

Clinical Trial Protocol

Iranian Registry of Clinical Trials

24 Jun 2026

Comparison of the effect of folic acid supplement with placebo on grade of liver steatosis, insulin resistance, inflammatory and oxidative stress biomarkers in patients with non-alcoholic fatty liver disease

Protocol summary

Study aim

Comparison of the effect of folic acid supplement with placebo on grade of liver steatosis, insulin resistance, inflammatory and oxidative stress biomarkers in patients with non-alcoholic fatty liver disease

Design

A randomized controlled clinical trial with parallel design. Total sample size will be 66 and randomization will be done based on the sequences of the random blocks using statistical software.

Settings and conduct

Patients with fatty liver disease will be evaluated for the study inclusion criteria at the gastroenterology clinic of Kashan University of Medical Sciences. Liver sonography, anthropometric indices and biochemical tests measured at baseline and after the intervention.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Patients who are diagnosed to have non alcoholic fatty liver disease confirmed with ultrasonography result; Ages between 18-80 years; Serum alanine transaminase enzyme level higher than 30 U/L in men and higher than 19 U/L in women
Exclusion criteria: Pregnancy; Lactation; Alcohol consumption; Having diseases such as hereditary hemochromatosis, Wilson's disease and α 1 antitripsin enzyme deficiency; History of jejunoileal bypass surgery and history of receiving total parenteral nutrition during last 6 months; Consumption of statins and hepatotoxic drugs such as calcium channel blocker, methotrexate, amiodarone, chloroquine; Intake of folate, B12, vitamin E and omega-3 supplements during the last 3 months

Intervention groups

The intervention group will receive one tablet contains 1 mg folic acid daily for 8 weeks. The control group will receive one tablet of placebo daily for 8 weeks.

Main outcome variables

A change in the grade of fatty liver; changes in serum

levels of alanine transaminase and aspartate transaminase; a change in insulin resistance; changes in serum levels of malondialdehyde and C-reactive protein

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20190901044662N1**

Registration date: **2019-11-07, 1398/08/16**

Registration timing: **prospective**

Last update: **2019-11-07, 1398/08/16**

Update count: **0**

Registration date

2019-11-07, 1398/08/16

Registrant information

Name

Shadi Zarringol

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 31 5554 0021

Email address

zarringol-sh@kaums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-12-21, 1398/09/30

Expected recruitment end date

2020-03-20, 1399/01/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the effect of folic acid supplement with placebo on grade of liver steatosis, insulin resistance, inflammatory and oxidative stress biomarkers in patients with non-alcoholic fatty liver disease

Public title

Effect of folic acid in treatment of fatty liver disease

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

Patients who are diagnosed to have non alcoholic fatty liver disease confirmed with ultrasonography result Ages between 18-80 years Serum alanine transaminase enzyme level higher than 30 U/L in men Serum alanine transaminase enzyme level higher than 19 U/L in women

Exclusion criteria:

Pregnancy Lactation Alcohol consumption greater than 20 g per day Having diseases such as hereditary hemochromatosis, Wilson's disease and α 1 antitripsin enzyme deficiency History of jejunoileal bypass surgery or gastroplasty History of receiving total parenteral nutrition during last 6 months Consumption of statins and hepatotoxic drugs such as calcium channel blocker, methotrexate, amiodarone, chloroquine History of hypothyroidism and Cushing's syndrome Intake of folate, B12, vitamin E and omega-3 supplements during the last 3 months

Age

From **18 years** old to **80 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **66**

Randomization (investigator's opinion)

Randomized

Randomization description

Participants will be randomly assigned to the intervention or control group in the random blocks based on the random number table. The sequence of permuted blocks will be generated with a random number table. An individual with no clinical involvement in the trial, puts the table of intervention or control group in an opaque and sealed envelope based on the random sequence. Then the other person, who is not aware of random sequences and the envelope content, will assign the patients to the intervention or control group.

Blinding (investigator's opinion)

Double blinded

Blinding description

In the present study, participants, clinical caregiver, principal investigator, data analyzer and outcome evaluator will be blinded to the allocation to study groups.

Placebo

Used

Assignment

Parallel

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics committee of Kashan University of Medical Sciences

Street address

Pezeshk Ave., Qotbe Ravandi Blvd.

City

Kashan

Province

Isfahan

Postal code

8715988141

Approval date

2019-10-21, 1398/07/29

Ethics committee reference number

IR.KAUMS.MEDNT.REC.1398.083

Health conditions studied**1****Description of health condition studied**

Non-alcoholic fatty liver disease

ICD-10 code

K76.0

ICD-10 code description

Fatty (change of) liver, not elsewhere classified

Primary outcomes**1****Description**

Serum level of alanine transaminase

Timepoint

At baseline and 8 weeks after the start of the intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

2

Description

Serum level of aspartate transaminase

Timepoint

At baseline and 8 weeks after the start of the intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

3

Description

Insulin resistance

Timepoint

At baseline and 8 weeks after the start of the intervention

Method of measurement

By the formula of homeostatic model assessment

4

Description

The grade of fatty liver

Timepoint

At baseline and 8 weeks after the start of the intervention

Method of measurement

By using ultrasonography

Secondary outcomes

1

Description

Serum level of folate

Timepoint

At baseline and 8 weeks after the start of intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

2

Description

Serum level of homocystein

Timepoint

At baseline and 8 weeks after the start of intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

3

Description

Serum level of C-reactive protein

Timepoint

At baseline and 8 weeks after the start of intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

4

Description

Serum level of malondialdehyde

Timepoint

At baseline and 8 weeks after the start of intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

5

Description

Serum level of low density lipoprotein cholesterol

Timepoint

At baseline and 8 weeks after the start of intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

6

Description

Serum level of high density lipoprotein cholesterol

Timepoint

At baseline and 8 weeks after the start of intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

7

Description

Serum level of triglyceride

Timepoint

At baseline and 8 weeks after the start of intervention

Method of measurement

Laboratory clinical kit and analyzer instrument

Intervention groups

1

Description

Intervention group: The intervention group will receive one tablet contains 1 mg folic acid daily for 8 weeks.

Category

Treatment - Other

2

Description

Control group: The control group will receive one tablet of placebo contains 1 mg maltodextrin daily for 8 weeks.

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

Gastroenterology clinic of Shahid Beheshti Hospital

Full name of responsible person

Mohammad Reza Mollaghanbari

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Pezeshk Ave., Qotb-e-Ravandi Blvd.

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Kashan University of Medical Sciences
Full name of responsible person
Hamid Reza Banafshe
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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
Kashan 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
Kashan University of Medical Sciences
Full name of responsible person
Shadi Zarringol
Position
Residency (medical)
Latest degree
Medical doctor

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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

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

Clinical Study Report

Yes - There is a plan to make this available

Analytic Code

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

A portion of the data regarding demographics, anthropometric, and food variables, that are collected at the baseline of the study, and also the information on the main outcome will be shared.

When the data will become available and for how long

The start of the data access period will be one year after the publication of the results.

To whom data/document is available

Researchers working in academic institutions

Under which criteria data/document could be used

In order to conduct meta analysis studies

From where data/document is obtainable

Nasrin Sharifi, Nutrition Department, School of Medicine, Kashan University of Medical Sciences, Qotbe-e-Ravandi Blvd., Kashan, Iran Postal Code: 88715973474 E-mail: sharifi-na@kaums.ac.ir Tel: 00983155540021 Fax: 00983155620608

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

An applicant can send a request for a data file by e-mail. After reviewing the request, the data file will be sent to him/her after about three weeks would have passed from the date of the request.

Comments