

A Review on Green Alternative : Herbal Contraceptive for Reproductive Health

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Abstract: *One of the main strategies that appears to be successful in population management is human fertility control. Numerous potential techniques, such as hormonal and pharmacological ones, have been used to cause infertility. The traditional use of medicinal plants and their extracts to treat a variety of illnesses, including issues connected to fertility, is now well known in society. Herbal antifertility medications, which can impede a woman's natural reproductive process, have gained importance in the context of women's health. The utilisation of different plant extracts with antifertility effects in different ways is part of current study. Several animal models have been used to examine the contraceptive properties of various plants. Even in remote areas, these herbal contraceptives are inexpensivereadily accessible, and environmentally beneficial.*

Keywords: ecofriendly, antifertility, antiovolatory

I. INTRODUCTION

One of the biggest and most pressing issues facing developing nations like India is their rapid population growth, which is expected to worsen significantly by 2050. The nation's economy and entire social structure are out of balance as a result of this increase. Therefore, it is the main contributor to pollution and poverty in emerging nations. The world's overpopulation has a catastrophic impact on the systems that sustain life. Therefore, in order to regulate the population, human fertility must be managed. The World Health Organisation (WHO) has initiated a program that includes research on traditional medical practices in an effort to regulate the population.

The World Health Organisation (WHO) has initiated a program that includes research on traditional medical practices in an effort to regulate the population. (Kaur and others, 2011) Numerous hormonal contraceptives have been created and are already in use, but because they are chemical-based, costly, complex, and have certain adverse effects, they have not been able to satisfy the needs of developing nations. There have also been some natural contraceptives created, but once more, they have limited human potential. People are now searching for herbal remedies to treat a variety of illnesses and regulate fertility as a result of these issues.

In 2013, Patil & Patil Research is underway to develop herbal antifertility agents that are more socially and culturally acceptable, have better human compatibility, fewer side effects, and are more effective than chemical compounds—nearly 80% of the world's population receives their primary medical care from traditional medicines (Kaur et al, 2011). The necessity to create antifertility medicines from medicinal plants stems from the dangers of synthetic steroidal contraceptives. Since human problems are at hand and no antiovolatory medication made entirely of herbal ingredients has been documented to date, it is imperative to create a highly effective medication that is exclusively herbal and does not negatively impact the reproductive system.

PROBLEM ASSOCIATED WITH CHEMICAL BASE DRUG

Issues with medications that are chemically based Drugs that are synthetic or chemically based have the potential to disrupt the endocrine system and have impacts on the body's metabolism, development, brain function, and reproduction. The synthesis, secretion, transport, and action of endogenous hormones may be adversely affected by these substances. By preventing the synthesis and metabolism of hormones or by obstructing their function, they disrupt the normal level of hormones. Below are a few examples: The creation of androgen is inhibited by pesticides, phthalates, and plasticisers, which impacts the sexual development of males. The synthesis of oestrogen and

progesterone is stopped by alkylphenols, bisphenol A, dioxins, heavy metals, fungicides, and insecticides, which impacts the sexual development of females.

These chemicals has shown some other adverse effects on the reproductive system such as

Whether infertility is transient or permanent Gonadal toxicity Testicular germ cell cancer Prostate/breast cancer Birth deformities and issues with brain development.

NEED OF HERBAL CONTRACEPTIVE

Medicinal plant extract are typically used in the manufacture of traditional herbal medication. Women use contraceptive at a higher rate than men worldwide. Modern contraceptive were difficult for women in rural areas and underdeveloped nation to get. Therefore, herbal contraceptive give them the chance to utilise affordable, effective medication with fewer side effect, especially for women who live in rural parts of developing countries with large population, such as Bangladesh, China, India, and Africa. Since herbal medication do have certain modest dangers, testing is necessary to determine their efficacy and effectiveness (Firenzuoli and Gori,2007). Contraceptive has been achieved through the use of swveral medicinal herbs. Their are various medicinal plant that have shown their action against various severe disease including cancer, HIV/AIDS, Alzheimer', malaria and some of them were tested for the antifertility properties .Various herbs have been used from a long time to induce infertility, and modern research has tested and confirmed anti-infertility effects in most of the herbs. During the last few years, the use of herbal medicine has been fastly growing all over the word .But these herbs have a cumulative effect on body.

They need to be taken on the daily basis to maintain the contraceptive effect for eg. Wild yam, neem used in the form of pills, vaginal foam, creams etc. A medicinal plant contain certain ingredients that are active in treating and preventing numbers of disease. The high cost of modern drugs ,unavailability in remote areas and sever side effecs have increased the demand of herbal medicines which are obtained from the plant extract. The active compounds from plant extract has been isolated for the preparation of particular drug (Balunas et al,2005)

MECHANISM OF ACTION OF HERBAL DRUGS.

There are various ways that medicinal herbs might cause infertility. The ovary, uterus, hormone production, inhibition of hormonal activity, sperm generation, and implantation may all be affected. Some of them create a protective covering around an egg to stop fertilization. These behaviors allow the plants to be categorized into many groups, like as

S.No	Plants	Mode of Action on reproductive system
1.	Antifertility plants	Prevents fertilization
2.	Antiovolatory plants	Inhibits ovulation
3.	Anti-implantation plants	Blocking implantation
4.	Abortifacient plants	Causing early abortion

Antifertility medications are those that hinder gamete development and disrupt the fertilization process. 6

Antiovolatory drugs are antifertility medications that suppress ovulation, hence causing infertility. These medications are administered intravenously or orally.

Anti-implantation medicines are substances that stop fertilized ovum from attaching or penetrating the uterus.

Abortifacients are substances that cause the fetus to be expelled early

ACTIVE INGREDIENTS PRESENT IN MEDICINAL PLANT

Regarding the herbal medication, the pure extracts of medicinal plants can be used as a medication to cause infertility. It is also known that alkaloids, glycosides, saponins, tannins, terpenoids, isoflavonoids, and other active compounds found in plants may be useful in the production of drugs. Among these, alkaloids are a plentiful class of secondary metabolites that are employed in local anesthesia and pain management, as well as in the treatment of diseases like malaria, diabetes, cancer, diarrhea, and hypertension. In previously examined plants, it was shown that alkaloids are the only phytoconstituents that might be in charge of changing the reproductive systems of humans and animals.

For example, the alkaloids arecoline, pilocarpine, and muscarine found in *Areca catechu*. Ergometrine, ergotamine, ergocristine, ergoflavin, ergotic acid betaine, clavicepsin, and lactic acid are all found in *purpurea*. Indolealkaloid, ajmalin, reserpine, rescinnanine, yohimbine, and ajmalicine are all present in *Rauwolfia serpentina*. Solasodine is one of the steroidal alkaloids found in *Solanum marginatum*. Warifene and Milonine are found in *Cissampelos Symodialis*. Numerous animal models have been used to evaluate the antifertility properties of these herbs. Animals have been shown to exhibit antifertility, antiovolatory, antiimplantation, and abortifacient effects from a variety of plants that were examined for their known bioactive compounds.

DRUG PROFILE:**Papaya :**Scientific Name: *Ocimum Santum*Biological Source: *Carica Papaya*

Kingdom: Plantae

Family: Caricaceae

Genus: *Carica*Species: *C. papaya***Description:**

Papaya is a tropical, herbaceous plant with a single stem and a broad, rounded crown. It grows up to 10-15 meters tall.

Traditional Uses:

Papaya has been used in traditional medicine for centuries, particularly in Ayurveda and Unani. Its fruit, leaves, and seeds are used to treat various ailments, including:

1. Digestive issues (constipation, diarrhea)
2. Infections (bacterial, viral, fungal)
3. Inflammation (arthritis, asthma)
4. Skin conditions (acne, eczema)
5. Menstrual disorders (menstrual cramps, irregular periods)

Chemical Constituents:

Papaya contains a variety of bioactive compounds, including:

1. Papain
2. Chymopapain
3. Caricain
4. Vitamin C
5. Potassium

Pharmacological Properties

Papaya has been reported to possess:

1. Anti-inflammatory
2. Antimicrobial
3. Antioxidant
4. Proteolytic
5. Immunomodulatory

Side Effects:

1. Allergic reactions
2. Gastrointestinal upset
3. Interaction with blood thinners

Tulsi:



Scientific Name: *Ocimum sanctum*
Biological Source: *ocimumSantum* Plant
Kingdom: Plantae
Family: Lamiaceae
Genus: *Ocimum*
Species: *O. sanctum*

Description:

Tulsi is a tropical, herbaceous plant with a distinctive aroma and flavor. It grows up to 1-2 meters tall.

Traditional Uses:

Tulsi has been used in traditional medicine for centuries, particularly in Ayurveda. Its leaves, seeds, and oil are used to treat various ailments, including:

1. Respiratory issues (asthma, bronchitis)
2. Digestive issues (indigestion, diarrhea)
3. Skin conditions (acne, eczema)
4. Fever and infections
5. Stress and anxiety

Chemical Constituents:

Tulsi contains a variety of bioactive compounds, including:

1. Eugenol

2. Linalool
3. Ursolic acid
4. Rosmarinic acid
5. Vitamin K

Pharmacological Properties:

Tulsi has been reported to possess:

1. Anti-inflammatory
2. Antimicrobial
3. Antioxidant
4. Adaptogenic
5. Immunomodulatory

Side effects;

Tulsi is generally considered safe, but high doses may cause:

1. Gastrointestinal upset
2. Allergic reactions
3. Interaction with blood thinners

Honey:



Synonym :madhu

Biological source: honey is sugar secretion deposition in honey comb by the bees Apidae

Chemical composition: amino acid , acetic acid

Description

Honey is a sweet, viscous fluid produced by bees from the nectar of plants. It is a supersaturated sugar solution containing a mixture of sugars, primarily fructose and glucose, as well as other compounds like enzymes, vitamins, and minerals.

Chemical Composition

Honey is composed of:

1. Carbohydrates (95-99%): fructose, glucose, sucrose, maltose
2. Water (14-18%)
3. Enzymes: diastase, invertase, glucose oxidase
4. Vitamins: vitamin C, vitamin B6, riboflavin
5. Minerals: calcium, copper, iron, magnesium, manganese, phosphorus, potassium, sodium, zinc.

Chemical Uses

Honey has several chemical uses:

1. Antimicrobial agent: Honey's acidity and hydrogen peroxide content make it effective against bacteria, fungi, and viruses.
2. Antioxidant: Honey's phenolic compounds and flavonoids have antioxidant properties, protecting against oxidative stress and cell damage.
3. Energy source: Honey is a natural energy source, providing a quick and sustained release of carbohydrates.
4. Moisturizer: Honey's humectant properties make it an effective moisturizer, retaining moisture and soothing dry skin.
5. Wound healing: Honey's antibacterial and antifungal properties promote wound healing, reducing the risk of infection and promoting tissue repair.

Neem:



Synonyms: neem tree

Biological source: neem is derived from various parts of the Neem tree, include leaves ,seeds bark etc

Chemical composition: Azadiractine ,nimbin,quercin.

Description

Neem is a fast-growing, evergreen tree that can grow up to 15-20 meters tall. It has a broad, rounded crown and a straight trunk with grayish-brown bark. The leaves are dark green, alternate, and consist of 8-19 leaflets. The flowers are small, white, and fragrant, and are arranged in clusters. The fruit is a yellowish-green drupe that contains a single seed.

Origin and Distribution

Neem is native to the Indian subcontinent and Southeast Asia. It is widely cultivated and naturalized in many parts of the world, including Africa, Australia, and the Americas.

Traditional Uses

Neem has been used for centuries in traditional medicine, agriculture, and cosmetics. The leaves, seeds, and oil are used to:

- Treat skin conditions, such as acne, eczema, and psoriasis
- Repel insects and pests
- Fertilize and protect crops
- Promote oral health and prevent gum disease
- Support immune function and reduce inflammation

Pineapple:



Synonyms: Ananas

Biological source: mixture of enzyme obtain from steam and ripen fruit of plant Ananascomosus.

Family: Bromeliaceae.

Chemical composition: Bromolin.

Description:

Pineapple is a tropical, herbaceous perennial plant that grows up to 1-2 meters tall. It has a short, stout stem with tough, waxy leaves that are arranged in a rosette pattern. The leaves are long and narrow, with sharp, spiny edges.

Traditional Uses:

Pineapple is a versatile fruit that is eaten fresh, cooked, or used in a variety of products, such as juice, jam, and smoothies. It is also used in traditional medicine and as an ornamental plant.

II. DISCUSSION & CONCLUSION

It is determined that in emerging and impoverished nations, pollution, poverty, and population growth are interrelated and must be managed. For population management, human fertility needs to be monitored. The traditional medical system offers us a number of strategies to stop human fertility. Birth control pills, skin patches, condoms, intrauterine devices, and other hormonal contraceptives are included. Because they are costly, inaccessible, and include chemical elements that may have negative effects on the human body, people from developing nations cannot effectively acquire them. Drugs made with chemicals should not be consumed, and individuals should choose natural remedies instead.. It generally includes all types of medicinal plants and other plant extracts. Herbal extracts may interfere with the fertility in different ways, they may affect female reproductive organs such as ovaries, uterus etc. or may block the secretion of hormones as they contain phytoestrogen and progesterone or its analogues.

Women's healthcare must be safe, effective, and free of side effects because they play a crucial role in the family and are also in charge of its wellbeing. Contraception and family planning programs are becoming essential components of women's healthcare, enabling them to prioritize their responsibilities. Since rural women may readily obtain herbal goods, it is vital to teach them how to recognize these herbs and make different alcoholic and aqueous extracts of them. The use of natural contraception has also gained awareness among metropolitan women.

Numerous pharmaceutical companies have commercialized certain herbal formulations; nevertheless, because to the presence of chemical components, negative effects have been recorded. Certain active chemicals found in medicinal plant extracts, such as antiovolution and antiimplantation, are what cause the antifertility effect. Several herbs have been shown to cause infertility, but their effects must be sustained over time and need daily use. They serve as emergency birth control. Numerous studies conducted on animal models have revealed that these herbal compounds have less adverse effects than chemically manufactured contraceptives, which typically contain different hormone combinations. So the value of the traditional knowledge for herbal contraceptive need to be highlighted to the masses in order to make it more acceptable and practiced.

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