# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

07 Nov 2026

# The effect of selenium-enriched saccharomyces cerevisiae on the improvement of clinical-stage, limb circumference, skinfold index, sense of heaviness, quality of life, and inflammatory and oxidative stress biomarkers in patients with breast cancer-related lymphedema: A triple-blind randomized controlled trial

## Protocol summary


**Study aim**

To compare the effect of selenium-enriched saccharomyces cerevisiae and sodium selenite on the improvement of clinical-stage, limb circumference, skinfold index, feeling of heaviness, quality of life, and inflammatory and oxidative stress biomarkers in patients with breast cancer-related lymphedema

**Design**

The controlled clinical trial, with two parallel arms, triple-blind, randomized, phase 3 on 50 patients. RAS (Random Allocation Software) will be used for randomization

**Settings and conduct**

The eligible women who suffer from breast cancer-related lymphedema referring to the oncology clinics of Tabriz educational hospitals will be selected through convenience sampling. Participants will be randomly assigned to two groups (1:1) of organic selenium supplements and placebo which will be similar in shape, color, and weight. The researcher, participant, data analyst, and outcome assessor will be blind.

**Participants/Inclusion and exclusion criteria**

Inclusion criteria: The first or second stage of Breast Cance-Related Lymphedema (BCRL), unilateral arm lymphedema, body mass index between 18.5 to 30. Exclusion criteria: The presence of bilateral lymphedema, the existence of known metastasis, the existence of diseases leading to swelling such as heart and kidney failure, the current consumption of selenium or compounds containing it, any known allergy to yeast.

**Intervention groups**

The first group will receive one 500 mg capsule per day containing 200, 300, and 400 micrograms of selenium-enriched yeast for the first, second, and third 20 days daily and be taken with a meal for 3 months. The second group will receive 500 mg placebo capsules containing yeast similar to the first group. The placebo will be taken with the same prescription as the selenium capsule

**Main outcome variables**

Changes in mean limb circumference; Skinfold index; Mean score of quality of life after intervention


## General information

**Reason for update**

**Acronym**

**IRCT registration information**

IRCT registration number: **IRCT20131009014957N12**
Registration date: **2022-04-07, 1401/01/18**
Registration timing: **prospective**

Last update: **2022-04-07, 1401/01/18**
Update count: **0**

**Registration date**

2022-04-07, 1401/01/18

**Registrant information**


**Name**

Azizeh Farshbaf-khalili

**Name of organization / entity**

Tabriz university of Medical Sciences

**Country**

Iran (Islamic Republic of)

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**Recruitment status**

**Recruitment complete**

**Funding source**

**Expected recruitment start date**
2022-05-21, 1401/02/31
**Expected recruitment end date**
2026-03-20, 1404/12/29
**Actual recruitment start date**
empty
**Actual recruitment end date**
empty
**Trial completion date**
empty

**Scientific title**
The effect of selenium-enriched saccharomyces cerevisiae on the improvement of clinical-stage, limb circumference, skinfold index, sense of heaviness, quality of life, and inflammatory and oxidative stress biomarkers in patients with breast cancer-related lymphedema: A triple-blind randomized controlled trial

**Public title**
Effect of organic selenium on the treatment of breast cancer-related lymphedema
**Purpose**
Treatment
**Inclusion/Exclusion criteria**
**Inclusion criteria:**
The first or second stage of breast cancer-related lymphedema Unilateral arm lymphedema Body mass index between 18.5 to 30
**Exclusion criteria:**
The presence of bilateral lymphedema The existence of known metastasis The existence of diseases leading to edema such as heart and kidney failure.
**Age**
From **15 years** old
**Gender**
Female

**Phase**
3
**Groups that have been masked**

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser
- Data and Safety Monitoring Board

**Sample size**
Target sample size: **50**
**Randomization (investigator's opinion)**
Randomized
**Randomization description**
Eligible women will be assigned into two groups of selenium-enriched yeast supplements or placebo using a randomized blocking method with the 4 and 6 sized blocks and a 1: 1 allocation ratio. The allocation sequence will be generated by the researcher through RAS (Random Allocation Software). The medicines and placebo will be placed in a container. Containers will be assigned numbers from 1 to 50. They will be the same shape, closed, opaque, and contain 60 capsules, and their preparation will be done based on the sequence allocation by the person not involved in the research.
**Blinding (investigator's opinion)**
Triple blinded
**Blinding description**
The first group will receive one 500 mg capsule of selenium-enriched yeast (containing 400-300-200 micrograms of organic selenium) daily, and the second group will receive a placebo capsule (containing 500 mg of yeast) that will be the same shape, color, and weight. participants, the principal investigator, health care personnel, those evaluating the outcome, the Data Safety and Monitoring Committee, and those drafting the article will be blinded.
**Placebo**
Used
**Assignment**
Parallel
**Other design features**

## Secondary Ids

empty

## Ethics committees

### 1

**Ethics committee**
**Name of ethics committee**
The Ethics Committee of Tabriz University of Medical Sciences
**Street address**
Vice Chancellor for Research and Technology, Floor 3, No 2 Central Building, Tabriz University of Medical Sciences, Golghasht Street
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Tabriz
**Province**
East Azarbaijan
**Postal code**
5165665931
**Approval date**
2022-02-02, 1400/11/13
**Ethics committee reference number**
IR.TBZMED.REC.1400.1133

## Health conditions studied

### 1

**Description of health condition studied**
Breast Cancer-Related Lymph edema
**ICD-10 code**
I 97
**ICD-10 code description**
Postprocedural disorders of circulatory system, not elsewhere classified

## Primary outcomes

**1**

**Description**
Limb circumference (arm, forearm, wrist)
**Timepoint**
Baseline and 60 days after the intervention
**Method of measurement**
Tape meter

**2**

**Description**
Skinfold thickness
**Timepoint**
Baseline and 60 days after the intervention
**Method of measurement**
Using the specified formula

**3**

**Description**
Quality of life score
**Timepoint**
Baseline and 60 days after the intervention
**Method of measurement**
WHOQOL-BREF standard quality of life questionnaire

## Secondary outcomes

**1**

**Description**
Clinical stage of lymphedema
**Timepoint**
Baseline and 60 days after the intervention
**Method of measurement**
According to the staging system of International Society of Lymphology

**2**

**Description**
Heaviness and tiredness feeling
**Timepoint**
Baseline and 60 days after the intervention
**Method of measurement**
Numerical pain rating scale (NRS)

**3**

**Description**
Serum inflammatory factors (High-sensitivity C-reactive Protein, Interleukin 6)
**Timepoint**
Baseline and 60 days after the intervention
**Method of measurement**
Using ELISA method and Immunoturbodimetry

**4**

**Description**
Oxidative stress biomarkers (Malondialdehyde and Glutathione peroxidase)
**Timepoint**
Baseline and 60 days after the intervention
**Method of measurement**
Using enzyme-linked immunosorbent assay (ELISA) method

**5**

**Description**
The frequency of probable side effects resulting from supplement use such as nausea, diarrhea, and stomach ache
**Timepoint**
During and after the intervention
**Method of measurement**
Questionnaire

**6**

**Description**
Satisfaction with medication
**Timepoint**
During and after the intervention
**Method of measurement**
Satisfaction rate questionnaire

## Intervention groups

**1**

**Description**
Intervention group: They will take one 500 mg S.cerevisiae yeast capsule per day containing 400, 300, and 200 micrograms of organic selenium for the first, second, and third 20 days for 60 days in total orally with meals. Organic selenium will be produced at the Nutrition Research Center
**Category**
Treatment - Drugs

**2**

**Description**
Control group: They will take one 500 mg oral capsule containing S. cerevisiae yeast per day for 60 days, which will be similar in shape, color, and weight to selenium-containing capsules. and will be produced at the Nutrition Research Center
**Category**
Placebo

## Recruitment centers

**1**

**Recruitment center**
**Name of recruitment center**
Nutrition Research Center
**Full name of responsible person**
Azizeh Farshbaf-Khalili
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Nutrition Research Center, Tabriz University of

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## Sponsors / Funding sources

### 1

**Sponsor**
**Name of organization / entity**
Tabriz University of Medical Sciences
**Full name of responsible person**
Parviz Shahabi
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Central building of Tabriz University of Medical Sciences., Azadi St., Golgasht St
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parvizshahabi@gmail.com
**Grant name**
**Grant code / Reference number**
**Is the source of funding the same sponsor organization/entity?**
Yes
**Title of funding source**
Tabriz 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**
Tabriz University of Medical Sciences
**Full name of responsible person**
Azizeh Farshbaf-Khalili
**Position**
Assistant Professor
**Latest degree**
Ph.D.
**Other areas of specialty/work**
Nutrition
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## Person responsible for scientific inquiries

**Contact**
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Bina Eftekharsadat
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Professor
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## Person responsible for updating data

**Contact**
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Tabriz University of Medical Sciences
**Full name of responsible person**
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**Position**
Assistant Profeassor
**Latest degree**

Ph.D.

**Other areas of specialty/work**

Nutrition

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## Sharing plan

**Deidentified Individual Participant Data Set (IPD)**

Yes - There is a plan to make this available

**Study Protocol**

Yes - There is a plan to make this available

**Statistical Analysis Plan**

Yes - There is a plan to make this available

**Informed Consent Form**

Yes - There is a plan to make this available

**Clinical Study Report**

Yes - There is 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

**Title and more details about the data/document**

Data on the main outcome will be published

**When the data will become available and for how long**

Six months after printing the results

**To whom data/document is available**

Researchers at institutions have access to data

**Under which criteria data/document could be used**

In order to help scientific progress in the field of research

**From where data/document is obtainable**

farshbafa@tbzmed.ac.ir

**What processes are involved for a request to access data/document**

Scientific approval of the applicant by Tabriz University of Medical Sciences

**Comments**