Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

Evaluation of protective effect of nano-silymarin oral formulation on vancomycin-induced nephrotoxicity

Protocol summary

Study aim
Evaluation of the protective effect of oral nano-silymarin formulation on vancomycin-induced nephrotoxicity

Design
A Phase 3 Triple-blind Parallel Randomized Clinical trial with control group on 60 patients. https://www.sealedenvelope.com was used for randomization.

Settings and conduct
60 patients in the infectious diseases ward of Imam Reza Hospital who receive vancomycin and meet the inclusion criteria will be included in the study. These patients will be randomly divided into two equal groups of intervention and placebo. The capsules will be identified and distinguished by the number 1-60 and will be placed in the cans by the manufacturer according to the randomization list prepared, 30 patients will take the nano-silymarin capsule and others will take the placebo capsule twice a day. Patients will receive vancomycin for at least 7 days. Serum creatinine and BUN levels will measure on days 0, 3, 7, 10 and day 14 from the start of silymarin administration. In case of renal toxicity, serum creatinine levels will be checked daily. Patients, analysts and therapists will be blind.

Participants/Inclusion and exclusion criteria
Age between 18-60 y, baseline GFR higher than90 ml/min, not receiving concomitant nephrotoxic drugs, no history of allergy to silymarin, not being pregnant or breastfeeding, not taking antioxidant supplements

Intervention groups
treatment group: Nano-silymarin 70 mg (softgel sinalive 70mg) capsules prepared by Exir Nanosina Company twice a day (after breakfast and dinner) for 14 days or until vancomycin is discontinued. placebo group: Placebo capsules(without silymarin) prepared by Elixir Nanosina Company, twice a day for 14 days or until vancomycin is discontinued.

Main outcome variables
Serum creatinine and BUN levels at days 0, 3, 7 ,10 and 14; Serum levels of cystatin C on days 3 and 7

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20200408046990N9**
Registration date: **2022-04-06, 1401/01/17**
Registration timing: **registered_while_recruiting**

Last update: **2022-04-06, 1401/01/17**
Update count: **0**

Registration date
2022-04-06, 1401/01/17

Registrant information

Name
Sepideh Elyasi

Name of organization / entity

Country
Iran (Islamic Republic of)

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+98 51 3180 1588

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elyasis@mums.ac.ir

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2021-12-20, 1400/09/29

Expected recruitment end date
2023-12-20, 1402/09/29

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date

empty

Scientific title
Evaluation of protective effect of nano-silymarin oral formulation on vancomycin-induced nephrotoxicity

Public title
Protective effect of oral nano-silymarin on vancomycin-induced nephrotoxicity

Purpose
Prevention

Inclusion/Exclusion criteria

Inclusion criteria:
Age between 18 to 60 Take vancomycin at a dose of 15-20 mg / kg two to three times a day for at least one week Signing a written consent by the patient Creatinine clearance greater than 90 ml/min based on Cockcroft-Gault formula

Exclusion criteria:
Underlying renal impairment such as glomerulonephritis, polycystic kidney disease, renal stone, interstitial nephritis, renal artery stenosis and renal carcinoma Receive nephrotoxic drugs such as aminoglycosides, amphotericin B, cyclosporine, tacrolimus and furosemide, etc. simultaneously History of allergy to products containing silymarin History of acute kidney injury Pregnancy and lactation Consumption of vitamin and herbal antioxidant supplements such as vitamins C and E or curcumin and ...

Age
From **18 years** old to **60 years** old

Gender
Both

Phase
3

Groups that have been masked

- Participant
- Care provider
- Investigator
- Data analyser

Sample size
Target sample size: **60**

Randomization (investigator's opinion)
Randomized

Randomization description
Blocked randomization using website https://www.sealedenvelope.com With the explanation that each block has 4 members and the shape of the blocks can be as follows: [ABAB], [ABBA, [AABB],[BBAA],[BABA][BAAB] Code A belongs to the intervention group and code B belongs to the control group. the mentioned website selects 15 blocks from Quadruple blocks and finally 60 patients will enter the study. Allocation concealment method: Use of the central service, which consists of people who work in the center and have no knowledge of the researchers and will make a secret allocation for the research. In this method, based on the blocks created in the randomization method, a code is considered for each patient, which will be provided to the researcher at the time of patient admission by a person who has no knowledge of the process of studies and statistical analysis.

Blinding (investigator's opinion)
Triple blinded

Blinding description
The capsules will be identified by the number 1-60, which are based on a random list prepared from randomization.com, belonging to the drug or placebo group, and are placed in cans by the manufacturer according to the randomization list prepared. Physicians, patients, and the person analyzing the results will remain unaware of the type of formulation until the work is completed. Patients receive one of the medicine containers with the number 1-60 from the clinical pharmacy resident, respectively. The list will be decrypted when completed. If a new drug, whether related to cancer or not is started for the patient he or she will inform the physician.

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 Science

Street address
Qureshi Building, Daneshgah street

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Mashhad

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Razavi Khorasan

Postal code
1394491388

Approval date
2021-12-05, 1400/09/14

Ethics committee reference number
IR.MUMS.REC.1400.264

Health conditions studied

1

Description of health condition studied
نفروتوکسیسیته وانکومایسین

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Incidence of vancomycin nephrotoxicity (increase of 0.3 mg/dl for two consecutive days)

Timepoint

At baseline (before intervention) and on days 3, 7, 10 and day 14

Method of measurement

Serum creatinine level is measured by Jaffe method

2

Description

Serum creatinine and BUN levels

Timepoint

At baseline (before intervention) and on days 3, 7, 10 and day 14

Method of measurement

Serum creatinine level is measured by Jaffe method

3

Description

Serum cystatin C levels

Timepoint

Serum levels of cystatin C on days 3 and 7

Method of measurement

turbidimetry method

Secondary outcomes

1

Description

Time of onset of nephrotoxicity

Timepoint

Days 0, 3, 7, 10, 14, 21 after starting vancomycin

Method of measurement

For nephrotoxicity, serum creatinine level is measured by Jaffe method and serum cystatin C level is measured by turbidometry method.

2

Description

Duration of hospitalization

Timepoint

Daily during treatment

Method of measurement

clinical evaluation of the physician will be performed during treatment

3

Description

Occurrence of other side effects of vancomycin including Red Man syndrome and hematological complications, etc., as well as occurrence of silymarin side effects such as gastrointestinal complications

Timepoint

Daily during treatment

Method of measurement

For blood and gastrointestinal complications, CBC test and clinical evaluation of the physician will be performed during treatment

Intervention groups

1

Description

Intervention group: silymarin softgel prepared by Exir nano Sina Inc. Company twice a day (after breakfast and dinner) for 14 days or until vancomycin is discontinued (There is no routine preventive measure).

Category

Prevention

2

Description

Control group: Placebo with the same appearance prepared by Exir nano Sina Inc. thrice a day (after breakfast and dinner) for 14 days or until vancomycin is discontinued. (There is no routine preventive measure).

Category

Prevention

Recruitment centers

1

Recruitment center

Name of recruitment center

Imam Reza Hospital

Full name of responsible person

Sepideh Elyasi

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School of Pharmacy, Ferdowsi University campus, Vakil Abad Blvd., Mashhad

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

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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
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
Vahid Soleimani

Position
Clinical Pharmacy Resident

Latest degree
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Medical Pharmacy

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Person responsible for updating data

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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