

Clinical Trial Protocol

Iranian Registry of Clinical Trials

19 Sep 2026

Study of the effect of synbiotic supplement on glycemic and lipid profile indices, inflammatory factors, oxidative stress condition and expression of related microRNAs in T2DM patients

Protocol summary

Study aim

Study of the effect of synbiotic supplement on glycemic and lipid profile indices, inflammatory factors, oxidative stress condition and expression of microRNA-126, microRNA-146a in T2DM patients

Design

A clinical trial with a control group, with parallel, double-blind, and randomized groups, will be performed on patients with type 2 diabetes. 72 patients will be randomly assigned to receive the synbiotic and the placebo by using a random number table.

Settings and conduct

The study is designed as a double blind randomized controlled trial. After receiving informed consent, the demographic information questionnaire will be completed. At the beginning and end of the study, Biochemical and anthropometric measurements and body composition are performed using standard methods, diet and physical activity will be evaluated by the three-day food record form and the three-day physical activity record form, Expression of microRNA-126 and microRNA-146a will be measured by RealTime PCR, and serum levels of IL6, TNF-a, MDA, and TAC will be measured by ELISA.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Men and women with type 2 diabetes, In the age range of 25-65 years, Glycosylated hemoglobin above 6.5% and below 8.5%, BMI 25-35. Exclusion criteria: People with low-immune, pregnant and lactating women, people with special diseases and allergies, inflammatory diseases, and those who use hormone replacement therapy, and people who use alcohol and tobacco.

Intervention groups

The intervention group will receive synbiotic capsules (containing probiotic, fructo-oligosaccharide as prebiotic, lactose, magnesium stearate, talc) containing 500 mg

and the control group will receive placebo (lactose, magnesium stearate, talc) containing 500 mg for 12 weeks twice a day.

Main outcome variables

Expression of microRNA-126 and microRNA-146a serum levels of IL6, TNF-a, MDA, and TAC

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180624040228N1**

Registration date: **2018-07-21, 1397/04/30**

Registration timing: **prospective**

Last update: **2019-03-19, 1397/12/28**

Update count: **1**

Registration date

2018-07-21, 1397/04/30

Registrant information

Name

Fahime Zeinali

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 35 3820 9143

Email address

fghzeinaly@ssu.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-07-23, 1397/05/01

Expected recruitment end date

2019-03-19, 1397/12/28

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Study of the effect of synbiotic supplement on glycemic and lipid profile indices, inflammatory factors, oxidative stress condition and expression of related microRNAs in T2DM patients

Public title
synbiotic in diabetes

Purpose
Prevention

Inclusion/Exclusion criteria
Inclusion criteria:
Men and women with type 2 diabetes (the minimum elapsed time of diagnosis is 3 months and diabetes treatment is started in person) Age range 25 to 65 years Glycosylated hemoglobin above 6.5% and below 8.5% BMI is between 25 and 35
Exclusion criteria:
Using alternative therapies with hormone (Insulin, Corticosteroids) or vitamin supplements Chronic kidney, liver, pulmonary diseases. chronic or acute inflammatory diseases (especially acute Pancreatic inflammation and Endocarditis) Valvular disease of the heart. Irritable Bowel Syndrome. Allergic Diabetes complications (Nephropathy, Cardiomyopathy, Retinopathy, Diabetic foot ulcers) People with low immune system (Autoimmune) Pregnancy, Lactation Use of tobacco and alcohol Probiotic consumption in the last three months Follow the unusual diet up to 1month before the study

Age
From **25 years** old to **65 years** old

Gender
Both

Phase
3

Groups that have been masked

- Participant
- Investigator

Sample size
Target sample size: **72**

Randomization (investigator's opinion)
Randomized

Randomization description
To assign individuals to the intervention and control groups, a random number table will be used. Stratified blocked randomization method will be used based on sex (male and female) and age (25-45 years and 45-65 years), so that the number of samples assigned to each of the groups will be equal.

Blinding (investigator's opinion)
Double blinded

Blinding description
Capsules containing synthetic and placebo are similar in

shape and appearance and the bottles of Capsules are the same (in terms of color and shape). A and B labels will be fixed on the bottles of Capsules by someone irrelevant to the entire study. participants and researchers will be blinded to the contents in the bottles through out the study.

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Shahid Sadoughi University of Medical Sciences

Street address

Health Faculty, Shahid Sadoughi University of Medical Sciences, Shohadaye gomnam Blvd, Alam Sqrt

City

Yazd

Province

Yazd

Postal code

8915173160

Approval date

2018-03-16, 1396/12/25

Ethics committee reference number

IR.SSU.SPH.REC.1396.172

Health conditions studied

1

Description of health condition studied

Type 2 diabetes mellitus

ICD-10 code

E11

ICD-10 code description

Type 2 diabetes mellitus

Primary outcomes

1

Description

Expression of microRNA-126

Timepoint

Before and immediately after the intervention

Method of measurement

Real time Polymerase Chain Reaction (PCR)

2

Description

Experation of microRNA-146a

Timepoint

Before and immediately after the intervention

Method of measurement

Real time Polymerase Chain Reaction (PCR)

3

Description

Serum levels of interleukin 6

Timepoint

Before and immediately after the intervention

Method of measurement

ELISA kit

4

Description

Serum levels of tumor necrosis factor alpha

Timepoint

Before and immediately after the intervention

Method of measurement

ELISA kit

5

Description

Serum levels of Malondialdehyde

Timepoint

Before and immediately after the intervention

Method of measurement

ELISA kit

6

Description

Serum levels of total antioxidant capacity

Timepoint

Before and immediately after the intervention

Method of measurement

ELISA kit

Secondary outcomes

1

Description

Triglyceride

Timepoint

Before and immediately after the intervention

Method of measurement

Turbidity test

2

Description

Total cholesterol

Timepoint

Before and immediately after the intervention

Method of measurement

Turbidity test

3

Description

High-density lipoprotein

Timepoint

Before and immediately after the intervention

Method of measurement

Turbidity test

4

Description

Low-density lipoprotein

Timepoint

Before and immediately after the intervention

Method of measurement

Turbidity test

5

Description

Fasting Blood Sugar

Timepoint

Before and immediately after the intervention

Method of measurement

Turbidity test

6

Description

Glycosylated hemoglobin

Timepoint

Before and immediately after the intervention

Method of measurement

Enzymatic Assay Kit

7

Description

fasting insulin

Timepoint

Before and immediately after the intervention

Method of measurement

ELISA kit

Intervention groups

1

Description

Intervention group: The intervention group will receive synbiotic capsules (containing probiotic, fructo-oligosaccharide as prebiotic, lactose, magnesium stearate, talc) containing 500 mg for 12 weeks twice a day.

Category

Prevention

2

Description

Control group: The control group will receive placebo (lactose, magnesium stearate, talc) containing 500 mg for 12 weeks twice a day.

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

Yazd Diabetes Research Center

Full name of responsible person

Fahime Zeinali

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Yazd University of Medical Sciences

Full name of responsible person

Research Deputy of Health Faculty

Street address

Health Faculty, Shahid Sadoughi University of Medical Sciences, Shohadaye gomnam Blvd, Alam Sqrt

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Grant name

Grant code / Reference number

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

Yes

Title of funding source

Yazd University of Medical Sciences

Proportion provided by this source

70

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

2

Sponsor

Name of organization / entity

Iran National Science Foundation

Full name of responsible person

Zargham Nosratollah

Street address

No. 33, 5th street, North Kargar

City

Tehran

Province

Tehran

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1439634665

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Grant name

Grant code / Reference number

96012141

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

Yes

Title of funding source

Iran National Science Foundation

Proportion provided by this source

30

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

Other

Person responsible for general inquiries

Contact

Name of organization / entity

Yazd University of Medical Sciences

Full name of responsible person

Fahime Zeinali

Position

PhD student

Latest degree

Master

Other areas of specialty/work

Nutrition

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Person responsible for scientific inquiries

Contact

Name of organization / entity

Yazd University of Medical Sciences

Full name of responsible person

Hassan Mozaffari-Khosravi

Position

Professor (Full)

Latest degree

Ph.D.

Other areas of specialty/work

Nutrition

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Person responsible for updating data

Contact

Name of organization / entity

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Full name of responsible person

Fahime Zeinali

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Latest degree

Master

Other areas of specialty/work

Nutrition

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Email

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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

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

Analytic Code

Not applicable

Data Dictionary

Not applicable