

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

26 Jun 2026

### **Determining the effect of saffron extract on the level of consciousness, cognitive function, and serum antioxidant capacity in patients with traumatic brain injury: A double-blind controlled randomized clinical trial**

#### **Protocol summary**

##### **Study aim**

Determining the effect of Saffron Extract on the level of consciousness, cognitive function and serum antioxidant capacity in patients with traumatic brain injury

##### **Design**

This study is a double-blind controlled randomized clinical trial that is conducted in parallel mode. The number of samples was calculated at 21 people in each group.

##### **Settings and conduct**

The research setting is the Intensive Care Unit and Neurosurgery Center of Imam Reza Hospital affiliated with Tabriz University of Medical Sciences.

##### **Participants/Inclusion and exclusion criteria**

Inclusion criteria: Hospitalization for fewer than 3 days, age range between 18 and 65 years, patients with moderate to severe traumatic brain injury based on GCS index (9-15), no record of delirium, dementia, and hospitalization in psychiatric hospitals or centers, There is no record of active bleeding or coagulation disorders or allergies to saffron. Exclusion criteria: Children and elderly with traumatic brain injury, patients with severe traumatic brain injury, any record of non-traumatic cerebral hemorrhage, and decreased level of consciousness due to metabolic disorders.

##### **Intervention groups**

Patients in the first intervention group are given saffron hydroalcoholic extract syrup (100 mg per day) for 10 days. Patients in the second intervention group receive a hydroalcoholic extract of saffron along with rose water and sugar, at a dose of 100 milligrams of saffron per day, for 10 days.

##### **Main outcome variables**

Consciousness level and cognitive function of patients with traumatic brain injury

#### **General information**

##### **Reason for update**

Because patients with mild traumatic brain injury have a short hospital stay and it was not possible to perform the intervention for 10 days, these patients were excluded from the inclusion criteria of the study and patients with moderate to severe injury according to the Glasgow Coma Scale (GCS = 3-12) were included in the study. Also, due to the low prevalence of patients with traumatic brain injury in Torbat Heydariyeh, the location of the study was changed to Tabriz due to the larger number of patients and greater cooperation in the research environment.

##### **Acronym**

##### **IRCT registration information**

IRCT registration number: **IRCT20131204015649N5**  
Registration date: **2023-05-18, 1402/02/28**  
Registration timing: **prospective**

Last update: **2025-09-05, 1404/06/14**

Update count: **1**

##### **Registration date**

2023-05-18, 1402/02/28

##### **Registrant information**

##### **Name**

Mohammad Eghbali

##### **Name of organization / entity**

Torbat Heydariyeh University of Medical Sciences

##### **Country**

Iran (Islamic Republic of)

##### **Phone**

+98 51 5242 1257

##### **Email address**

m-eghbali@alumnus.tums.ac.ir

##### **Recruitment status**

**Recruitment complete**

## Funding source

### Expected recruitment start date

2024-02-01, 1402/11/12

### Expected recruitment end date

2024-11-01, 1403/08/11

### Actual recruitment start date

2024-02-01, 1402/11/12

### Actual recruitment end date

2024-11-01, 1403/08/11

### Trial completion date

2025-11-22, 1404/09/01

## Scientific title

Determining the effect of saffron extract on the level of consciousness, cognitive function, and serum antioxidant capacity in patients with traumatic brain injury: A double-blind controlled randomized clinical trial

## Public title

Effectiveness of saffron extract on the level of consciousness, cognitive function, and serum antioxidant capacity in patients with traumatic brain injury

## Purpose

Supportive

## Inclusion/Exclusion criteria

### Inclusion criteria:

Hospitalization for fewer than 3 days Age range between 18 and 65 years Patients with moderate to severe traumatic brain injury based on GCS index (3-12) No record of delirium, dementia, and hospitalization in psychiatric hospitals or centers No record of active bleeding or coagulation disorders, No record of allergies to saffron.

### Exclusion criteria:

Children and elderly with traumatic brain injury Patients with severe traumatic brain injury Any record of non-traumatic cerebral hemorrhage Decreased level of consciousness due to metabolic disorders

## Age

From **18 years** old to **65 years** old

## Gender

Both

## Phase

N/A

## Groups that have been masked

- Participant
- Care provider
- Outcome assessor
- Data analyser

## Sample size

Target sample size: **63**

Actual sample size reached: **63**

## Randomization (investigator's opinion)

Randomized

## Randomization description

Randomized block design (based on triple block size) was used for randomization. The random sequence was proposed by a statistical expert; then, appropriate software was employed accordingly. Overall, 21 blocks of three were prepared, and then the samples were

assigned to three groups

## Blinding (investigator's opinion)

Double blinded

## Blinding description

In this study, the corresponding researcher produces syrups containing saffron extract and identical placebo in similar cans. These cans are labeled as 1, 2, and 3. Thus, none of the participants, university researchers, hospital personnel, data collectors, or data analysts was informed whether the cans contain saffron or the placebo

## Placebo

Used

## Assignment

Parallel

## Other design features

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Research Ethics Committees of School of Medicine-  
Tehran University of Medical Sciences

##### Street address

Secretariat of Ethics Committee in Biomedical  
Research, University of Tehran, Keshavarz Blvd.,  
Intersection of Quds St., Central Building, Tehran  
University of Medical Sciences, 6th Floor

##### City

Tehran

##### Province

Tehran

##### Postal code

1417653761

#### Approval date

2023-04-11, 1402/01/22

#### Ethics committee reference number

IR.TUMS.MEDICINE.REC.1402.036

## Health conditions studied

### 1

#### Description of health condition studied

Patients with traumatic brain injury

#### ICD-10 code

S06.9

#### ICD-10 code description

Unspecified intracranial injury

## Primary outcomes

### 1

#### Description

Level of consciousness

#### Timepoint

Daily for 10 consecutive days  
**Method of measurement**  
Glasgow Coma Scale

## 2

### **Description**

Cognitive Function

### **Timepoint**

Daily for 10 consecutive days

### **Method of measurement**

Rancho Los Amigos Level of Cognitive Functioning Scale

## **Secondary outcomes**

## 1

### **Description**

Total activities of serum antioxidant

### **Timepoint**

Before the intervention and after 10 days

### **Method of measurement**

The superoxide dismutase (SOD) serum activity was measured based on controlling the reduction of nitro-blue tetrazolium by the superoxide at 560 nm. The catalase (CAT) activity was determined by monitoring the initial rate of disappearance of H<sub>2</sub>O<sub>2</sub> at 240 nm. Glutathione S-transferase (GST) activity was assayed based on monitoring the formation of the thioether product of the reaction between glutathione (GSH) and 1-chloro-2, 4-dinitrobenzene at 340 nm. GSH level was performed at 412 nm by the use of 5, 5'-dithiobis 2-nitrobenzoic acid. Serum glutathione peroxidase (GPx) and glutathione reductase (GR) activities were determined based on the decrease in absorbance of NADPH at 340 nm. The total antioxidant capacity (TAC) was measured by ferric reducing/antioxidant power (FRAP) method using commercially available kit. Malondialdehyde (MDA) level, as an indicator of lipid peroxidation, was measured as a result of condensation with thiobarbituric acid at 532 nm.

## **Intervention groups**

## 1

### **Description**

Patients in the first intervention group are given saffron hydroalcoholic extract syrup (100 mg per day) for 10 days. This product will be produced by the School of Persian Medicine, Department of Traditional Pharmacy.

### **Category**

Treatment - Other

## 2

### **Description**

Patients in the second intervention group receive a hydroalcoholic extract of saffron along with rose water and sugar, at a dose of 100 milligrams of saffron per day, for 10 days. This product will be produced by the School of Persian Medicine, Department of Traditional

Pharmacy.

### **Category**

Treatment - Other

## **Recruitment centers**

## 1

### **Recruitment center**

#### **Name of recruitment center**

Intensive Care Unit and Neurosurgery departments of Imam Hossein hospital

#### **Full name of responsible person**

Mohammad Eghbali

#### **Street address**

Imam Hossein Hospital, Torbat-e-Heydariyeh, Torbat-e-Heydariyeh-Mashhad Road, 5th kilometer

#### **City**

Torbat-e Heydarieh

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Razavi Khorasan

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#### **Web page address**

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## **Sponsors / Funding sources**

## 1

### **Sponsor**

#### **Name of organization / entity**

Tehran University of Medical Sciences

#### **Full name of responsible person**

Akbar Fotouhi

#### **Street address**

6th floor, Central Building of Tehran University of Medical Sciences, Qods St., Keshavarz St., Tehran

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Tehtan

#### **Province**

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1417653761

#### **Phone**

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vcr@sina.tums.ac.ir

#### **Web page address**

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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**

Tehran 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

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## Person responsible for general inquiries

### Contact

**Name of organization / entity**  
Torbat-Heidaria University of Medical Sciences  
**Full name of responsible person**  
Mohammad Eghbali  
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Assistant Professor  
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Ph.D.  
**Other areas of specialty/work**  
Nursery  
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## Person responsible for scientific inquiries

### Contact

**Name of organization / entity**  
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**Full name of responsible person**  
Roja Rahimi  
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**Street address**  
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**City**  
Tehran

## Person responsible for updating data

### Contact

**Name of organization / entity**  
Tehran University of Medical Sciences  
**Full name of responsible person**  
Roja Rahimi  
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Professor of Traditional Pharmacy  
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rojarahimi@gmail.com  
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<http://spm.tums.ac.ir>

## 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

Currently, no decision has been made in this regard by the team

### 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