Clinical Trial Protocol
Iranian Registry of Clinical Trials

13 Jul 2026

Evaluation of the effect of Milk Thistle in the prevention of anti-tuberculosis drugs-induced hepatotoxicity: A randomized controlled clinical trial

Protocol summary

Study aim

Recommendation for Use of the Extract of Milk Thistle (Containing Silymarin) in Patients Receiving Anti-Tuberculosis Drugs to Reduce the Risk of Hepatotoxicity, If Positive Results Were Observed

Design

Randomized, Parallel Group, Controlled Clinical Trial

Settings and conduct

This study was performed in Al-Zahra hospital affiliated to Isfahan University of Medical Sciences. Patients who had inclusion criteria were randomly assigned to two groups of drugs and control. All patients received standard anti-TB regimen according to the national protocol. The patients of drug used liver support capsule, twice daily for 2 weeks, while patients in the control group received the standard anti-TB drugs alone. All patients were measured and recorded ALT, AST, ALP and serum bilirubin at the beginning of the study and before the start of interventions and then weekly for up to 2 weeks.

Participants/Inclusion and exclusion criteria

Age ≥ 18 years old; pulmonary or outer pulmonary tuberculosis; taking first line of anti-TB drugs (Isoniazid, Rifampin and Pyrazinamide); don't take first line of anti-TB drugs for the last 8 weeks; don't use of known hepatotoxic drugs (e.g., sodium valproate, methotrexate, sulfonamides); not taking acetaminophen persistently; not using systemic glucocorticoids simultaneously; don't use supplements containing Silymarin in the last 4 weeks; not using alcohol; not use antioxidants (such as vitamins E,C); lack of chronic liver or kidney disease; and non pregnant; non lactating women.

Intervention groups

Drug group: taking capsule of dry extract of Milk Thistle Seed (Liver Support) Containing 150 mg of Silymarin, twice daily from the Onset of Anti-Tuberculosis Drugs
Control group: taking Anti-Tuberculosis drugs alone

Main outcome variables

Serum Levels of Liver Enzymes (ALT, AST, ALP) and Total and Direct Bilirubin; The Number of Cases of Acute Liver Injury

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20150721023282N9**
Registration date: **2020-03-30, 1399/01/11**
Registration timing: **retrospective**

Last update: **2020-03-30, 1399/01/11**
Update count: **0**

Registration date

2020-03-30, 1399/01/11

Registrant information

Name

Rasool Soltani

Name of organization / entity

Isfahan University of Medical Sciences

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2017-03-21, 1396/01/01

Expected recruitment end date

2018-08-22, 1397/05/31

Actual recruitment start date
2017-03-21, 1396/01/01
Actual recruitment end date
2018-08-22, 1397/05/31
Trial completion date
2018-09-22, 1397/06/31

Scientific title
Evaluation of the effect of Milk Thistle in the prevention of anti-tuberculosis drugs-induced hepatotoxicity: A randomized controlled clinical trial

Public title
Evaluation of the effect of Milk Thistle in the prevention of anti-tuberculosis drugs-induced hepatotoxicity: A randomized controlled clinical trial
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Age ≥ 18 years Pulmonary or outer pulmonary tuberculosis Taking first line of anti-TB drugs (Isoniazid, Rifampin and Pyrazinamide) No use of first-line anti-TB drugs within the last 8 weeks
Exclusion criteria:
Use of known hepatotoxic drugs (e.g., sodium valproate, methotrexate, sulfonamides) Regular use of acetaminophen Use of systemic glucocorticoids Use of Silymarin-containing supplements within the last 4 weeks Alcoholism Use of antioxidant agents (e.g., vitamins E and C) Having chronic hepatic or renal disease Pregnancy Lactation
Age
From **18 years** old
Gender
Both

Phase
N/A
Groups that have been masked

- Participant
- Care provider
- Investigator

Sample size
Target sample size: **53**
Actual sample size reached: **37**
Randomization (investigator's opinion)
Randomized
Randomization description
Simple randomization was used for patients' allocation to the groups. For this, an online random number generator was used (available at: https://www.random.org/sequences) so that even and odd numbers were considered for drug and control groups, respectively.
Blinding (investigator's opinion)
Double blinded
Blinding description
This study is a double-blind clinical trial (participant, researcher).
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethical Committee of Isfahan University of Medical Sciences
Street address
Isfahan University of Medical Sciences, Hezar-Jerib Ave.
City
Isfahan
Province
Isfehan
Postal code
8174673461
Approval date
2016-05-29, 1395/03/09
Ethics committee reference number
IR.MUI.REC.1395.3.930

Health conditions studied

1

Description of health condition studied
Anti-tuberculosis drugs-induced hepatotoxicity
ICD-10 code
K71
ICD-10 code description
Toxic liver disease

Primary outcomes

1

Description
Serum level of ALT
Timepoint
Before the intervention and 7 and 14 days after initiation of intervention
Method of measurement
blood test

2

Description
serum level of AST
Timepoint
Before the intervention and 7 and 14 days after initiation of intervention
Method of measurement
blood test

3

Description
serum level of ALP
Timepoint
Before the intervention and 7 and 14 days after initiation of intervention
Method of measurement
blood test

4

Description
serum level of bilirubin(direct/total)
Timepoint
Before the intervention and 7 and 14 days after initiation of intervention
Method of measurement
blood test

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: 150-mg oral capsules of Milk Thistle, twice daily, for 2 weeks with standard 4-drug anti-TB therapeutic regimen including isoniazid 5 mg/kg + rifampin 10 mg/kg + ethambutol 15 mg/kg + pyrazinamide 25 mg/kg
Category
Prevention

2

Description
Control group: standard 4-drug anti-TB therapeutic regimen including isoniazid 5 mg/kg + rifampin 10 mg/kg + ethambutol 15 mg/kg + pyrazinamide 25 mg/kg
Category
N/A

Recruitment centers

1

Recruitment center
Name of recruitment center
Al-Zahra Hospital
Full name of responsible person
Rasool Soltani
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Soffeh Ave.
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8174675731
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Esfahan University of Medical Sciences
Full name of responsible person
Shagayegh Haghjooy Javanmard
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+98 31 3668 8138
Email
sh_haghjoo@med.mui.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Esfahan 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
Esfahan University of Medical Sciences
Full name of responsible person
Rasool Soltani
Position
Associate professor
Latest degree
Specialist
Other areas of specialty/work
Medical Pharmacy
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Person responsible for updating data

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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
Confidentiality of patients data
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