

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

31 May 2026

### Comparison of the efficacy and safety of Atazanavir/Ritonavir plus Hydroxychloroquine regimen with Lopinavir/Ritonavir plus Hydroxychloroquine regimen in patients with moderate COVID-19, A randomized, double-blind study

#### Protocol summary

##### Study aim

Comparison of the efficacy and safety of Atazanavir/Ritonavir +HCQ with Lopinavir/Ritonavir +HCQ in patients with moderate COVID-19

##### Design

A randomized, double-blind, parallel phase 3 clinical trial is conducted on 128 patients with moderate COVID-19. Sealed envelope online software was used to randomize the allocation of treatment to the two intervention arms.

##### Settings and conduct

Patients dyspnea and O2Sat less than 94% with possibly lung CT scan evidence of moderate COVID-19 pneumonia (Involvement of a maximum of 3 or 4 lung lobes with an area less than 1/3 size of each lobe or involvement of 1 or 2 lobes with more involvement) and refer to Razi Hospital in Ghaemshahr in the 2020 epidemic, will be enrolled in the study. Researcher and final assessor are blind to the type of intervention and the allocation of treatment is under the supervision of a physician.

##### Participants/Inclusion and exclusion criteria

Inclusion criteria: Signing a written consent form; Age 18-75 years; Moderate COVID-19 Exclusion criteria: History of hospitalization due to COVID-19; Participate in any other clinical trial of COVID-19 treatment; Patients under mechanical ventilation at baseline; Sensitivity to atazanavir; Active cancer; Immune system compromised; Abnormal baseline ECG; Pregnancy and lactation; Renal failure; Severe liver failure; multi-organ failure; Concomitant use of CYP3A4 inducers

##### Intervention groups

In group A, 400 mg of hydroxychloroquine on the first day and Kaletra 2 tablets every 12 hours for 5 days, and in group B, hydroxychloroquine 400 mg single dose on the first day and atazanavir/ritonavir daily were administered for at least 5 days.

##### Main outcome variables

Primary Outcome: Recovery within 10 days of starting treatment  
Secondary outcomes: Improvement within 14 days after starting treatment; Survival rate; Number of days hospitalized; Number of days of intubated; Number of days in the ICU

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20200328046886N2**

Registration date: **2020-10-12, 1399/07/21**

Registration timing: **registered\_while\_recruiting**

Last update: **2020-10-12, 1399/07/21**

Update count: **0**

##### Registration date

2020-10-12, 1399/07/21

##### Registrant information

##### Name

Hamideh Abbaspour

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 11 4203 1035

##### Email address

dr.abbaspour1@yahoo.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2020-08-22, 1399/06/01

**Expected recruitment end date**

2020-11-21, 1399/09/01

**Actual recruitment start date**

empty

**Actual recruitment end date**

empty

**Trial completion date**

empty

**Scientific title**

Comparison of the efficacy and safety of Atazanavir/Ritonavir plus Hydroxychloroquine regimen with Lopinavir/Ritonavir plus Hydroxychloroquine regimen in patients with moderate COVID-19, A randomized, double-blind study

**Public title**

Evaluation of the efficacy and safety of Atazanavir/Ritonavir plus Hydroxychloroquine regimen in patients with moderate COVID-19

**Purpose**

Treatment

**Inclusion/Exclusion criteria****Inclusion criteria:**

Getting out the informed consent form from all of the patients or their guardian Aged between 18 to 75 Having one of the following symptoms: Dry cough, Severe weakness or fatigue, Dyspnea, Feeling of pain and pressure on the chest, With or without fever greater than 38° C Days from onset of the symptoms equal or less than 7 Definitive diagnosis of moderate COVID-19 based on involvement of up to 3 or 4 pulmonary lobes with an area less than one-third the volume of each lobe or involvement of one or two lobes with a larger area on CT scan O2Sat<94% It is necessary to have all items 1 to 4 and at least one of items 5 and 6

**Exclusion criteria:**

History of hospitalization because of COVID-19 Participate in any other clinical trial for the treatment of COVID-19 Patients under mechanical ventilation at the baseline Bradycardia Sensitivity to Atazanavir Active cancer Immune deficiency or immune compromised Baseline abnormal ECG Pregnancy and lactation Renal impairment (CLcr<50 mL/min) Severe hepatic impairment (Child-pough C) Multi organ failure Concomitant use of rifampin, carbamazepine, phenytoin

**Age**From **18 years** old to **75 years** old**Gender**

Both

**Phase**

3

**Groups that have been masked**

- Participant
- Investigator
- Outcome assessor

**Sample size**Target sample size: **120****Randomization (investigator's opinion)**

Randomized

**Randomization description**

Before randomization, the effect of confounding factors on the two treatment arms was adjusted. Sealed envelope online software was used to randomize the treatment assignment to the two treatment arms A and B (Keltra/ hydroxychloroquine diet and atazanavir/ritonavir/ hydroxychloroquine diet, respectively) and thus 120 patients were divided into 30 quadri blocks.

**Blinding (investigator's opinion)**

Double blinded

**Blinding description**

To eliminate Confounding by indication as well as Confounding by severity, the investigator (clinical pharmacy assistant) and patients will be blind to the type of treatment. The treatment will be assigned in accordance with the above block randomization under the supervision of a physician.

**Placebo**

Not used

**Assignment**

Parallel

**Other design features****Secondary Ids**

empty

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

Research Ethics Committee of Mazandaran University of Medical Sciences

**Street address**

Imam Square, Joybar Three Ways, the beginning of Valiasr Highway, the headquarters of Mazandaran University of Medical Sciences

**City**

Sari

**Province**

Mazandaran

**Postal code**

۴۸۱۵۷۳۳۹۷۱

**Approval date**

2020-08-12, 1399/05/22

**Ethics committee reference number**

IR.MAZUMS.REC.1399.602

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

Effectiveness and safety of Atazanavir in COVID-19

**ICD-10 code**

U07.1 COVI

**ICD-10 code description**

Virus Identified

## Primary outcomes

### 1

#### Description

Recovery within 10 days of starting medication

#### Timepoint

daily during 10 days from the beginning of intervention

#### Method of measurement

Measurement of O2 saturation% by pulse oximeter and clinical signs under the supervision of the physician including (no fever - no dyspnea - no cough or improvement compared to baseline - no fatigue or improvement compared to baseline - oral intake for at least 24 hours)

## Secondary outcomes

### 1

#### Description

survival rate

#### Timepoint

daily

#### Method of measurement

By a designed checklist

### 2

#### Description

Recovery within 14 days after starting medication

#### Timepoint

daily until the day 14 after beginning of intervention

#### Method of measurement

Measurement of O2 saturation% by pulse oximeter and clinical signs under the supervision of the physician including (no fever - no dyspnea - no cough or improvement compared to baseline - no fatigue or improvement compared to baseline - oral intake for at least 24 hours)

### 3

#### Description

Number of days hospitalized

#### Timepoint

daily

#### Method of measurement

By a designed checklist

### 4

#### Description

number of days in ICU

#### Timepoint

daily

#### Method of measurement

By a designed checklist

### 5

#### Description

number of days intubated

#### Timepoint

daily

#### Method of measurement

By a designed checklist

## Intervention groups

### 1

#### Description

Intervention group: Hydroxychloroquine 400 mg single dose on the first day with atazanavir/ritonavir 100/300 mg daily (2 serving which one contains placebo) for at least 5 days is administered. Atazanavir Considerations: If the patient is receiving PPIs, an interval of at least 12 hours after PPIs and at least 2 hours after H2 blocker should be considered. Take the medicine after or with a meal. Drug interactions with atazanavir including the concomitant use of statins, CYP3A4 inducers, or inhibitors should be considered to dose adjustment.

#### Category

Treatment - Drugs

### 2

#### Description

Intervention group: Hydroxychloroquine 400 mg single dose on the first day with Kaletra (Lopinavir/Ritonavir) (50/200) 2 tablets every 12 hours for at least 5 days is administered.

#### Category

Treatment - Drugs

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Razi hospital

##### Full name of responsible person

Hamideh Abbaspour kasgari

##### Street address

Yusef Reza Ave.

##### City

Qaemshahr

##### Province

Mazandaran

##### Postal code

4565686143

##### Phone

+98 11 4221 8018

##### Fax

+98 11 4221 8011

##### Email

razi-ghh@mazums.ac.ir

##### Web page address

<https://razihospital.mazums.ac.ir/>

## Sponsors / Funding sources

## 1

### Sponsor

**Name of organization / entity**

Mazandaran University of Medical Sciences

**Full name of responsible person**

Research and technology department

**Street address**

Imam Square, Joybar Three Ways, the beginning of Valiasr Highway, the headquarters of Mazandaran University of Medical Sciences

**City**

Sari

**Province**

Mazandaran

**Postal code**

4815733971

**Phone**

+98 11 3304 4000

**Email**

publicrel@mazums.ac.ir

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

Yes

**Title of funding source**

Mazandaran 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**

Mazandaran University of Medical Sciences

**Full name of responsible person**

Hamideh Abbaspour Kasgari

**Position**

Associate professor

**Latest degree**

Specialist

**Other areas of specialty/work**

Medical Pharmacy

**Street address**

Faculty of pharmacy, Payambar Azam academic complex, 18 km of Khazar Abad Ave, Sari

**City**

Sari

**Province**

Mazandaran

**Postal code**

4763947444

**Phone**

+98 11 4203 1035

**Email**

dr.abbaspour1@yahoo.com

### Person responsible for scientific inquiries

**Contact****Name of organization / entity**

Mazandaran University of Medical Sciences

**Full name of responsible person**

Hamideh Abbaspour Kasgari

**Position**

Associate professor

**Latest degree**

Specialist

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**Web page address**

### Person responsible for updating data

**Contact****Name of organization / entity**

Mazandaran University of Medical Sciences

**Full name of responsible person**

Hamideh Abbaspour Kasgari

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dr.abbaspour1@yahoo.com

## Sharing plan

### Deidentified Individual Participant Data Set (IPD)

Yes - There is a plan to make this available

### Study Protocol

Yes - There is a plan to make this available

### Statistical Analysis Plan

Yes - There is a plan to make this available

### Informed Consent Form

Yes - There is a plan to make this available

### Clinical Study Report

Yes - There is a plan to make this available

### Analytic Code

Yes - There is a plan to make this available

### Data Dictionary

Yes - There is a plan to make this available

### Title and more details about the data/document

All collected deidentified IPD

### When the data will become available and for how long

Starting 1 month after publication

### To whom data/document is available

Researchers working in academic and scientific institutions

### Under which criteria data/document could be used

In situations which the researchers have expressed their willing

### From where data/document is obtainable

Email address

### What processes are involved for a request to access data/document

In a short time after request, will be available with email

### Comments