Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Effect of Rifaximin on Changes in Fibrosis-4 Index and Liver Stiffness Measurement by Transient Elastography in Patients with Metabolic Dysfunction-Associated Steatotic Liver Disease: A Randomized Controlled Clinical Trial

Protocol summary

Study aim
Effect of Rifaximin on Fibrosis-4 Index and Liver Stiffness Measurement in Patients with Metabolic Dysfunction-Associated Steatotic Liver Disease

Design
This is a randomized, double-blind, placebo-controlled clinical trial.

Settings and conduct
This double-blind clinical trial will be conducted at Imam Khomeini Hospital in Ahvaz. Eligible patients will be allocated in a 1:1 ratio to the rifaximin or placebo group using block randomization (block size: 4). The randomization list will be generated by an independent statistician, and allocation concealment will be maintained until enrollment. Patients, the treatment team, and outcome assessors, including the FibroScan operator, will be blinded to group allocation. The research pharmacy and the statistician will have access to the allocation codes. The follow-up period will be 6 months.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Age 18–75 years, metabolic dysfunction-associated steatotic liver disease, and provision of written informed consent. Exclusion criteria: Pregnancy or breastfeeding, hypersensitivity to rifaximin, severe concomitant illness, severe renal impairment, or concurrent participation in another interventional study.

Intervention groups
In the intervention group, rifaximin 550 mg (manufactured by Tehran Darou Pharmaceutical Company, Iran) will be administered orally twice daily for six months along with standard MASLD treatment. In the control group, a matching placebo manufactured by Tehran Darou Pharmaceutical Company, Iran, will be administered with the same schedule and duration along with standard treatment.

Main outcome variables
Fibrosis-4 (FIB-4) index; liver stiffness measurement (LSM)

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20260524069511N1**
Registration date: **2026-08-30, 1405/06/08**
Registration timing: **registered_while_recruiting**

Last update: **2026-08-30, 1405/06/08**
Update count: **0**

Registration date
2026-08-30, 1405/06/08

Registrant information

Name
maryam masoumi

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 61 3332 5431

Email address
alavinejad-p@ajums.ac.ir

Recruitment status
recruiting

Funding source

Expected recruitment start date
2026-07-23, 1405/05/01

Expected recruitment end date
2027-01-21, 1405/11/01

Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Effect of Rifaximin on Changes in Fibrosis-4 Index and Liver Stiffness Measurement by Transient Elastography in Patients with Metabolic Dysfunction-Associated Steatotic Liver Disease: A Randomized Controlled Clinical Trial

Public title
Effect of Rifaximin in Patients with Metabolic Dysfunction-Associated Fatty Liver Disease
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Signed informed consent form. Diagnosis of Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) based on medical history and valid diagnostic documentation, including imaging findings, previous liver biopsy reports, or other medical records confirming the diagnosis. Stable clinical condition, including Child-Pugh class A or B with a score of 8 or less and without failure of vital organs. Presence of Fibrosis-4 Index (FIB-4) or Liver Stiffness Measurement (LSM) within a range indicative of monitorable liver fibrosis. No systemic antibiotic or probiotic use within 4 weeks prior to screening. Age between 18 and 75 years old.
Exclusion criteria:
Clinically active hepatic encephalopathy, grade II or higher, or a history of hospitalization due to hepatic encephalopathy within the past three months. Active hepatocellular carcinoma (HCC) or other active malignancies. Current use of rifaximin or medications with clinically significant interactions with rifaximin.. A known history of hypersensitivity or allergy to rifaximin or any of its components. Severe renal impairment, including an estimated glomerular filtration rate (eGFR) of less than 30 mL/min/1.73 m^2 or requiring dialysis. Pregnancy or breastfeeding: Women of childbearing potential must have a negative pregnancy test and agree to use a reliable method of contraception throughout the study. Concurrent participation in another interventional study or use of any medication or treatment that could significantly affect the study outcomes, such as statins or similar therapies, depending on the study protocol. Presence of serious comorbid conditions that would make participation in the study impossible or unsafe, such as unstable cardiac disease, active systemic infection, or other severe clinical conditions. Inability to comply with the study instructions or inability to attend the study visits and follow-up assessments
Age
From **18 years** old to **75 years** old
Gender
Both

Phase
2

Groups that have been masked

- Participant
- Outcome assessor

Sample size
Target sample size: **60**
Randomization (investigator's opinion)
Randomized
Randomization description
Participants will be randomized to either the rifaximin or placebo group using block randomization with a block size of 4 and a 1:1 allocation ratio. The randomization sequence will be generated using Sealed Envelope software and maintained by an independent statistician who is not involved in the conduct of the study. Allocation codes will be provided to the research pharmacy. The research pharmacy will prepare rifaximin and placebo packages labeled with unique identification numbers according to the randomization list. Upon enrollment, each participant will be assigned the next sequentially numbered study package based on the predetermined allocation sequence. This procedure ensures that the randomization sequence remains concealed from the investigators until the participant has been assigned to a study group.
Blinding (investigator's opinion)
Double blinded
Blinding description
This study will be conducted as a double-blind trial. In this design, participants, treating physicians, clinical staff, outcome assessors, transient elastography operators, and data analysts will remain unaware of treatment allocation. The rifaximin and placebo formulations will be identical in appearance, size, color, packaging, and labeling to ensure that treatment groups cannot be distinguished. Drug preparation and coding will be performed by the research pharmacy. Only the research pharmacy and an independent statistician will have access to the randomization codes. Throughout the study, neither participants nor members of the research team will have access to the allocation sequence, and blinding will be maintained until the completion of data analysis.
Placebo
Used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Research Ethics Committee of Ahvaz Jundishapur University of Medical Sciences
Street address

Ahvaz Jundishapur University of Medical Sciences, Golestan Blvd., Ahvaz, Khuzestan, Iran

City
Ahvaz

Province
Khouzestan

Postal code
6133545139

Approval date
2026-05-09, 1405/02/19

Ethics committee reference number
IR.AJUMS.REC.1405.051

Health conditions studied

1

Description of health condition studied
Metabolic Dysfunction-Associated Steatotic Liver Disease

ICD-10 code
K76.0

ICD-10 code description
Fatty (change of) liver, not elsewhere classified

Primary outcomes

1

Description
Fibrosis-4 index (FIB-4)

Timepoint
Before the start of the intervention (Baseline) and 6 months after the start of the intervention.

Method of measurement
The FIB-4 index will be calculated using the standard formula: FIB-4 = (Age × AST) / (Platelet count × √ALT). AST, ALT, and platelet count values will be obtained from blood tests performed in the central study laboratory. Measurement tools: Complete Blood Count (CBC) and Liver Function Tests (LFTs).

2

Description
Liver stiffness measurement (LSM)

Timepoint
Before the start of the intervention (Baseline) and 6 months after the start of the intervention.

Method of measurement
Liver stiffness measurement (LSM) will be assessed using FibroScan (Transient Elastography) and reported in kilopascals (kPa). Measurement tool: FibroScan device.Time point(s) of assessment:At baseline and 6 months after initiation of the intervention.

Secondary outcomes

1

Description
Alanine aminotransferase

Timepoint
Before the start of the intervention (baseline), and at 3 and 6 months after the start of the intervention

Method of measurement
will be measured using an automated laboratory biochemistry analyzer.

2

Description
CRP

Timepoint
Before the start of the intervention (baseline), and at 3 and 6 months after the start of the intervention

Method of measurement
will be measured using an automated laboratory biochemistry analyzer.

3

Description
AST level

Timepoint
Before the start of the intervention (baseline), and at 3 and 6 months after the start of the intervention.

Method of measurement
Measurement of serum aspartate aminotransferase (AST) level using standard laboratory biochemical assays, expressed in U/L

4

Description
Albumin level

Timepoint
Before the start of the intervention (baseline), and at 3 and 6 months after the start of the intervention.

Method of measurement
Measurement of serum albumin level using a standard laboratory biochemical assay, expressed in g/dL

5

Description
bilirubin level

Timepoint
Before the start of the intervention (baseline), and at 3 and 6 months after the start of the intervention.

Method of measurement
Measurement of serum bilirubin level using a standard laboratory biochemical assay, expressed in mg/dL.

Intervention groups

1

Description
Intervention group: Patients with metabolic dysfunction-associated steatotic liver disease (MASLD), after randomization, will receive Rifaximin 550 mg (manufactured by Tehran Darou Pharmaceutical Co., Iran) orally twice daily at 12-hour intervals for 6 months. The medication will be provided as oral capsules in identical, coded packaging by the research pharmacy.

Throughout the study, patients will continue to receive standard treatment and routine care for MASLD according to the judgment of their treating physician.

Category

Treatment - Drugs

2

Description

Control group: Control group: Patients with MASLD who are randomized to the control group will receive a placebo identical to rifaximin (manufactured by Tehran Darou Pharmaceutical Co., Iran) every 12 hours (twice daily) for 6 months. The placebo will be identical to the active drug in appearance, weight, size, and packaging. Patients in this group will also receive standard treatment for MASLD according to the diagnosis and treating physician's judgment.

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

Gastroenterology and Hepatology Clinic, Imam Khomeini Hospital

Full name of responsible person

Pezhman Alavinejad

Street address

Imam Khomeini Hospital, Shahid Ahvazian Street, Azadegan Street, Ahvaz, Khuzestan Province,

City

Ahvaz

Province

Khouzestan

Postal code

۶۱۹۳۶۷۳۱۱۱

Phone

+98 61 3332 5431

Email

Pezhmanalavinejad@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Ahvaz University of Medical Sciences

Full name of responsible person

Abdollah Rafiei

Street address

Central Building, Ahvaz Jundishapur University of Medical Sciences, Golestan Boulevard, P.O. Box 159, Ahvaz, Khuzestan, Iran.

City

Ahvaz

Province

Khouzestan

Postal code

۶۱۹۳۶۷۳۱۱۱

Phone

+98 61 3332 5431

Email

Rafiei-a@ajums.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Ahvaz 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

Ahvaz University of Medical Sciences

Full name of responsible person

Pezhman Alavinejad

Position

Associate Professor of Gastroenterology and Hepatology, Ahvaz Jundishapur University of Medical Scie

Latest degree

Specialist

Other areas of specialty/work

Internal Medicine

Street address

Ahvaz Jundishapur University of Medical Sciences, Golestan Blvd

City

Ahvaz

Province

Khouzestan

Postal code

۶۱۹۳۶۷۳۱۱۱

Phone

+98 61 3332 5431

Fax

Email

alavinejad-p@ajums.ac.ir

Person responsible for scientific inquiries

Contact

Name of organization / entity

Ahvaz University of Medical Sciences

Full name of responsible person

Pezhman Alavinejad

Position

Associate Professor of Gastroenterology and Hepatology, Ahvaz Jundishapur University of Medical Scie

Latest degree

Specialist

Other areas of specialty/work

Internal Medicine

Street address

Ahvaz Jundishapur University of Medical Sciences, Golestan Blvd.

City

Ahvaz

Province

Khouzestan

Postal code

۶۱۹۳۶۷۳۱۱۱

Phone

+98 61 3332 5431

Fax

Email

alavinejad-p@ajums.ac.ir

Person responsible for updating data

Contact

Name of organization / entity

Ahvaz University of Medical Sciences

Full name of responsible person

Pezhman Alavinejad

Position

Associate Professor of Gastroenterology and Hepatology, Ahvaz Jundishapur University of Medical Scie

Latest degree

Specialist

Other areas of specialty/work

Internal Medicine

Street address

Ahvaz Jundishapur University of Medical Sciences, Golestan Blvd.

City

Ahvaz

Province

Khouzestan

Postal code

۶۱۹۳۶۷۳۱۱۱

Phone

+98 61 3332 5431

Fax

Email

alavinejad-p@ajums.ac.ir

Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

No additional information is 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

No - There is not a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available