# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

07 Nov 2026

# Comparison of different medication protocols for in vitro fertilization to induce controlled ovarian stimulation on expression of Gremlin1 (GREM1), Hyaluronic acid Synthetase2 ( HAS2) and Prostaglandin synthetase2 ( PGS2) genes as markers of oocyte maturation in granulosa cells

## Protocol summary


**Summary**

Objective: Comparison of 4 protocols of ovulation induction in IVF for the expression of GREM1, HAS2 and PGS2 genes in granulosa cells as a probable determinant of oocyte maturation. Study design: The study will be performed on 200 infertile couples that need IVF with unexplained cause or male factor . The ovaries will be suppressed from the 21th day of the previous cycle and gonadotropin will be started from the 2nd day of the cycle up to the day of HCG injection using 4 methods. Group 1: will receive highly purified-human HMG, group 2: human-FSH, group 3: recombinant-FSH, group 4: human-FSH for 6 days followed by recombinant-FSH, respectively. All of the drugs will be started with the dose of 225 IU/day. The dose can be changed if needed after ultrasound scanning. Randomization will be performed according to the number of entrance of the cases in the study. HCG will be injected when follicles are mature. Estradiol level on HCG day, number of harvested Follicles and their quality, number and grade of embryos and clinical pregnancy rate will be evaluated. Granulosa cells will be separated and freezed in liquid nitrogen. The quantity of GREM1, HAS2 and PGS2 genes expression on granulose cells will be evaluated by PCR method and will be compared to the outcome measures between the four methods.


## General information

**Acronym**

**IRCT registration information**

IRCT registration number: **IRCT201201046541N2**
Registration date: **2012-02-10, 1390/11/21**
Registration timing: **registered_while_recruiting**
Last update:
Update count: **0**

**Registration date**

2012-02-10, 1390/11/21

**Registrant information**


**Name**
Bahia Namavar Jahromi
**Name of organization / entity**
Shiraz University of Medical Sciences
**Country**
Iran (Islamic Republic of)
**Phone**
+98 71 1233 2365
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**Recruitment status**

**Recruitment complete**

**Funding source**


Shiraz university of Medical Sciences, Infertility research center


**Expected recruitment start date**

2011-10-23, 1390/08/01

**Expected recruitment end date**

2016-03-19, 1394/12/29

**Actual recruitment start date**

empty

**Actual recruitment end date**

empty

**Trial completion date**

empty

**Scientific title**

Comparison of different medication protocols for in vitro fertilization to induce controlled ovarian stimulation on expression of Gremlin1 (GREM1), Hyaluronic acid Synthetase2 ( HAS2) and Prostaglandin synthetase2 (

PGS2) genes as markers of oocyte maturation in granulosa cells

**Public title**
Comparison of different medication protocols for induction of ovarian in the cycles of in vitro fertilization on expression of GREM 1, HAS2 and PGS2 genes as determinants of oocyte development
**Purpose**
Treatment
**Inclusion/Exclusion criteria**
Inclusion criteria: Infertility with male factor or with unexplained cause. Exclusion criteria: all the cases with known female factor.
**Age**
From **20 years** old to **38 years** old
**Gender**
Female

**Phase**
2
**Groups that have been masked**
*No information*
**Sample size**
Target sample size: **200**
**Randomization (investigator's opinion)**
Randomized
**Randomization description**
**Blinding (investigator's opinion)**
Single blinded
**Blinding description**
**Placebo**
Not used
**Assignment**
Parallel
**Other design features**

## Secondary Ids

empty

## Ethics committees

### 1

**Ethics committee**
**Name of ethics committee**
Ethics committee of Shiraz University of Medical Sciences
**Street address**
Shiraz University of Medical Sciences, Zand street
**City**
Shiraz
**Postal code**
**Approval date**
2011-12-19, 1390/09/28
**Ethics committee reference number**
CT-90-5874

### 2

**Ethics committee**
**Name of ethics committee**
Ethics committee of Shiraz University of Medical Sciences
**Street address**
Shiraz University of Medical Sciences , Zand Street
**City**
Shiraz
**Postal code**
**Approval date**
2011-12-19, 1390/09/28
**Ethics committee reference number**
CT-9o-5873

### 3

**Ethics committee**
**Name of ethics committee**
Ethics committee of Shiraz University of Medical Sciences
**Street address**
Shiraz University of Medical Sciences, Zand street
**City**
Shiraz
**Postal code**
**Approval date**
2011-12-18, 1390/09/27
**Ethics committee reference number**
CT-90-5875

## Health conditions studied

### 1

**Description of health condition studied**
male infertility
**ICD-10 code**
N46
**ICD-10 code description**
Male infertility

### 2

**Description of health condition studied**
Female infertility
**ICD-10 code**
N97.9
**ICD-10 code description**
Female infertility, unspecified

## Primary outcomes

### 1

**Description**
Number of oocytes
**Timepoint**
At the time of Harvesting the oocytes
**Method of measurement**
Counting the oocytes

### 2

**Description**

quality of oocytes
**Timepoint**
At the time of oocyte retrival
**Method of measurement**
based on quality grading(GV-MI-MII)

**3**

**Description**
embryo count
**Timepoint**
3 days after oocyte retrival
**Method of measurement**
microscopic evaluation

**4**

**Description**
Evaluation of expression of HAS2 Gene
**Timepoint**
after oocyte retrival
**Method of measurement**
Polymerase Chain Reaction (PCR)

**5**

**Description**
quantity of GREM1 expression
**Timepoint**
at the time of oocyte retrival
**Method of measurement**
PCR test

**6**

**Description**
Evaluation of expression of PGS2 Gene
**Timepoint**
after oocyte retrival
**Method of measurement**
Polymerase Chain Reaction (PCR)

## Secondary outcomes

empty

## Intervention groups

**1**

**Description**
group 1: highly purified-human HMG starting with the dose of 225 IU/day
**Category**
Treatment - Drugs

**2**

**Description**
group 2: human-FSH starting with the dose of 225 IU/day
**Category**
Treatment - Drugs

**3**

**Description**
group 3: recombinant-FSH starting with the dose of 225 IU/day
**Category**
Treatment - Drugs

**4**

**Description**
group 4: human-FSH for 6 days followed by recombinant-FSH starting with 225 IU/day
**Category**
Treatment - Drugs

## Recruitment centers

**1**

**Recruitment center**
**Name of recruitment center**
Ghadir hospital for mother and chilld
**Full name of responsible person**
Dr. Mohammad Ebrahim Parsanejhad
**Street address**
Shiraz university of Medical Sciences, Infertility research center
**City**
Shiraz

## Sponsors / Funding sources

**1**

**Sponsor**
**Name of organization / entity**
Shiraz university of Medical Sciences, Infertility research center
**Full name of responsible person**
Dr. Jhale Zolghadr
**Street address**
Ghadir Hospital for Mother and Child, Infertility research center, Shiraz university of Medical Sciences
**City**
Shiraz
**Grant name**
**Grant code / Reference number**
**Is the source of funding the same sponsor organization/entity?**
Yes
**Title of funding source**
Shiraz university of Medical Sciences, Infertility research center
**Proportion provided by this source**
100
**Public or private sector**
*empty*
**Domestic or foreign origin**
*empty*
**Category of foreign source of funding**
*empty*

**Country of origin**
**Type of organization providing the funding**
*empty*

## Person responsible for general inquiries

**Contact**
**Name of organization / entity**
Shiraz university of Medical Sciences, Infertility research center
**Full name of responsible person**
Dr. Bahia Namavar Jahromi
**Position**
Associate professor in Shiraz University of Medical Sciences
**Other areas of specialty/work**
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**Web page address**

## Person responsible for scientific inquiries

**Contact**
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**Full name of responsible person**
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professor in Shiraz university of Medical Sciences
**Other areas of specialty/work**
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**Postal code**
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+98 71 1233 2365
**Fax**
**Email**
parsame@rogers.com
**Web page address**

## Person responsible for updating data

**Contact**

## Sharing plan

**Deidentified Individual Participant Data Set (IPD)**
*empty*
**Study Protocol**
*empty*
**Statistical Analysis Plan**
*empty*
**Informed Consent Form**
*empty*
**Clinical Study Report**
*empty*
**Analytic Code**
*empty*
**Data Dictionary**
*empty*