Clinical Trial Protocol
Iranian Registry of Clinical Trials

17 Sep 2026

Bioequivalence study of Rivaroxaban 20mg tablet manufactured by Darou Darman Arang versus originator brand in healthy volunteers in the fasted condition

Protocol summary

Study aim
Bioequivalence Study of Rivaroxaban 20 mg tablet (Areleto)manufactured by Darou Darman Arang company versus originator brand (Xarelto) manufactured by Bayer

Design
Bioequivalence study, crossover, single-blinded, 24 healthy volunteers. Simple randomization was used for randomization

Settings and conduct
The study is a single-blinded, cross-over and fasting, and on two series of healthy volunteers. The study will be done in two periods (72h). The interval between these two periods is a week. In the first round of the study, the candidates divide into two groups. the first group receives a test tablet and the second group receives a brand tablet. Blood samples are collected immediately before and after drug administration by volunteers. Then, drug extraction is done and samples are ready for analysis. These steps are performed in Radin laboratory in Tabriz

Participants/Inclusion and exclusion criteria
Inclusion criteria: General Health (Liver, Heart, and Kidney); Body Mass Index (18-28); Informed consent; age (18-55 years old). Exclusion criteria: smoking; history of cardiovascular disease; history of liver and kidney disease; alcohol and drug addiction; history of allergy to Rivaroxaban.

Intervention groups
Intervention group 1: Xarelto 20mg tablet as a reference
Intervention group 2: Areleto 20 mg tablet as a test

Main outcome variables
Maximum drug concentration; time to reach maximum drug concentration; half-life of drug

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20200623047902N28**
Registration date: **2023-03-19, 1401/12/28**
Registration timing: **prospective**

Last update: **2023-03-19, 1401/12/28**
Update count: **0**

Registration date
2023-03-19, 1401/12/28

Registrant information

Name
Elham Ghasemian

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 21 6696 5196

Email address
ghasemian@zistdaru.ir

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2023-05-05, 1402/02/15

Expected recruitment end date
2024-03-18, 1402/12/28

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Bioequivalence study of Rivaroxaban 20mg tablet

manufactured by Darou Darman Arang versus originator brand in healthy volunteers in the fasted condition

Public title
Bioequivalence study of Rivaroxaban 20mg tablet
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
General Health (Liver, Heart, and Kidney) Body Mass Index (18-28) Informed consent Age (18-55 years old)
Exclusion criteria:
Smoking History of cardiovascular disease History of liver and kidney disease Alcohol and drug addiction History of allergy to Rivaroxaban
Age
From **18 years** old to **55 years** old
Gender
Both

Phase
Bioequivalence
Groups that have been masked

- Participant

Sample size
Target sample size: **24**
Randomization (investigator's opinion)
Randomized
Randomization description
People in the mentioned age group are invited to participate through the advertisement. People are then checked for health and healthy volunteers are identified. Each candidate is assigned a number from 1 to 24. The numbers are written on a plastic ball, poured into a container, and mixed. The balls are then removed randomly from the container. The first 12 no.s are considered as (first sequence: Darou Darman Arang's medicine) and the second 12 no.s are considered as (second sequence: originator brand recipient). The volunteers don't have any information about taking the test drug or brand drug
Blinding (investigator's opinion)
Single blinded
Blinding description
This study is a single-blinded clinical trial (volunteers). Darou Darman Arang's Rivaroxaban and Originator brand tablets are removed from their packaging by the executor and placed in similar and coded cans. Volunteers will not be informed about receiving the brand or test dosage form
Placebo
Not used
Assignment
Crossover
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Research Ethics Committees of Tabriz University of Medical Sciences
Street address
International Relations Office, No 2 Central Building, Tabriz University of Medical Sciences, Golgasht Street,
City
Tabriz
Province
East Azarbaijan
Postal code
5165665931
Approval date
2023-02-20, 1401/12/01
Ethics committee reference number
IR.TBZMED.REC.1401.1068

Health conditions studied

1

Description of health condition studied
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
The plasma concentration of the drug
Timepoint
Pre-dose, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 6, 8, 10, 12, 24, 48 and 72 h after drug admin
Method of measurement
Liquid Chromatography Mass-Mass

Secondary outcomes

1

Description
Time to reach maximum plasma concentration
Timepoint
After intervention
Method of measurement
The time to reach the maximum drug concentration in plasma is recorded

2

Description
Extent of absorption
Timepoint
After intervention

Method of measurement
Calculation of area under curve of concentration -time

Intervention groups

1

Description
Intervention group: single dose, one oral tablet of Xaltero 20mg manufactured by Bayer, as a reference product
Category
Treatment - Drugs

2

Description
Intervention group: Single dose, one oral tablet of Altero 20 mg manufactured by Darou Darman Arang company as a test product
Category
Treatment - Drugs

Recruitment centers

1

Recruitment center
Name of recruitment center
Radin laboratory
Full name of responsible person
Javad Shokri
Street address
No.22, first floor, Azadi alley, Moalem st., Abureihan St
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Tabriz
Province
East Azarbaijan
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5154995671
Phone
+98 914 313 5843
Email
Shokri.j@gmail.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Darou Darman Arang company
Full name of responsible person
Alireza Mahbubian
Street address
Unit 1, No.1,West Saeb Tabrizi St., Sheikh Bahaei St., Molla Sadra St.
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Tehran
Province
Tehran
Postal code
1993674855
Phone
+98 21 8805 4460
Email
info@arangpharm.com
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Darou Darman Arang company
Proportion provided by this source
100
Public or private sector
Private
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Industry

Person responsible for general inquiries

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Elham Ghasemian
Position
Visiting professor
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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
These data are as secure between researchers and related industries.
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