



## Review Article

### Herbal Plants Used as Contraceptives

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#### ABSTRACT

One of the most critical problems of developing country like India is its geometrical increase in human population. About 90% of the world's contraceptive users are women. This gender-based usage has occurred due to the emphasis of family planning programs and contraception research. Condom, vasectomy and withdrawal are the only male contraception devices available with less assurance for men. It has, therefore, become necessary to use biologically active botanical substances or fertility-regulating agents of plant origin which are ecofriendly in approach and interfere with the natural patterns of reproduction. At present, for the study of natural herbal contraception become one of the focuses of modern contraceptive research. Herbs have been used by women since the beginning of time in an attempt to control their fertility. The development of new fertility regulating drug from medicinal plants is an attractive proposition, because from times immemorial humans have relied on plants and their products as sources of drugs and therapeutic agents.

**KEY WORDS:** Abortifacient, Anti- implantation, Contraceptive, Herbal plants.

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#### INTRODUCTION

India is first among the countries which adopted an official family planning programme, as early as 1950. However, fifty years later this has not prevented the population touching the one billion mark. It is obvious that despite good intentions and concerted efforts we have failed in controlling our population. Even in ancient times, people limited the size of their families. Since the major responsibilities of pregnancy, birth, and child rearing fell on women, they found methods for controlling fertility and aborting unwanted children, and they have passed down this knowledge as an oral tradition that survives worldwide. It is obvious now that there cannot be an ideal contraceptive, suitable for everybody.<sup>1</sup> Family planning has been prompted through several methods of contraception, but due to adverse effects produced by synthetic steroidal contraceptives attention has now been focused in indigenous plants for possible contraceptive effect. Since ancient times, mankind has used plants to cure diseases and relieve physical sufferings. Because of better cultural acceptability, better compatibility with the human body, lesser side effects and effectiveness of many traditional medicines is now an accepted fact. More than 35,000 plant species are being used in various human cultures around the world for medicinal purposes.<sup>2</sup> Nearly 80% of the world populations rely on traditional medicines for primary health

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care, most of which involve the use of plant extracts.<sup>3</sup> Plants that have contraceptive and abortifacient properties may act through rapid expulsion of the fertilized ova from the fallopian tube, inhibition of implantation due to a disturbance in oestrogen - progesterone balance, foetal abortion, perhaps due to lack of supply of nutrients to the uterus and the embryo, and also on the male side through affecting sperm count, motility and viability.<sup>4-6</sup> There were many plants that had their surge of popularity; one is silphium which was in great demand in ancient Greece, being so effective in preventing unwanted pregnancy. According to *Susruta Samhita*, the seeds of the plant Pippalayadi Vati have been used as a antifertility agent since ancient time. In 1963, the resin from asafetida (*Ferula assa-foetida*) was found to be effective in humans as a contraceptive and for inducing early abortion.<sup>7</sup> Besides silphium and asafetida, other plants were recognized as having both contraceptive and abortifacient properties by ancient women. Hippocrates "the father of medicine" stated the seeds of Queen Anne's lace, or wild carrot, when taken orally both prevented and terminated pregnancy and recommended their use.<sup>8</sup> Some herbal contraceptives are meant to be taken on a daily basis due to the cumulative effect they have on the in order to uphold the effects of contraception. Such examples include wild yam and neem. Wild yam is a tested and tried great herbal contraceptive that is a folk remedy and as a daily intake it speeds the effectiveness of contraception. Each herb has varied effect on the body and no two herbs are alike in their abilities to prevent conception. There are numerous ways in which herbs are used to disrupt fertility. Some herbal preparations possess properties that cause the ovary to be affected, while some others impress upon the uterus or sometimes block and even disturb the production of hormones. There are some herbal contraceptives that have the property to intervene with implantation and such herbs are consumed as an emergency contraceptive. Among men herbal contraceptive help in interfering with the natural production of sperms. Various plants which are used as contraceptives are given below.

#### Tansy

Common name is Scented Fern which is known to botanists as *Tanacetum vulgare* L., family Asteraceae, and tansy has a long history of use in folk medicine. The dried leaves and flowering tops of tansy have been employed, usually in the form of a tea, as an anthelmintic, tonic, stimulant, and emmenagogue (promotes menstrual flow-often a euphemism for promoting abortion.)



Figure no 1: *Tanacetum vulgare*



Figure no 2: *Azadirachta indica*

#### Neem Oil

Neem oil is obtained from the plant *Azadirachta indica* family Meliaceae. Neem is a perennial found in India. It is used as herb to treat many ailments. Its leaves, roots, fruits everything is used to make various herbal medicines. The neem

oil if applied vaginally acts as a spermicidal contraceptive. Men should take it orally to induce temporary sterility.<sup>9</sup> The contraceptive effect of neem leaf extract has been demonstrated in female rats.<sup>10</sup> Intrauterine administration of neem oil in rat results in high contraceptive efficacy.<sup>11</sup> A direct spermicidal activity of neem oil occurs in vitro and in vivo.<sup>12,13</sup> In rats, intra-vas administration of neem oil results in blocked spermatogenesis without affecting testosterone production, sexual behavior, or antisperm antibody production.<sup>14</sup> For women it is used vaginally as a spermicide, and men use it orally as a daily contraceptive to induce temporary sterility.

**Table no 1: Herbal plants as contraceptives**

Common name	Botanical name	Family	Part used	Action
Ankol	<i>Alangium salviifolium</i>	Alangiaceae	Stem bark	Abortifacient, anti-implantation
Vidanga	<i>Embelia Ribes</i>	Myrsinaceae	Fruit	antifertility effect, antioestrogenic action
Pomegranate	<i>Punica granatum</i>	Punicaceae	seeds	Post-coital contraceptive.
China Rose	<i>Hibiscus rosasinensis</i>	Malvaceae	Flowers	Anti-fertility effect.
Smartweed leaves	<i>Polygonum hdropiper</i>	Polygonaceae	roots	Anti-implantation
Kanphuti	<i>Cardiospermum helicacabum</i>	Spindaceae	Whole plant	Anti-implantation ,increase uterus weight, inhibit sperm motility & decrease sperm count
Jangli – arandi	<i>Jatropha curcus</i>	Euphorbiaceae	Fruits	Decrease sperm motility & decrease sperm count , abortifacient
Stevia	<i>Stevia rebaudiana</i>	Compositae	Whole plant	decrease sperm count ,
Haldi	<i>Curcuma longa</i>	Zingiberaceae	Rhizomes	Inhibit sperm motility, anti- implantation
Papai	<i>Carica papaya</i>	Cariaceae	Seeds	Abortifacient
Golden shower	<i>Cassia fistula</i>	Caesalpinaceae	Seeds	Anti-fertility
kuvar pathu	<i>Aloe vera</i>	Liliaceae	Latex	Spermicidal
Tulsi	<i>Ocimum sanctum</i>	Labiatae	Leaves	Late abortifacient, anti- implantation
Parvel	<i>Cyclea burmanni</i>	Menispermaceae	Roots	decrease sperm count
Bitter apple	<i>Citrullus colocynthis</i>	Curcurbitaceae	fruits	stop [terminate] pregnancy
Pennyroyal	<i>Mentha pulegium</i>	Lamiaceae	In form of infusion	abortifacient which causes the uterine muscles to contract
Abeji	<i>Pleioceras barteri</i>	Apocynaceae	Bark & seeds	Abortifacient
Pookwood	<i>Guanicum officinale</i>	Zygophyllaceae	Aerial parts	Abortifacient
Lajalu	<i>Biophytum sanctivum</i>	Oxalidaceae	Leaves	anti- implantation

smartweed	<i>Polygonum hydropiper</i>	Polygonaceae	Leaves	to prevent implantation after fertilizing intercourse
Apricot	<i>Prunus armeniaca</i>	Rosaceae	Kernels	Anti-implantation
Cotton Root	<i>Gossypium hirsutum</i>	Malvaceae	Bark	Abortifacient.

### Black cohosh

Black cohosh is a perennial plant belonging to the family Ranunculaceae, with the scientific name of *Actaea racemosa* L, a common synonym for which is *Cimicifuga racemosa* (L) Nutt. In 1998, the genus *Actaea* was revised to subsume or include the genera *Cimicifuga* and *Souliea*; thus, the genus now contains 28 species.<sup>15,16</sup> *Cimicifuga* comes from the Latin “to drive away bedbugs” and reflects some of the common names of the herb: “bugbane” and “bugwort”.<sup>17</sup> In rats and mice, *C. racemosa* induced estrus and increased uterine weight in a dose-dependent manner.<sup>18</sup> It is thought to possess astringent, diuretic, diaphoretic, antirheumatic, antitussive, antispasmodic, aphrodisiac, emmenagogue, nervine, sedative, stomachic and emmenagogue properties.<sup>19-21</sup>



Figure no 3: *Actaea racemosa*



Figure no 4: *Daucus carota*

### Seeds of a wild carrot

Women have used the seeds from *Daucus carota*, family Apiaceae commonly known as wild carrot or queen Anne's Lace, for centuries as a contraceptive, the earliest written reference dates back to the late 5th or 4th century B.C. appearing in a work written by Hippocrates.<sup>22</sup> They should be chewed within 8 hours of being exposed to sperms. They are commonly used in India as a contraceptive. It does not really work for women who have recently given birth or have come out of pills. Traditionally, Queen Anne's lace has been known to be used for:

- Regulating menstrual cycle
- Endometriosis
- Prevent clotting
- Tones uterus

### Asafoetida

Asafoetida, or asafetida having botanical name *Ferula assafoetida* belongs to family umbelliferae, is a plant native to Iran that has a strong sulfurous smell. The common name of, asafoetida is devil's dung, gum asafoetida, hing. It contains 40-64% resins having ferulic acid esters (60%), free ferulic acid (1.3%), asaresinotannols and farnesiferols A, B and C, coumarin derivatives (e.g. umbelliferone), coumarin-sesquiterpene complexes (e.g. asacoumarin A and asacoumarin B). The oleo gum resins of different *Ferula* species are not identical and many papers have documented their phytochemistry<sup>23-33</sup>, reporting polysulfanes, complex acetylenes, and phenylpropanoids and sesquiterpene derivatives. Asafoetida has a folkloric reputation as an abortifacient and an emmenagogue.



Figure no 5: *Ferula assafoetida*



Figure no 6: *Ruta graveolens*

### Rue

Rue, biologically *Ruta graveolens*, family Rutaceae has been used historically as tea to induce miscarriage by thousands of women all over the world from the Mediterranean, and Europe to Latin America and North America. Rue is a traditional abortifacient used by the Hispanic people in New Mexico.<sup>34</sup> Rue contains two chemicals that we know have the ability to cause abortion during early pregnancy. One of the chemical substances is called philocarpine, which is used in veterinary medicine as an abortifacient for horses<sup>35</sup>. The other is called Rutin, a bioflavonoid that hardens bones and teeth, strengthening arteries and veins. Rutin can be used to disrupt pregnancy and as an emergency contraceptive. It is contraindicated in individuals who have poor kidney functions. When using rue, avoid long exposure to sunlight. May be irritating to the gastrointestinal tract.

### CONCLUSION

The knowledge of medicinal plants used by the people are popular in various cultures and traditions. For centuries herbal potions and pessaries have been concocted with the goal of preventing, and or disrupting pregnancy. However, taking herbal contraceptives may risk exposure to health concerns, not always 100% effective, and should not be taken with prescribed medication or having an existing health problem. Taking herbal contraceptives long term may or may not cause a health concerns.

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