

Clinical Trial Protocol

Iranian Registry of Clinical Trials

11 Sep 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)

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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 m² 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

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

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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: $FIB-4 = (Age \times AST) / (Platelet\ count \times \sqrt{ALT})$. 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

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Sponsors / Funding sources**1****Sponsor****Name of organization / entity**

Ahvaz University of Medical Sciences

Full name of responsible person

Abdollah Rafiei

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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

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

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Person responsible for updating data

Contact

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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