



REVIEW ARTICLE

A CRITICAL REVIEW ON THE MEDICINAL PLANTS ACTING ON FEMALE REPRODUCTIVE SYSTEM

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ABSTRACT

Women's body has to undergo lot of changes. There are some specific phases in women's life like pre puberty, puberty, adolescence, reproductive period and climacteric. In each of these phases there will be lot of physiological changes which will be influenced by female hormones. So, one must be very cautious while selecting medicinal plants for women. Medicinal plants have got varied action on women's physiology. Some of them act as phytoestrogen, galactogauge, fertility drugs, whereas on the other hand some act as emmenogauge, abortifacient, anti-fertility drugs. This review discusses on the medicinal plants used in women's disorders and their mode of action, adverse effects and effects on pregnancy and lactation.

Key words: Reproductive system, phytoestrogen, abortifacient, antifertility.

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INTRODUCTION:

Ayurveda offers systemic and comprehensive management of women's disorders. It has indicated many herbal and compound formulations obtained from different origin (Including mineral, metallic and animal kingdom).

There is a popular misconception that Ayurvedic drugs are safe due to their natural origin. So many of Ayurvedic drugs are sold on OTC and commonly used for self medication, especially by women. However naturalness of medicinal herbs does not guarantee that they are harmless. So detail knowledge of medicinal plants and their influence on the human physiology is quite necessary.

Women's body has to undergo lot of changes. There are some specific phases in women's life like pre puberty, puberty, adolescence, reproductive period and climacteric. In each of these phases there will be lot of physiological changes which will be influenced by female hormones. So, one must be very cautious while selecting medicinal plants for women. Medicinal plants have got varied action on women's physiology. Some of them act as phytoestrogen, galactogauge, fertility drugs, whereas on the other hand some act as emmenogauge, abortifacient, anti-fertility drugs.

This article is an attempt to present update on the medicinal plants used in

women's disorders and their mode of action, adverse effects and effects on pregnancy and lactation.

1. **ASHOKA** (*Saraca asoka*)

Ashoka (Latin name-*Saraca asoka*, Family-*Ceasalpiniaceae*) is one of the sacred trees of Hindu and Buddhist. It is believed to be capable of relieving the sorrows' of people^[1].

It is an evergreen medium sized tree, which is distributed throughout India, abundant in South India. It is scarce in the wild, but is widely cultivated.

Ayurvedic properties –

Rasa – Kashaya, tikta

Guna – Laghu, ruksha

Veerya – Sheeta

Vipaka - Katu

Doshagnata – Kaphapittahara

Karma – Grahi, varnya, krumigna, vedanasthapana, garbhashaya uttejaka, garbhashaya sancochaka.

Rogagnata – Trushna, daha, pradara, kashtartava, garbhashaya shaithilya, ratarsha, raktatisara, pravahika, visha, krumi^[2].

Chemical composition – It contains 6%tannin, haemotoxyllin, ketosterol, saponin, and organic calcium and iron compounds. The activity of drug is due to presence of steroidal component and the calcium salt. Bark is found to contain powerful oxytocicprinciple, a phenolic glycoside^[3].

Part used – stem bark, flowers, seed.

Dosage – Bark decoction – 50-100ml, seed powder, Flowers – 3-6gms^[4].

Ashoka(*Saraca asoka*) in women's disorders – In *Ayurveda ashoka*(*Saraca asoka*) stem bark decoction along with cold milk is indicated for *pradara*^[5].

It is not reported as an emmenagogue, oestrogenic or uterine tonic as claimed by herbal industry. It is having styptic property like ergot preparation and it exhibits potent oxytocin like activity. Therefore one must be cautious^[6]. Alcoholic extract is known to produce frequent and prolonged tonic contractions.

Useful in uterine disorder like menorrhagia, especially due to fibroids, menometrorrhagia, leucorrhoea and dysmenorrhoea^[7].

Anti fertility activity – Powdered bark of *Asoka*(*Saraca asoka*) produced 55.5% anti implantation activity and 28.5% fetal loss at the dose of 100ml/100mgbody weight. No effect on the estrogen cycle and teratogenicity is seen with *Asoka*(*Saraca asoka*). Thus, it exhibits a good contraceptive activity^[8].

Ayush AC4 - A composite drug from CCRAS contains *Embellia ribes*, *Laccardia lacca*, *Areca catechu* and *Saraca indica* all equal parts. Given orally 1gm/day in 2 doses for 15days starting from 4th day of menstrual cycle to 18th day exhibited good contraceptive activity^[9].

Ayush AC2- *Saraca indica*, *Areca catechu*, *coccus lacca* exhibited anti implantation activity in rats^[10].

Contra indications – The drug is widely adulterated with the bark of *Polyalthia longifolia*, *Shorea robusta* or *Bauhinia variegata*. Therefore the side effects with the larger doses are not reported^[11].

In Pregnancy – As *Saraca asoka* is having oxytocic like activity and is proved anti fertility agent. So it must be avoided in pregnancy^[12].

2. ESHWARI (*Aristolochia indica*)

Eshwari (Latin name - *Aristolochia indica*, (Aristo – best, Lochia birth) Family - *Aristolochiaceae*) commonly known by the names of birth wort and snake root which refers to its use in traditional medicine for postpartum infection and snakebite respectively.

According to the doctrine of signature the appearance of flowers of *aristolochia* were thought to resemble a curved fetus or snake^[13].

It is a perennial climber found growing throughout India in plains and lower hills^[14].

Ayurvedic properties –

Rasa – Katu, Tikta, Kashaya

Guna – laghu, ruksha

Veerya – Ushna

Vipaka - katu

Doshagnata – Kaphavatahara

Karma – Shothahara, vedanasthapana, nadiuttejana, deepana, anulomana, shoolaprashamana, raktashodhaka, mutrala, swedajanana, vishagna, krumigna .

Rogagnata – shotha, vataja vyadhi, agnimandya, visoochika, pratishyaya, rajorodha, kashtartava, mutrakruchra, kushta, twakvikara, vishamajwara, krumi^[15].

Chemical composition – Root contains essential oil having phenanthrene derivatives like aristolochic acid alkaloid I-curine (aristolochine) sesquiterpenoids like Ishwarene, ishwarone, aristolochene, ishwarol, naphoquinone, aristolindiquinone, steroids like betasitosterol, sterol glucoside and others like P-caumaric acid, d-camphor, fixed oil, having glycerides and sitosterol. Whole plant contains nonacosinoic acid^[16].

Part used – Root

Dosage – Root powder – 1-3gm, Leaf juice – 5-10ml^[17].

Eshwari (Aristolochia indica) in women's disorders –

Ethnobotany – In traditional practice, Plant is used for menorrhagia, leaves for antispasmodic, and root for menorrhagia, as contraceptive, root & leaves as emetic, emmenagogue and abortifacient agent^[18].

Anti estrogenic activity – Aristolic acid exhibited antiestrogenic activity as shown by the prevention of estrogen induced weight

increase and epithelial growth in the mouse uterus. It caused a decrease in the alkaline phosphate activity, glycogen content and mitotic counts in the estrogen treated uterus and prevented implantation in the early stages of pregnancy in the mice^[19].

Abortifacient activity – In female mice, methyl aristolate produced 100% abortifacient activity at a single oral dose of 60mg/kg when administered on the 6th or 7th day of pregnancy and 20-25 % when given on days 10 or 12 respectively^[20].

Anti fertility activity – Aristolic acid from *Aristolochia indica* disrupted nidation in mice, when administered on day 1 of pregnancy.

The implantation inhibiting effect of the compound was assessed with respect tubal transport of ova in to the uterus, hyperpermeability of endometrial capillaries, increase in uterine weight and total protein content, endometrial bed preparation and changes in uterine phosphate enzymes during day 4-6.

The plant induces impairment of development with a decrease in uterine weight and total protein content, in treated animals.

Aristolic acid interfered with steroidal condition of the uterus, rendering it hostile to ovum implantation^[21].

Toxicology – LD 50 of aristolic acid in mice was 14.32mg/kg. methyl ester derivative of aristolochic acid showed damage to kidney,

liver at the dose of 60mg/ kg/day for 15 days^[22].

Plant is carcinogenic and nephrotoxic^[23].

Note – *Eshwari(Aristolochia indica)*if used prolonged period may lead to aristolohic acid nephropathy as it contains aristolochic acid.

Pregnancy – contraindicated as it is having abortifacient activity.

3. LATAKARANJA (*Caesalpinia bonduc*)

Latakaranja (Latin name – *Caesalpinia bonduc*, Family –*Caesalpinaceae*) commonly known as fever nut. It is large thorny scrambling shrub found throughout India, Burma, and Sri Lanka on waste land and along the coastal areas^[24].

Ayurvedic properties –

Rasa – *Katu, Tikta*

Guna – *laghu, ruksha, teekshna*

Veerya – *Ushna*

Vipaka - *katu*

Doshagnata – *Kaphavatahara*

Karma – *Garbhanirodhana , sramsana, bhedana, shothagna, krimigna, vedanasthapana, shwasahara, mutrala, jwarahara, tiktapaushtika, pramehagna.*

Rogagnata – *Ashmari, shoola, udara, krimi, antravridhi, ajeerna, sootika vikara, kshta, jwara, amavata, arsha*^[25].

Chemical composition –A bitter substance bonducin, phytosterinin, fatty acids, cesalpins, a new diterpene caesalpin, a new homoisoflavone- bonducellin and citrullin are the main phytochemicals reported^[26].

Part used – Seed, root, bark and leaves

Dosage – Powdered seed – 12gms, powdered root 1-2 gms,

Leaf infusion – 12-20ml^[27]

***Latakaranja(Caesalpinia bonduc)* in women's disorders –**

According to *Ayurveda*, it is useful in alleviating *Vata dosha* by which it checks the digestive problems, amenorrhea and reduces pain associated with menstruation.

Latakaranja(Caesalpinia bonduc) alone, or in combination with *haritak(Terminalia chebula)*, *saurchala lavana(Black salt)*, and *hingtu(Ferula nrtex)* are considered very effective in the treatment of abdominal colic according to *Harita samhita*^[28].

Anti estrogenic activity - Alcohol seed extract of the *Caesalpinia bonduc* has anti estrogenic property, possibly acting via inhibition of estrogen secretion^[29].

Uterine stimulant effect – The aqueous extract of the leaves of *Caesalpinia bonduc* increased the contractile force in isolated strips of pregnant rat myometrium preparation in a concentration dependent manner^[30].

Anti fertility effect – Effect of ethanol seed extract of *Caesalpinia bonduc* on pregnant female albino rats reveals it possess anti fertility activity probably due to its anti progesterogenic hormone properties^[31].

Contraindication – Pregnancy. As it is having anti estrogenic and anti progestogenic activity it is contra indicated in pregnancy.

4. **SHATAVARI** (*Asparagus recemosus*)

Shatavari (Latin name – *Asparagus recemosus*, Family - *Liliaceae*) is a popular herb aptly called the “Female Health Formula”.

It is extensively branched, rambling, spiny shrub with a stout root stock bearing numerous, long, fusiform, tuberous roots. This plant is found throughout tropical and subtropical India, in all districts^[32].

Ayurvedic properties –

Rasa – Madhura, Tikta

Guna – Guru, snigdha

Veerya – Sheeta

Vipaka - Madhura

Doshagnata – Vatapittahara

Karma – Shothahara, rasayana, netrya, stanyavardhaka, balya, shukravardhaka .

Rogagnata – Stanyakshaya, Artavakshaya, raktapitta, arsha, grahani, kshaya^[33].

Chemical composition –Tuberous roots contain 4 steroidal saponins shatavarin I-IV. Shatavarin I is the major glycoside with 3 glucose and 1 rhamnose moieties attached to the sarsapogenin, where as Shatavarin IV, 2 glucose and 1 rhamnose moieties are attached. Also contains mucilage and starch. Flowers and fruits of *Shatavari* contain quercetin, rutin and hyperoside, while leaves contain diosgenin and quercetin^[34].

Part used – Tuberous roots

Dosage – Fresh juice – 10-20ml, Powder – 3-6gms, Decoction – 50-100ml^[35].

Shatavari (*Asparagus recemosus*) in women’s disorders –

Shatavari(*Asparagus recemosus*) is the main drug in *Bruhat Shatavari gruta* which is useful in disorders of female genital tract caused by *pitta* (*Pittaja yoni vyapat*) according to *Charaka samhita*^[36].

Shatavari gruta is indicated as *rasayana* by *Vagbhatachrya*^[37].

Shatavari(*Asparagus recemosus*) along with milk acts as aphrodisiac^[38].

It is well known for its effects on the female reproductive system and used in all female related problems such as PMS and sexual debility, amenorrhea, dysmenorrhea and DUB. It supports deeper tissues and builds blood and so it helps to remove infertility, prepare womb for conception, prevents miscarriage and acts as a postpartum tonic where it helps to increase lactation and normalizes the uterus and prolapsed of the uterus and balancing reproductive hormones levels^[39].

As galactagogue – It is famous and widely used as galactagogue since antiquity. *Asparagus recemosus* effects of i.m. administration (250mg/kg) of the crude alcoholic extract of the root were studied.

The extract increases the weight of mammary glands in the postpartum estrogen primed rats

and uterine weight in estrogen primed rats. They also showed well developed lobulo alveolar tissue with milk secretion. The mechanism of action of the extract may be through a direct action on the pituitary or pituitary adrenal axis and due to the secretion of prolactin and ACTH^[40].

As Anti -bacterial - *A. recemosus* can be helped in the mastitis prevention through its anti microbial properties. The main casual organism of mastitis are streptococci, E. coli, Klebsiella, psedomonus proteus spand alcoholic extract of the root was found to possess in vitro antibacterial activity against mentioned mastitis causing bacteria^[41].

Effect in young females – In young females it may increase weight of ovaries and may enhance folliculogenesis as evidenced by histological study of ovaries of immature female arts. A significant rise in sr. follicle stimulating hormone is observed with a dose of 100mg/kg of *A. recemosus* root extract^[42].

In problems related with menstruation – It is useful in PMS, irregular bleeding during perimenopausal period and post menopausal syndrome.

A. recemosus contain saponin which hinders the oxytocin activity on uterine motility, confirming its utility in dysmenorrhea.

Ethyl acetate and acetone extract of roots of *A. recemosus* block spontaneous motility of the virgin rat's uterus. These can also inhibit

the spasmogenic effect of Ach, barium chloride and serotonin on the uterus, further confirming its activity in relieving dysmenorrhea.

A. recemosus is a known source of phytoestrogen and thus effective in reducing adverse menopausal symptoms^[43].

Anti abortifacient activity – Saponin glycoside A4 produces specific and competitive blockade of pitocin induced contraction and spontaneous motility^[44]. And shatavarin I blocks even oxytocin induced contractions in rat, guinea pig and rabbit uterus in vivo and situ in a dose dependent manner.

Its anti oxidant (*rasayana*) activity help in modulating various immune processes and also prevents lipid peroxides at the placental level.

The polycystic alkaloid asparagamine A is also reported to have an anti oxytocic action^[45].

5. All this justifies the use of *Shatavari(Asparagus recemosus)* in threatened abortion as an anti abortifacient.

Safety of *A. recemosus* – On chronic use, root extract even at very high doses did not produce any abnormality in behavior of rats and mice. The plant found safe during pregnancy and lactation^[46].

Contra-indication - No data available about the contra-indication of *A. recemosus*, while

commission E of London have contra-indicated this in inflammation^[47].

6. **UPAKUNCHIKA** (*Nigella sativa*)

Upakunchika (Latin name – *Nigella sativa*, Family- *Ranunculaceae*) is a small herb which grows up to 30-60cm in height. It is known as small fennel in English. It is cultivated in western India^[48].

Ayurvedic properties –

Rasa – Tikta, Katu

Guna – laghu, ruksha, teekshna

Veerya – Ushna

Vipaka - katu

Doshagnata – Kaphavatahara

Karma – Vrushya, Deepana, Pachan, Garbhashaya vishodhini, Artava pravartaka.

Rogagnata – Shoola, raktapitta, krumi, admana, gulma, rajorodha^[49].

Chemical composition – Seed contains poisonous saponin malanthine, bitter alkaloid – nigellin, essential oil- cymine, nigellone, carvone, limonene, nigellimine^[50].

Part used – seeds, leaves

Dosage – seed powder – 1-3gm, seed oil – 500mg^[51].

Upakunchika (*Nigella sativa*) in women's disorders –

Galactogague activity – Seed of *NS* showed marked galactogague activity. Administration of seeds exhibits more proliferation of acini and secretory activity in breast tissue of mother rat. The secretory activity of the

lactating breast tissue of rat shoes marked enhancement and increased distention after feeding of ether extract of *NS*^[52].

Effect of uterus – The volatile oil of *N sativa* inhibits the spontaneous movement of rats and guinea pig uterine smooth muscles and also the contraction induced by oxytocin stimulation.

The effects are found to be dose dependent and reversible, suggesting some antioxytotic potential of volatile oil.

It stimulate menstrual periods^[53].

Side effects – Excess dose leads to headache, giddiness and cramps

Contra indications and drug interaction – As long term administration shows elevated creatinin levels. Its long term use in renal diseases is contraindicated.

As its anti motility and anti diarrheal effects are known large doses must be avoided in constipation.

N sativa is not known to interact with any other drug^[54].

7. **JEERAKA** (*Cuminum cyminum*)

Jeeraka (Latin name – *Cuminum cyminum*, Family- *Apiaceae*) is one of the earliest cultivated herbs in Asia, Africa and Europe. In India it is extensively cultivated in northern region. Cumin seeds are popular as culinary spices and also used in folklore therapy since antiquity^[55].

Ayurvedic properties –

Rasa – Katu, tikta

Guna – laghu, ruksha

Veerya – ushna

Vipaka - katu

Doshagnata – Kaphavatahara

Karma– deepana, Grahi, pittakaraka, medya, pachaka, balya, ruchya, garbhashaya shodhaka, vrushya.

Rogagnata - jwara, gulma, murcha, atisara, krumi^[56].

Chemical composition – It contains 2.5-4% volatile oil, 10% fixed oil and protein. Volatile oil mainly consists of 30-50% cuminum aldehyde, small quantity of alpha pinene, beta pinene, phellandrene, cuminic alcohol, hydrated cuminaldehyde and hydrocuminine^[57].

Part used –seed.

Dosage –seed powder– 3-6gms^[58].

Jeeraka(Cuminum cyminum) in women's disorders –

Estrogenic/Anti osteoporotic Effect – Cumin is recognized as a phytoestrogen-rich plant containing estrogenic components, such as beta-sitosterol, stigmasterol, and the flavonoids luteolin and apigenin. Cumin may serve as a potential treatment option in estrogen-related conditions such as postmenopausal osteoporosis^[59].

In animals receiving a methanolic extract of cuminum, a significant reduction in urinary calcium excretion and augmentation of

calcium content and mechanical strength of bone was found. Animals showed greater bone and ash densities and improved microvasculature with no adverse effect like body weight gain and weight of atrophic uterus^[60].

Effect on Lactation- It is rich in iron and thus very good for lactating mothers as well as women who are undergoing menses or who are pregnant, since they are more in need of iron than others. Moreover, cumin is said to help ease and increase secretion of milk in lactating women due to presence of Thymol, which tends to increase secretions from glands, including milk which is a secretion from mammary glands. It is more beneficial if taken with honey. Cumin has remarkable amount of calcium (above 900 mg per 100 grams) which accounts to over 90% of our daily requirement of calcium. This calcium is an important constituent of milk and hence cumin is very good for lactating mothers^[61].

Side effects - Cumin is safe in food amounts and seems to be safe for most adults in appropriate medicinal amounts. The side effects of cumin are not known^[62].

In Pregnancy- Not enough is known about use of cumin during pregnancy^[63].

8. LAJJALU (*Mimosa pudica*)

Lajjalu (Latin name – *Mimosa pudica*, Family- *Mimosaceae*) as the name itself indicates the plant is having very sensitive leaves which

folds on touching. It grows throughout hotter parts of India and cosmopolitan in tropics^[64].

Ayurvedic properties –

Rasa – Kashaya, tikta

Guna – laghu, ruksha

Veerya – sheeta

Vipaka - katu

Doshagnata – Kaphapittahara

Karma – Sandhaneeya, rakta shodhaka, vishagna, vrana shodhaka, vrushya.

Rogagnata – Pradara, raktapitta, atisara, jwera, arsha, Yoniroga^[65].

Chemical composition – Mimosine, orientin, isoorientin^[66].

Part used – Whole plant root, leaf, seeds.

Dosage – Juice – 10-20ml^[67].

Lajjalu(Mimosa pudica) in women's disorders

–

In *Ayurveda* it is indicated for vaginal and uterine disorders^[68].

Effect on uterine bleeding – Aqueous extract of root powder in pilot study on patients with dysfunctional uterine bleeding gave promising results^[69].

Anti fertility activity – *M. pudica* is one of the folk medicinal plants commonly used as anti-fertility agent in some places in India.

The dried methanolic extract of the root was administered orally to Swiss albino mice for 21 consecutive days.

The root extract of *M. pudica* found to having anti-fertility effect as it prolongs the estrous

cycle and disturbs the secretion of gonadotrophin hormone in albino mice.

The decrease in FSH levels in the proestrous and estrous stages in the extract administered group compared with those of control animals indicates the disturbances of estrous cycle and ovulation through suppression of FSH^[70].

Contra indications – In Pregnancy – As it is having anti fertility effect it must be avoided in pregnancy.

9. KUMARI (Aloe vera)

Kumari (Latin name – *Aloe vera*, Family- *Liliaceae*) is fleshy herb which is cultivated in dry parts of India.

Ayurvedic properties –

Rasa –Tikta, Madhura

Guna – Guru, Snigdha

Veerya – sheeta

Vipaka - katu

Doshagnata – Kaphapittahara

Karma – Shothahara, vedanasthapana, vrunaropana, deepana, pachana , netrya, rasayana, balya, vrushya, Artavajanana, Grabhasravakara.

Rogagnata – Gulma, pleeha, yakrutvrudhi, krimi, shukradaurbalya, rajorodha, charmaroga^[71].

Chemical composition – It contains crystalloid glycoside aloine, aloe emodine or trihydroxy methyl – anthraquinone, resin, volatile oil, gallic acid^[72].

Part used –Leaf, Leaf juice, dried juice of leaf.

Dosage – Leaf juice – 10-20ml, dried juice 100-300mg^[73].

Kumari (Aloe vera) in women's disorders –

In *Ayurveda* it is indicated for amenorrhea^[74].

In a study conducted to evaluate the effect of *Aloevera* sap on progesterone, estrogen and gonadotrophin in female rats revealed that *Aloe vera* sap having favorable effect on estrogen synthesis due to its phytoestrogen component such as beta sitosterol, and can increase the estrogen level^[75].

Aloes is the most irritable of all the emodin purgative and produces considerable abdominal gripping and pelvic vascular congestion along with stimulation of uterine muscle^[76].

Contra indications – Pregnant and nursing women^[77].

The latex form of *aloe* should not be used orally by anyone with inflammatory intestinal diseases such as crohn's disease, ulcerative colitis or appendicitis. It should not be used by children or by women during pregnancy^[78].

CONCLUSION

Ayurveda has indicated many numbers of medicinal plants in the treatment of women's disorders. The above review suggests that these medicinal plants can be used effectively in the treatment of these disorders and at the same time it cautions about the safety of these during pregnancy and lactation.

Furthermore medicinal plants needs to be explored, so that there should be no doubts regarding the efficacy and safety of medicinal plants.

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