
Infertile men who, despite having at least one year of unprotected intercourse, have not had fertility in their spouse. These men will all be married According to WHO criteria, abnormalities in sperm parameters should be observed in at least two sperm samples within 2 weeks. These men will be between the ages of 20 and 50.
Exclusion criteria:
Single men Men with varicoceles or any other specific disease Men who have taken a particular drug for the past three months

Age
From **20 years** old to **50 years** old

Gender
Male

Phase
3

Groups that have been masked

- Participant
- Investigator
- Outcome assessor
- Data analyser

Sample size
Target sample size: **120**

Randomization (investigator's opinion)
Randomized

Randomization description
Simple randomization

Blinding (investigator's opinion)
Double blinded

Blinding description
Both participants and researchers or evaluators of the outcome are unaware of the allocation of study groups.

Placebo
Used

Assignment
Parallel

Other design features
The drugs selected in this study will not interfere in the normal course of treatment of patients.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Arak University of Medical Sciences

Street address

No. 6315 Upstairs Azimi shop, Shahid Haghani Street.

City

Arak

Province

Markazi

Postal code

3815166315

Approval date

2019-08-07, 1398/05/16

Ethics committee reference number

IR.ARAKMU.REC.1398.179

Health conditions studied

1

Description of health condition studied

infertile men

ICD-10 code

N46

ICD-10 code description

Male infertility

Primary outcomes

1

Description

semen analysis

Timepoint

Before intervention

Method of measurement

CASA (Computer-aided sperm analysis) system

2

Description

Hormones analysis

Timepoint

Before intervention

Method of measurement

ELISA Kit

3

Description

Malondialdehyde (MDA) level

Timepoint

Before intervention

Method of measurement

ELISA Kit

4

Description

total antioxidant capacity (TAC)

Timepoint

Before intervention

Method of measurement

ELISA Kit

5

Description

DNA fragmentation

Timepoint

Before intervention

Method of measurement

SDFA (Sperm DNA Fragmentation Analysis) kit

6

Description

Levels of inflammatory factors

Timepoint

Before intervention

Method of measurement

ELISA Kit

7

Description

sperm viability

Timepoint

Before intervention

Method of measurement

Eosin-Negrosin Staining

8

Description

sperm maturation

Timepoint

Before intervention

Method of measurement

Aniline blue staining kit

9

Description

Investigation of changes in gene expression level

Timepoint

Before intervention

Method of measurement

Real-time polymerase chain reaction (RT-PCR)

10

Description

Protein levels measurement

Timepoint

Before intervention

Method of measurement

Western blot

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Theophylline (200 mg/day for 3 months period)

Category

Treatment - Drugs

2

Description

Intervention group: Zink sulfate (220 mg/day for 3 months period)

Category

Treatment - Drugs

3

Description

Intervention group: Theophylline (200 mg/day for 3 months period) and Zink sulfate (220 mg/day for 3 months period) at the same time

Category

Treatment - Drugs

4

Description

Control group: just placebo for 3 months period

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Sina Hospital-Rastak Infertility Clinic

Full name of responsible person

Dr. Alireza Noushad Kamran

Street address

Rastak Fertility Clinic, Sina Hospital, Next to Imam Khomeini Stadium, Hepko Ave.

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info@araksinahospital.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The University of Arak

Full name of responsible person

Dr. Malek Soleimani Mehranjani

Street address

Arak University, Karbala Ave., Basij Square

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m-soleimani@araku.ac.ir

Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

The University of Arak

Proportion provided by this source

25

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

Arak University

Full name of responsible person

Atena Sadat Azimi

Position

PhD student

Latest degree

Ph.D.

Other areas of specialty/work

Others

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Person responsible for updating data

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Name of organization / entity

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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

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

Informed Consent Form

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

Clinical Study Report

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

Analytic Code

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

Data Dictionary

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