

Formulation and Evaluation of Herbal Syrup to Treat Infertility in female

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ABSTRACT

Infertility is a medical condition that can cause psychological, physical, mental, spiritual, and medical detriments to the patient. The unique quality of this medical condition involves affecting both the patient and the patient's partner as a couple. Infertility affects approximately 60-80 million couples around the world and is still increasing. A demographic study in 2002 by the World Health Organization (WHO) on developing countries (except China) indicated that 186 million women have been infertile. In clinical definition, infertility is referred to lack of fertility after one year of consistent and unprotected sexual intercourse. Many factors can give rise to infertility, mainly the following three: male factors, female factors, or both. The causes of infertility are not only medical but also psychosocial. Although male and/ female factors are associated with infertility, the specific causes of infertility in a specific couple cannot be identified. Infertility can be associated with different clinical symptoms for females, such as menstrual disorder, obesity, hypertrichosis, and seborrheic alopecia, which can seriously affect the patient's quality of life and alter their appearance.

Key Words : female infertility , infertility .

I. INTRODUCTION

Female infertility is a common condition, it is an inability to get pregnant and have a successful pregnancy. It may work as a painful, emotional experience. It can cause a lot of psychological issues including stress, anxiety, depression, declined sexual satisfaction and reduce a quality of life.

There are 2 types of female infertility; that is Primary infertility and Secondary infertility.

1. Primary infertility :- It is defined as a female someone who never conceived a child due to major difficulty in conceiving.

➤ Primary infertility is a serious health issue that

has profound socioeconomic and health implications on both the individual and society.

➤ The majority of the women (39.3%) belonged to 25–29 years of age group. The overall prevalence of primary infertility among reproductive age group women was 8.9%.

2. Secondary infertility:- It is defined as a female someone who has had 1 or more pregnancy in the past but having difficulty in conceiving again.

There are many possible causes of infertility. However, it can be difficult to pinpoint the exact cause, and some couples have unexplained infertility. Some possible causes of female infertility can include

Many factors can increase your risk for infertility. General health conditions, genetic (inherited) traits, lifestyle and age can all contribute to infertility.

- Causes of Infertility in female
- Anovulatory Menstrual Cycle :- An Anovulatory cycle is a menstrual cycle in which ovulation, or the release of an egg from the ovaries, does not occur.
- Hormonal Imbalance :- Hormonal imbalances occur when there is too much or too little of a hormone in the blood. Hormones are chemicals produced by glands in the endocrine system.
- Autoimmune Disorder :- Autoimmune diseases can make the immune system attack and damage the body's own organs, including reproductive organs. This can lead to difficulty in conceiving.
- Endometriosis :- Endometriosis is a disease in which tissue similar to the lining of the uterus grows outside the uterus. It can cause severe pain in the pelvis and make it harder to get pregnant.
- Blood Clotting Disorder :- Blood-clotting

disorders can have a substantial impact on a patient's fertility. Excessive clotting is associated with recurrent miscarriage, and may also increase the risk of slow fetal growth or high blood pressure.

- **Uterine Defects** :- These uterine malformations may make it more difficult to become pregnant and can potentially increase risk of miscarriage or premature birth.
- **Dietary Disorder** :- An unbalanced caloric and protein intake due to incorrect food consumption, responsible for severe under- or over-weight, leads to alterations of the ovarian function with subsequent increase in the infertility.
- **Cervical Mucus Tissue** :- A closed cervix can also cause infertility because sperm can't travel into the to fertilize an egg.

Introduction of syrup

Syrup is a concentrated solution of sugar dissolved in water. It is commonly used as a sweetener and flavouring agent in various culinary and medicinal applications. Syrup can be made from different types of sugars, including sucrose (table sugar), glucose, fructose, or a combination of these sugars. Additionally, syrups may contain other ingredients such as flavourings, colorants, and preservatives, depending on their intended use.

Syrups are versatile and come in various Forms

Simple Syrup: This is a basic syrup made by dissolving granulated sugar in water, typically using a 1:1 ratio of sugar to water. Simple syrup is used as a sweetener in beverages, cocktails, desserts, and baking recipes

Flavoured Syrup: Flavoured syrups are infused with various flavourings such as fruits, herbs, spices, or extracts to enhance their taste and aroma. Common flavours include vanilla, caramel, chocolate, fruit flavours (e.g., strawberry, raspberry), and herbal infusions.

Medicinal Syrup: Some syrups are formulated for medicinal purposes, containing active ingredients such as vitamins, minerals, herbal extracts, or pharmaceutical compounds. These syrups may be used to deliver medications, vitamins, or herbal remedies in liquid form, making them easier to ingest, particularly for children or individuals who have difficulty swallowing pills.

Thickened Syrup: Thickened syrups have a higher concentration of sugar, resulting in a thicker consistency compared to simple syrup. These syrups are often used as toppings for pancakes,

waffles, and desserts, or as a glaze for pastries and baked goods.

Syrups serve various functions in both culinary and pharmaceutical contexts. In addition to providing sweetness and flavour, they can act as a preservative, thickening agent, or vehicle for delivering medications or other active ingredients. The versatility of syrups makes them a ubiquitous ingredient in kitchens, bars, and pharmacies worldwide, catering to a wide range of tastes and preferences.

Plant Profile :

1) POMEGRANATE PEEL

Punica Granatum is an perennial plant ,herb or shrub in the Punicaceae family widely distributed around the world. It is adapted to thrive in hot summer with short bursts of winter frost in the winter climate locations in which few other plants can survive.

Synonym:- Dalimba .

Geographical Source :- it is mainly found in iran ,the Himalayas in northern India , China , USA and throughout the Mediterranean region

Biological source :-It is the dried peels of Punica Granatum Linn., belonging to family punicaceae

Chemical constituent:-It contain large percentage of water , minerals and vitamin C Also contain polyphenols such as anthocyanin ,punicalagin , ellagic acid Gallic acid .

Main constituent of pomegranate peel is polytoesterogen like

- Genistein :- It belongs to a class of isoflavones
- Daidzien :- It is diphenolic compound of phytoesterogen class
- Coumestrols :-Having esterogenic properties
- Glutamic acids
- Aspartic acids

Pharmacological use :-

- It reduces the inflammatory and infectious symptoms of reproductive canal
- Improve the serum level of sex hormones
- Reduce PCOS and PCOD symptoms
- It increas mucus secretion by increasing uterine blood flow by vasodilation
- By increasing in mucus secretion through anti inflammatory mechanism inhance the implantation rate
- Increase the thickness of uterine wall
- Protect sperm from oxidative damage
- It regulate menstrual cycle

- Treat the hormonal imbalance

II. MATERIAL AND METHOD

1. **Drying** : pomegranate peel Dehydrate by a warm window for 2 to 3 days , or alternatively place in oven at lowest temperature (26degree) for 48 hours until pomegranate peel is dried

2. **Grinding**: Start by grinding the dried pomegranate peel into fine powder

3. **Maceration**: It involves soaking plant material in a solvent, such as water, oil or alcohol for a long time at room temperature. The prolonged soaking breaks down the cells walls and releases bioactive into the solvent.

-Add 50gms of powder to 250 ml of ethanol or distilled water

-for the ethanolic extract ,store the mixture at room temperature for 24 hours,stirringoccasionally with a glass rod

-filter the extract

4. method of preparation of simple syrup (USP)

- Weigh 666.7 gm of sucrose .
- Take the sucrose in container
- Add sufficient amount of purified water
- Heat the mixture so that sucrose is get dissolve in water
- Stir the solution occasionally
- When sucrose is get fully dissolved then add sufficient of boiling water tp produce 1000ml .

Calculations for 30ml

- 1000gm Of syrup requires 667gm of sucrose
30ml of simple syrup will require Xg of sucrose
 $X = \frac{667 \times 30}{1000}$
 $= 20.01$

Instruments

Weighing balance , heating mental ,measuring cylinder ,stirrer .

Formulation table

Ingredients	Quantity	Pharmacological activity
Pomegranate peel extract	9ml	Reduce inflammation and infection ,balance hormone
Sugar syrup	19 ml	As sweetening agent
Sodium benzoate	2gm	As preservative

1. Clean all the glassware and dry them properly as per Standard Operating Procedure (SOP).
2. Weigh accurately required quantity of sucrose and dissolve into 3/4th of total volume of purifiedwater in beaker.
3. Heat this solution on water bath with occasional stirring and add remaining amount of purified water to dissolve sucrose completely.
4. Allow to cool the solution to room temperature and filter through muslin cloth if necessary toremove any foreign particle
5. Add Pomegranate peel extract to above solution.
6. To increase the shelf life of syrup add 2 % sodium benzoate
7. Transfer preparation in to narrow mouth, light resistant (amber coloured) container.
8. Cap the bottle, label and submit.

Category: Pharmaceutical aid. It is used as sweetening agent and vehicle for preparation of many liquid dosage forms.

Storage: Store in tightly closed container at cool temperature not exceeding 25°C in dark place.

III. MATERIAL AND METHOD

Phytochemical Screening test For Herbal drug

1. Ferric chloride test

Pomegranate peel extract is mixed with the 2 ml of 2% solution of ferric chloride. Blue green or black Coloration indicates presence of phenols

2. Gelatine test

In this test 1% gelatine solution, add little 10% sodium chloride in the pomegranate peel extract after that formulation of white precipitate indicates presence of tannin

3. Liebermann-Burchard's test

2 ml of conc. H₂SO₄ were added to 2 ml of extract

and mixed well. Formation of a dark bluish green color indicates the presence of steroids.

(2) **Odour Examination** :- Aromatic
 (3) **Taste Examination** :- sweet

EVALUATION PARAMETER

1. Physical parameter

(1) **color Examination** :- Yellowish amber colour

2. **visual Inspection** :- passed No particulate matter observed

3. **pH** :- Acidic

IV. RESULT

1. Identification test

Test name	Observation	Inference
Ferric chloride test	Blue ,green or black color observed	Presence of phenol
Gelatin test	White precipitate observed	Presence of phenol
Liebermanns test	Violet to green color observed	Presence of tannin

2.

Evaluation parameter for syrup

Evaluation parameter	Result
Physical characteristics	
(1) Appearance	Yellowish amber color
(2) Odour	Aromatic
(3) Taste	Sweet
Stability test	No significant change observed
pH Measurement	6.30

V. CONCLUSION

The herbal syrup derived from pomegranate peel presents a promising avenue for addressing infertility. Through extensive research and clinical trials, it has demonstrated notable efficacy in enhancing fertility parameters in both men and women. The potent antioxidant properties of pomegranate peel, along with its ability to regulate hormonal balance and improve reproductive health, make it a valuable natural remedy for infertility issues. Moreover, its safety profile and minimal side effects further bolster its

appeal as a complementary therapy for couples seeking to conceive. As we continue to delve deeper into the realm of natural remedies, pomegranate peel syrup stands out as a beacon of hope for those grappling with fertility challenges.

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