Clinical Trial Protocol
Iranian Registry of Clinical Trials

21 Jul 2026

Evaluation of oral silymarin formulation efficacy in prevention of hepatotoxicity induced by doxorubicin containing chemotherapy regimen in patients with non-metastatic breast cancer

Protocol summary

Study aim

Evaluation of oral silymarin formulation efficacy in prevention of hepatotoxicity induced by doxorubicin containing chemotherapy regimen in patients with non-metastatic breast cancer

Design

This is a randomized triple-blind, parallel group clinical trial on 50 patients with non-metastatic breast cancer (25 patients in treatment group and 25 patients in placebo group).

Settings and conduct

This study will be performed on 50 non-metastatic breast cancer patients referring to Imam Reza Hospital, Mashhad, Iran. They whether will receive 3 silymarin 140mg tablets for 4 courses in treatment group or 3 placebo tablets in placebo group.

Participants/Inclusion and exclusion criteria

Inclusion criteria: 1. Non-metastatic breast cancer undergoes chemotherapy with a regimen containing doxorubicin after a mastectomy. 2. Age between 18 to 65 years 3. Signing the informed consent by the patient Non-Inclusion criteria: 1. Viral hepatitis 2. History of allergy to silymarin or other similar compounds 3. Pregnancy or lactation 4. Liver involvement grade 2 or higher based on liver ultrasound 5. Chronic liver disease and cirrhosis (Child-Pugh B and C classes), 6. Hepatic-biliary obstruction 7. Renal failure (GFR <30 mL/min) 8. Malabsorption syndrome or GI obstruction 9- Concomitant use of hepatotoxic or antioxidant medications Exclusion criteria: 1. Changing the chemotherapy regimen 2. The patient unwillingness for medication use 3. Severe adverse drug reactions 4. Inability of the patient to swallow oral medication 5. Uncontrolled vomiting

Intervention groups

Intervention group: 420mg silymarin daily (three livergol 140mg tablets daily) during 4 courses of chemotherapy

Placebo group: three placebo tablets/day for 4 courses of chemotherapy (with same appearance of livergol tablet containing all livergol ingredients except silymarin)

Main outcome variables

liver enzymes serum level & ultrasound

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20200408046990N6**
Registration date: **2021-01-13, 1399/10/24**
Registration timing: **prospective**

Last update: **2021-01-13, 1399/10/24**
Update count: **0**

Registration date

2021-01-13, 1399/10/24

Registrant information

Name

Sepideh Elyasi

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 51 3180 1588

Email address

elyasis@mums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-01-20, 1399/11/01

Expected recruitment end date

2021-08-23, 1400/06/01

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

Scientific title
Evaluation of oral silymarin formulation efficacy in prevention of hepatotoxicity induced by doxorubicin containing chemotherapy regimen in patients with non-metastatic breast cancer

Public title
Evaluation of silymarin tablet efficacy in prevention of hepatotoxicity induced by doxorubicin containing chemotherapy regimen in patients with non-metastatic breast cancer
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
Age between 18-65 y Patients with diagnosis of non-metastatic breast cancer who will be treated by doxurobicin after mastectomy Signing the written consent
Exclusion criteria:
Viral hepatitis History of hypersensitivity to silymarin or similar compounds Pregnancy and lactation Liver involvement grade 2 or higher based on ultrasound evaluation Any kind of liver injury resulting in rise of liver enzymes or bilirubin to higher than upper limit normal Hepatobiliary obstruction Renal failure (GFR<30 mL/min) Malabsorption syndrome Concomitant use of heptotoxic agents or antioxidants
Age
From **18 years** old to **65 years** old
Gender
Female

Phase
3
Groups that have been masked

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

Sample size
Target sample size: **50**
Randomization (investigator's opinion)
Randomized
Randomization description
Patients with inclusion criteria of the study will be recruited in the intervention or the control group according the permuted block randomization (10 blocks and 3 patients in each block)
Blinding (investigator's opinion)
Triple blinded
Blinding description
The silymarin and placebo tablets (prepared by Mashhad Pharmacy School) will be packaged in boxes with same appearance and delivered to the clinician. Patients who meet the inclusion criteria are selected by clinician to be included in the study and will receive a box filled with medication or placebo respectively. Patients will be evaluated during the treatment course by the physician. Data collection and analysis will be performed by the pharmacy student and the clinical pharmacist. All of them will be unaware patients' grouping until the end of the study and data analysis.
Placebo
Used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Mashhad University of Medical Sciences
Street address
Qureshi Building, Daneshgah street
City
Mashhad
Province
Razavi Khorasan
Postal code
1394491388
Approval date
2020-12-05, 1399/09/15
Ethics committee reference number
IR.MUMS.REC.1399.527

Health conditions studied

1

Description of health condition studied
hepatotoxicity
ICD-10 code
K71.1
ICD-10 code description
Toxic liver disease with hepatic necrosis, with coma

Primary outcomes

1

Description
Serum level of hepatic transaminases, total billirubin, direct billirubin, prothrombin time, serum albumin, alkalin phosphatase
Timepoint
At the beginning of the study, 2 weeks after the beginning of study, one month after the beginning of the

study

Method of measurement

Serum level measurement by the laboratory

2

Description

Liver ultrasound to determine the stage of the fatty liver

Timepoint

At the beginning of the study, one month after the beginning of the study

Method of measurement

Ultrasound evaluation

Secondary outcomes

1

Description

Serum level of creatinine and urea

Timepoint

At the beginning of the study, 2 weeks after the beginning of study, one month after the beginning of the study

Method of measurement

Serum level measurement by the laboratory

Intervention groups

1

Description

Intervention group: Livergol 140 mg three tablets daily after meals (produced by Goldaroo company), oral, for 4 weeks

Category

Treatment - Drugs

2

Description

Control group: Placebo tablets for Livergol, three tablet daily after meals, for 4 week, oral

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Imam Reza hospital, affiliated to Mashhad University of Medical Sciences

Full name of responsible person

Sepideh Elyasi

Street address

Imam Reza Sq.

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9137913316

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Fax

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elyasis@mums.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Mashhad University of Medical Sciences

Full name of responsible person

Mohsen Tafaghodi

Street address

Faculty of Pharmacy, Ferdowsi University, Vakilabad Boulevard

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tafaghodim@mums.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Mashhad 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

Mashhad University of Medical Sciences

Full name of responsible person

Sepideh Elyasi

Position

Associate Professor

Latest degree

Specialist

Other areas of specialty/work

Medical Pharmacy

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Faculty of Pharmacy; Ferdowsi University; Vakilabad Boulevard
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Person responsible for scientific inquiries

Contact
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Mashhad University of Medical Sciences
Full name of responsible person
Sepideh Elyasi
Position
Associate Professor
Latest degree
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Other areas of specialty/work
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is 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
Yes - There is 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
No - There is not a plan to make this available
Title and more details about the data/document
The findings will be published in an article. Study protocol and statistical analysis will be used for article publication.
When the data will become available and for how long
One year after the end of the study it will be published and available in databases.
To whom data/document is available
If the funding sponsor allowed, the findings will be available for researchers, clinicians, and scientific centers.
Under which criteria data/document could be used
The other researchers can use our findings in their review articles and meta analysis.
From where data/document is obtainable
For this purpose, you can contact with Sepideh Elyasi, at Clinical Pharmacy Department, School of Pharmacy, Vakil Abad Aven., Mashhad, Iran. Email: elyasis@mums.ac.ir
What processes are involved for a request to access data/document
After receiving the query, dependent on the requested data, the scientific responsible person of the study will response to the query in coordinate with the sponsor within 2 weeks
Comments