Clinical Trial Protocol
Iranian Registry of Clinical Trials

24 Jun 2026

The effect of Curcumin, Nigella Sativa, and Curcumin-Nigella Sativa on cellular- molecular and clinical outcomes related to primary osteoporosis among postmenopausal women: A triple blind randomized controlled trial

Protocol summary

Study aim

To determine and comparison of the effect of Curcumin, Nigella Sativa, Curcumin and Nigella Sativa on cellular-molecular and clinical outcomes in postmenopausal women with primary osteoporosis.

Design

In this triple-blind randomized, controlled trial with four parallel arms, 120 postmenopausal women with primary osteoporosis will be randomly assigned into four groups using block randomization with block sizes of 4 and 8, and the ratio of 1: 1: 1: 1, receiving 1) Nigella Sativa, 2) Curcumin nano-missile, 3) Nigella Sativa and Curcumin nano-missile, or 4) both placebo, and will receive the intervention for 6 months.

Settings and conduct

Eligible women will be selected using the information available in Tabriz's health centers, after necessary assessments and receiving written informed consent and will be randomized into one of the four groups, receiving the treatments for six months. Participants, investigators, and statistical analyst will be blinded.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Postmenopausal women aged 50 to 65; Low bone density (T-score <-2.5) in lumbar spine or hip (total and femoral neck) Exclusion criteria: T-score≤-4 in the lumbar spine, T-score≤-3.5 in the hip and femoral neck; taking drugs affecting bone metabolism; systemic diseases and hormonal disorders; coagulation disorders; gastrointestinal ulcers; gallstone

Intervention groups

Receiving the following daily treatments: group 1: one 1000 mg Nigella Sativa oil capsule and one Curcumin placebo; group 2: one 80 mg Curcumin-nanomicelle capsule and one Nigella Sativa placebo group 3: one Curcumin and one Nigella Sativa capsule; and group 4: placebo of both drugs.

Main outcome variables

Bone mineral density, serum levels of bone turnover markers (Osteocalcin, Osteopontin, Total ALP), and serum levels of some inflammatory and oxidative factors (TAC, SOD, MDA, TNF-α, HS-CRP, IL-6)

General information

Reason for update

Hi, Hereby, the study protocol in the measuring part of serum level "CTX","BSAP","P1NP" was changed to "osteopontin" and "alkaline phosphatase (ALP)" as alternatives due to high cost and impossibility of assaying. Please agree.

Acronym

IRCT registration information

IRCT registration number: **IRCT20131009014957N4**
Registration date: **2018-07-16, 1397/04/25**
Registration timing: **prospective**

Last update: **2023-01-21, 1401/11/01**
Update count: **3**

Registration date

2018-07-16, 1397/04/25

Registrant information

Name
Azizeh Farshbaf-khalili
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Tabriz university of Medical Sciences
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Iran (Islamic Republic of)
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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date
2018-08-16, 1397/05/25
Expected recruitment end date
2019-12-16, 1398/09/25
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
The effect of Curcumin, Nigella Sativa, and Curcumin-Nigella Sativa on cellular- molecular and clinical outcomes related to primary osteoporosis among postmenopausal women: A triple blind randomized controlled trial

Public title
The effect of Curcumin, Nigella Sativa, and Curcumin-Nigella Sativa on outcomes related to primary osteoporosis among postmenopausal women
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Postmenopausal women aged 50 to 65 years Ability to self-care Resident of Tabriz city Menstrual cessation for at least 12 consecutive months Low bone density (T-score <-2.5) in lumbar spine or hip (total and femoral neck) No fracture history The ability to communicate verbally for answering questions
Exclusion criteria:
T-score≤-4 in lumbar spine or T-score≤-3.5 in femoral neck bone Renal failure and diseases Bone disease other than osteoporosis The use of medications that affect bone metabolism, including intravenous bisphosphonate over the past 5 years, oral bisphosphonate use in the last 6 months, cumulative oral bisphosphonate use for more than 3 years, or more than 1 month between 6-12 months before the study, Use of parathyroid hormone analogues over the past 12 months or strontium, fluoride or cathepsin k inhibitor at any time, use of hormonal medications or corticosteroids during the study or within 3 months before (or more). Chronic liver disease Other systemic diseases, such as diabetes, gastrointestinal disorders, and endocrine disorders Mental illness, as reported by the woman The malignancy, as reported by the woman Taking anti-coagulants, and coagulation disorders Stomach ulcers and gallstones The levels of 25-hydroxyvitamin D less than 20ng/ ml Current Hypercalcemia or hypocalcemia
Age
From **50 years** old to **65 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: **120**
Randomization (investigator's opinion)
Randomized
Randomization description
Women with primary osteoporosis were randomly assigned into four groups recieving: 1) Nigella Sativa capsule and curcumin placebo; 2) curcumin capsule and Nigella Sativa placebo; 3) Nigella Sativa and curcumin capsule ; or 4) placebo capsules of Nigella Sativa and curcumin. Allocation sequence will be determined using random blocking of blocks 4 and 8 in RAS software (Random Allocation Software) using a 1: 1: 1: 1 assignment ratio. To conceal the allocation, the medications will be placed inside a consecutively numbered sealed opaque envelopes. Preparation of envelopes and sequence generation will be done by a person not involved in participant recruitment or data collection.
Blinding (investigator's opinion)
Triple blinded
Blinding description
The medications and their placebo will be prepared by the pharmaceutical company in identical shape, color and smell. Investigators, health care providers, outcome assessors, and statistical analyst will be blinded.
Placebo
Used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Tabriz University of Medical Sciences
Street address
Research Vice-chancellor of Tabriz University of Medical Sciences., End of Gholgasht Ave., Tabriz., Iran
City
Tabriz
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East Azarbaijan
Postal code
5166614766
Approval date
2018-05-14, 1397/02/24
Ethics committee reference number
IR.TBZMED.REC.1397.131

Health conditions studied

1

Description of health condition studied
Postmenopausal osteoporosis
ICD-10 code
M81
ICD-10 code description
Osteoporosis without current pathological fracture

Primary outcomes

1

Description
Bone mineral density
Timepoint
At the baseline (before intervention) and just after completion of the intervention (6 months after beginning the intervention)
Method of measurement
Dual-energy X-ray absorptiometry (DXA)

2

Description
Serum levels of bone turnover markers (Osteocalcin، Osteopontin, Total Alkaline Phosphatase)
Timepoint
At the baseline (before intervention) and just after completion of the intervention (6 months after beginning of intervention)
Method of measurement
Using the ELISA method

3

Description
Serum levels of some inflammatory factors (TNF-α, hs-CRP, IL-6)
Timepoint
At the baseline (before intervention) and just after completion of the intervention (6 months after beginning of intervention)
Method of measurement
Using calorie meter and ELISA method

Secondary outcomes

1

Description
Serum levels of osteoporosis MicroRNA (miR422a، miR-133a، miR-21 و miR-503)
Timepoint
At the baseline (before intervention) and completion of the intervention (6 months after beginning intervention)
Method of measurement
Using the Real-Time PCR method

2

Description
Quality of life score
Timepoint
At the baseline (before intervention) and 1,3, and 6 months after beginning intervention
Method of measurement
Using the MENQOL questionnaire

3

Description
Body composition analysis score (PBF, MBF, SLM, LBM, VFM, TBW, Mineral)
Timepoint
At the baseline (before intervention) and completion of the intervention (6 months after beginning intervention)
Method of measurement
Body Composition Analyzer

4

Description
The 10-year probability of fracture
Timepoint
At the baseline (before intervention) and completion of intervention (6 months after beginning of study)
Method of measurement
Fracture Risk Assessment Tool (FRAX)

5

Description
Serum levels of some oxidative stress indices (TAC, SOD, MDA)
Timepoint
At the baseline (before intervention) and just after completion of the intervention (6 months after beginning of intervention)
Method of measurement
Using Spectrophotometer and ELISA method

6

Description
Serum levels of Insulin-like Growth Factor-I and binding proteins (TAC, SOD, MDA)
Timepoint
At the baseline (before intervention) and completion of intervention (6 months after beginning of study)
Method of measurement
Using Spectrophotometer and ELISA method

7

Description
Lipid profile
Timepoint
At the baseline (before the intervention) and completion of the intervention (6 months after the beginning of the study)
Method of measurement
biochemical methods

8

Description
Glycemic control indices
Timepoint
At the baseline (before intervention) and completion of the intervention (6 months after the beginning of the study
Method of measurement
biochemical methods

9

Description
Serum 17-β estradiol
Timepoint
At the baseline (before intervention) and completion of the intervention (6 months after the beginning of the study
Method of measurement
Using ELISA method

Intervention groups

1

Description
Intervention group 1: One Nigella Sativa oil soft-gel capsule 1000 mg once a day prepared by Baryj Essence pharmaceutical company and one Curcumin placebo capsule containing 80 mg carboxymethyl cellulose once a day produced by Exir Nano Sina company, orally by for 6 months,
Category
Treatment - Drugs

2

Description
Intervention group 2: One Curcumin soft-gel capsule containing 80 mg Curcumin as nanomicelle once a day prepared by Exir Nano Sina company, and one Nigella Sativa placebo capsule containing 1000 mg carboxymethyl cellulose once a day produced by Baryj Essence pharmaceutical company, orally for 6 months.
Category
Treatment - Drugs

3

Description
Intervention group 3: One Nigella Sativa oil soft-gel capsule 1000 mg once a day prepared by Baryj Essence pharmaceutical company and one Curcumin soft-gel capsule containing 80 mg Curcumin as nanomicelle once a day prepared by Exir Nano Sina company, orally for 6 months.
Category
Treatment - Drugs

4

Description
Control group: One Nigella Sativa placebo soft-gel capsule containing 1000 mg carboxymethyl cellulose once a day prepared by Baryj Essence pharmaceutical companyand one Curcumin placebo capsule containing 80 mg carboxymethyl cellulose once a day prepared by Exir Nano Sina company, orally for 6 months.
Category
Treatment - Drugs

Recruitment centers

1

Recruitment center
Name of recruitment center
Public health Departments in Tabriz
Full name of responsible person
Dr Mitra Yeghaneh
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Email
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
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Full name of responsible person
Dr. Abolghasem Jouyban
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No. 2 Central building of the university, Golgasht street, Azadi street
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+98 41 3334 4280
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research-vice@tbzmed.ac.ir
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
Dr. Azizeh Farshbaf-Khalili
Position
Assistant Professor
Latest degree
Ph.D.
Other areas of specialty/work
Nutrition
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Person responsible for updating data

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available
Study Protocol
No - There is not a plan to make this available
Statistical Analysis Plan
No - There is not a plan to make this available
Informed Consent Form
No - There is not 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
Requested data will be provided to researchers for statistical analysis of the submitted proposal (meta-analysis).
When the data will become available and for how long
starting immediately after publication
To whom data/document is available
Data will be available to researchers as well as to

journals.

Under which criteria data/document could be used

The data will be available to researchers upon request and submission of a proposal to perform meta-analysis using IPD data after being unidentified. Also, in exceptional cases, data will be made available to journals for checking.

From where data/document is obtainable

Refer to the email address (farshbafa@tbzmed.ac.ir).

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

The requests will be sent by email and data will be available within a week.

Comments