

Clinical Trial Protocol

Iranian Registry of Clinical Trials

31 May 2026

Investigating the efficacy of simultaneous administration of N-acetylcysteine and Silymarin compared to N-acetylcysteine alone in liver function improvement in patients with drug-induced liver injury-clinical trial

Protocol summary

Study aim

Investigating the efficacy of simultaneous administration of N-acetylcysteine and silymarin compared to N-acetylcysteine alone in liver function improvement in patients with drug-induced liver injury

Design

A clinical trial with a control group and an intervention group, with parallel groups, not blinded, randomized by random block allocation method with Stata software, phase 3 on 130 patients.

Settings and conduct

Kosar Hospital in Karaj, 130 patients will randomly be assigned to intervention group (treated with Silymarin and NAC) and control group (treated with NAC). The study is not blinded.

Participants/Inclusion and exclusion criteria

Inclusion criteria: All women and men between the ages of 12 and 80 who have laboratory complications of liver damage caused by drug poisoning in the form of an increase in liver enzymes AST, ALT more than 5 times the upper limit of normal regardless of the presence of clinical symptoms or an increase in AST, ALT, ALKP to twice the upper limit of normal along with total Bilirubin above 2 mg/dL or increase of AST, ALT to the extent of three times the upper limit of normal despite clinical symptoms will be included in the study. Exclusion criteria: 1. Patients with a history of underlying diseases of the Liver and Biliary tract

Intervention groups

Control group: Treated with NAC at a dose of 300mg/kg/day divided every 8 hours from hospitalization until discharge. Intervention group: treated with silymarin (Livergol) at a dose of 70-140 mg every 6 to 8 hours plus NAC at a dose of 300 mg/kg/day divided every 8 hours from admission to discharge

Main outcome variables

Serum levels of AST, ALT, ALKP, Total and direct Bilirubin and clinical symptoms

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20240720062482N1**

Registration date: **2024-10-13, 1403/07/22**

Registration timing: **registered_while_recruiting**

Last update: **2024-10-13, 1403/07/22**

Update count: **0**

Registration date

2024-10-13, 1403/07/22

Registrant information

Name

Ava Doosti

Name of organization / entity

Alborz University of Medical Sciences

Country

Iran (Islamic Republic of)

Phone

+98 21 4400 7481

Email address

ava.doosti1378@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2024-08-22, 1403/06/01

Expected recruitment end date

2024-10-21, 1403/07/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Investigating the efficacy of simultaneous administration of N-acetylcysteine and Silymarin compared to N-acetylcysteine alone in liver function improvement in patients with drug-induced liver injury-clinical trial

Public title

Investigating the efficacy of simultaneous administration of N-acetylcysteine and Silymarin in liver function improvement in patients with drug-induced liver injury

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

All women and men between the ages of 12 and 80 who have laboratory complications of Liver damage caused by Drug poisoning in the form of an increase in Liver enzymes AST, ALT more than 5 times the upper limit of normal, regardless of the presence of clinical symptoms, will be included in the study. All women and men between the ages of 12 and 80 who have laboratory complications of Liver damage caused by drug poisoning in the form of an increase in AST, ALT, and ALKP to twice the upper limit of normal along with total Bilirubin above 2 mg/dl will be included in the study. All women and men between the ages of 12 and 80 who have laboratory complications of Liver damage caused by drug poisoning in the form of an increase in AST, ALT to three times the upper limit of normal despite clinical symptoms (such as loss of appetite, fatigue, weakness and lethargy, nausea and vomiting, abdominal pain preferably epigastric and RUQ, itching, yellow skin or sclera, colorless stool or dark urine) will be included in the study. Since Liver damage caused by drug poisoning may not necessarily have significant and clear clinical symptoms, the preferred entry criterion will be the elevation of Liver enzymes, which will determine the importance of clinical symptoms in decision making.

Exclusion criteria:

Patients with a history of underlying diseases of the Liver and Bile ducts (such as Alcoholic hepatitis, Autoimmune hepatitis, Non-alcoholic fatty liver disease (NAFLD), Viral hepatitis including Hepatitis B virus or Hepatitis C virus).

Age

From **12 years** old to **80 years** old

Gender

Both

Phase

3

Groups that have been masked

No information

Sample size

Target sample size: **130**

Randomization (investigator's opinion)

Randomized

Randomization description

A total of 130 patients with drug-induced liver injury will be randomly assigned to 2 treatment groups using block randomization. Randomization will be performed in the STATA software using the ralloc command in blocks of sizes 6 and 8. Patients will be randomly allocated to the intervention and control groups (A and B). Based on the mentioned method, the allocation order of individuals to the intervention and control groups will be carried out randomly using STATA software. Using the complete command below, randomization of 130 samples into two groups in random blocks of sizes 6 and 8 will be performed. ralloc block size treat, nsubj(130) seed() sav(mytrial) idvar(study_ID) init(6) osize(2) noequal

Blinding (investigator's opinion)

Not blinded

Blinding description**Placebo**

Not used

Assignment

Parallel

Other design features**Secondary Ids**

empty

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

Ethics committee of Alborz University of Medical Sciences

Street address

Alborz University of Medical sciences, North Taleghani Blvd, Taleghani Sq.

City

Karaj

Province

Alborz

Postal code

3147734568

Approval date

2024-07-10, 1403/04/20

Ethics committee reference number

IR.ABZUMS.REC.1403.098

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

Drug-induced Liver injury

ICD-10 code

T96

ICD-10 code description

Sequelae of poisoning by drugs, medicaments and biological substances

Primary outcomes

1

Description

Serum levels of Aspartate aminotransferase(AST)

Timepoint

At the beginning of hospitalization and then daily until discharge from the hospital

Method of measurement

Lab test results in the patient's hospital file

2

Description

Serum levels of Alanine aminotransferase(ALT)

Timepoint

At the beginning of hospitalization and then daily until discharge from the hospital

Method of measurement

Lab test results in the patient's hospital file

3

Description

Serum levels of Alkaline phosphatase(ALP)

Timepoint

At the beginning of hospitalization and then daily until discharge from the hospital

Method of measurement

Lab test results in the patient's hospital file

4

Description

Serum levels of Total Bilirubin

Timepoint

At the beginning of hospitalization and then daily until discharge from the hospital

Method of measurement

Lab test results in the patient's hospital file

5

Description

Serum levels of Direct Bilirubin

Timepoint

At the beginning of hospitalization and then daily until discharge from the hospital

Method of measurement

Lab test results in the patient's hospital file

Secondary outcomes

1

Description

Clinical symptoms caused by hepatotoxicity (Loss of appetite, fatigue, weakness and lethargy, nausea and vomiting, abdominal pain preferably in the Epigastrium and RUQ, itching, yellowing of the skin or sclera, colorless stool or dark urine)

Timepoint

At the beginning of hospitalization and then during daily visits of patient until discharge from the hospital

Method of measurement

By taking a history from the patient and asking the patient about the mentioned symptoms and during clinical examinations on daily visits

Intervention groups

1

Description

Control group: The patients of this group will be treated with N-acetylcysteine (NAC) at a dose of 300mg/kg/day divided every 8 hours. This treatment will start when the patient is hospitalized and will continue until the patient is discharged from the hospital. The group will be monitored daily for clinical symptoms and liver profile tests, and the information obtained will be recorded in the checklists.

Category

Treatment - Drugs

2

Description

Intervention group: Patients in this group will be treated with Silymarin (Livertgol) at a dose of 70-140 mg every 6 to 8 hours plus N-acetylcysteine (NAC) at a dose of 300 mg/kg/day divided every 8 hours. This treatment will start when the patient is hospitalized and will continue until the patient is discharged from the hospital. The patients of this group will be monitored daily for clinical symptoms and liver profile tests, and the information obtained will be recorded in the checklists.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Kosar Hospital

Full name of responsible person

Dr.Lida Shojaei

Street address

Kharazmi Blvd, Hesarak Quarter.

City

Karaj

Province

Alborz

Postal code

3197914795

Phone

+98 26 3428 4761

Email

kosarhp@abzums.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Karaj University of Medical Sciences

Full name of responsible person

Dr.Lida Shojaei

Street address

Alborz University of Medical sciences, North Taleghani Blvd, Taleghani Sq.

City

Karaj

Province

Alborz

Postal code

3147734568

Phone

+98 26 3419 8000

Email

l.shojaei52@gmail.com

Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Karaj 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**

Karaj University of Medical Sciences

Full name of responsible person

Ava Doosti

Position

Medical Student(Intern)

Latest degree

Medical doctor

Other areas of specialty/work

General Practitioner

Street address

Unit 20, No.7, before the 8th Alley, Hasan Abad St, East Ferdous Blvd

City

Tehran

Province

Tehran

Postal code

1481838964

Phone

+98 21 4400 7481

Fax**Email**

Ava.doosti1378@gmail.com

Person responsible for scientific inquiries

Contact**Name of organization / entity**

Karaj University of Medical Sciences

Full name of responsible person

Dr.Lida Shojaei

Position

Assistant professor

Latest degree

Subspecialist

Other areas of specialty/work

Forensic Medicine

Street address

Alborz University of Medical Sciences, North Taleghani Blvd, Taleghani Sq.

City

Karaj

Province

Alborz

Postal code

3147734568

Phone

+98 26 3419 8000

Email

l.shojaei52@gmail.com

Person responsible for updating data

Contact**Name of organization / entity**

Karaj University of Medical Sciences

Full name of responsible person

Ava Doosti

Position

Medical Student(Intern)

Latest degree

Medical doctor

Other areas of specialty/work

General Practitioner

Street address

Unit 20, No.7, before the 8th Alley, Hasan Abad St, East Ferdous Blvd

City

Tehran

Province

Tehran

Postal code

1481838964

Phone

+98 21 4400 7481

Fax**Email**

Ava.doosti1378@gmail.com

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

Undecided - It is not yet known if there will be 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

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

Analytic Code

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

Data Dictionary

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