

Role and Application of Indian Medicinal Plants in Women Health Management

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Abstract

Gynaecology, also spelt gynecology, is the branch of medicine that deals with the condition of the female reproductive system (including the uterus, vagina, and ovaries). Gynaecology is a significant subspecialty that deals with the treatment of conditions that affect rural women, such as abortion, monthly irregularities, menopausal syndrome, morning sickness, leucorrhea, infertility, delivery issues with women's health have a significant effect on social, economic, and psychological facets of life. Despite the lack of awareness and health care systems worldwide, they are the source of all life. In light of this, an effort has been made to compile data on plants utilised in a variety of issues relating to women's health through literature and field research. The several findings showed that native plants are significant and widely used therapeutic agents for issues relating to women's health. The article emphasises the significance of using native flora to treat women's reproductive issues and effective usefulness as a therapeutic herbal drug.

Keywords: Gynaecology, fertility, medicinal plants, women health, reproductive

INTRODUCTION

Women, all over the world, have relatively greater access to herbal products, especially from the kitchen, due to our socio-economic construct and traditions of our societies. Women from the all-social classes, rely on herbal products for their cosmetic and wellness needs. Thus, it should not be difficult to induce women to use plant and their parts for treatments and as a preventive agent. Moreover, for the women who are hesitant to undertake health checkups for gynaecological problems or have lack of access to healthcare in their areas, herbal medicine can be a good alternative. It has been highlighting the depth of traditional knowledge about plant medicines that exists among rural men and women. The primary cause of maternal mortality in underdeveloped nations, reproductive diseases and disorders account for 18% of the worldwide burden of disease for women of reproductive age (WHO, 2003). Ailments associated to female reproduction include menstruation troubles, fertility problems, and pregnancy and its complications. It was noted which plant parts were used, how they were delivered, how they were prepared, how much was taken, and if the plant was used as a decoction or mixture (Kaingu et al., 2013). Most medicinal plants are traditionally obtained from the wild, where they grow naturally. However, as a result of many negative human and environmental factors, such as overharvesting, deforestation, desertification and global warming to mention a few, medicinal plants are faced with the serious problem of extinction (Kankara et al., 2013).

Additionally, they are aware of the linkages between their health and the ethical cultivation and usage of therapeutic herbs. According to a gender role analysis of medicinal herbs, women are primarily responsible for their gathering, processing, storage, and use. In a similar vein, women are in charge of passing on this information to the next generation. Sustainable use of medicinal plants is challenged, nevertheless, by rising interest in ayurvedic medicine, the growth of organised marketplaces for those products, and extreme poverty and illiteracy among rural residents. The findings show that in order to manage medicinal plants sustainably through their participation in decision-making, it is necessary to identify gender roles and include indigenous knowledge (Singhal, 2005). For thousands of years, herbal remedies have been utilised to heal human illnesses. The World Health Organisation (WHO) has recently rekindled interest in the use of therapeutic plants by traditional healers in Africa. This curiosity has encouraged more study of conventional medications. The foundation of traditional medicine as it is practised in different African countries is the idea that forces from enraged ancestral spirits, bad spirits, and witchcraft can sometimes be blamed for illness, disease, or discomfort. Traditional medicine attributes most serious illnesses to supernatural causes, and it takes into account a person's social and economic circumstances when diagnosing physical and psychological issues in their lives. However, herbal remedies are used to treat more minor ailments (Kaingu et al., 2013). Prior to recorded history, people have used plants and their resources to treat a variety of illnesses, and people continue to do so now all over the world. On a Sumerian clay slab from Nagpur, which is thought to be about 5000 years old, the earliest written record of the use of medicinal herbs for the production of medications has been discovered. The discovery of morphine from opium in the early 19th century opened the door for other investigations aiming at separating active substances from therapeutic plants. This discovery sparked the discovery of other bioactive substances like cocaine, codeine, digitoxin, and quinine. Despite the fact that research and development (R&D) organisations and pharmaceutical corporations are becoming more interested in molecular modelling, combinatorial chemistry, and other synthetic methods (Kankara et al., 2013).

India's States vary widely with respect to fertility, mortality, and contraceptive use. In general, there is a gradient from north south and east west. The states, which have higher contraceptive use, have lower fertility and lower mortality. In the north, Uttar Pradesh, the most populous state, has low contraceptive use but the highest fertility and mortality rate.

In India overpopulation is due to manifold reasons. However, the major two causes are early marriages and longer span of reproductive activity. The other contributing factors are lack of

respect for women, lack of recreational facilities, tropical climate, total beliefs, ignorance, illiteracy, absence of proper welfare schemes and decline of death rate (Park, 1995).

NATURAL RESOURCES FOR FERTILITY REGULATION

Due to severe and long-lasting side effects of modern medicines including contraceptive, the people are now looking for using herbal medicines for curing various diseases and also for fertility control. Fortunately, India has rich heritage of use of medicinal plants for fertility control. In this context, it is appropriate to locate the large number of indigenous plants that are used as oral contraceptives by tribal and other section of people. Many such plants are recommended in Ayurvedic, Yunani and Folk medicines (Chopra et al., 1956, 1958; Nadakarni and Nadkarni, 1976; Satyavati et al., 1987). A good number of scientific papers have been already published related to the use of medicinal plants for antifertility. However, still many more medicinal plants are either less investigated or left investigated.

Many scientists all over the world in general and India in particular, are presently engaged in the search for a safe, effective, easily administrable, cheap and non-steroidal antifertility agent derived from medicinal plants, acceptable both by male and female and are commonly grown in India and other parts of the world.

The plants, which exhibit fertility control in females, may possess antiovulatory, antiimplantation, abortifacient and uterine stimulating activities (Kamboj and Dhawan, 1982). The plants, which exhibit fertility control in males, may possess androgenic, antiandrogenic, antispermatogenic and spermicidal activities (Ericsson, 1974).

Many plants and plant preparation have been used to control fertility (Anonymous, 1996; Kirtikar and Basu, 1935; Nadakarni, 1954; Chopra et al., 1956). This has led to exploit new antifertility compounds from natural products. Some active constituents were isolated and are in clinical practice as antifertility agents (Jayashree, 2001).

PLANTS AND THEIR PRODUCTS EXHIBITING ANTIFERTILITY PROPERTY IN FEMALES

Table 1: Plants and their products possessing Anti-ovulatory activity

Name of the plant	Part used	Animal model	References
<i>Albizia lebbek</i>	Seeds	Rabbit	Vohora and Khan, 1974
<i>Aloe barbadensis</i>	Leaves	Rabbit	Gupta et al., 1971
<i>Azadirachta indica</i>	Seeds	Rat	Roop et al., 2005
<i>Citrus medica</i>	Seeds	Rat	Sharangouda and Patil, 2007, 2007a, 2008, 2010; Patil and Patil, 2010, 2013
<i>Crotolaria juncea</i>	Seeds	Rat, Mice	Vijaykumar, 2004
<i>Hibiscus rosa sinensis</i>	Flowers	Mouse	Murthy et al., 1997
<i>Malvaviscus conzatti</i>	Flowers	Rat	Bannerjee et al., 1999
<i>Melia azedarach</i>	Seeds	Rat	Roop et al., 2005
<i>Mentha arvensis</i>	Leaves	Rabbit	Kapoor et al., 1974
<i>Momordica charantia</i>	Seeds	Rat	Sharanabasappa et al., 2002, 2003
<i>Nelumbo nucifera</i>	Seeds	Mice	Majumdar et al., 1992
<i>Polygonum hydropiper</i>	Roots	Rabbit	Kapoor et al., 1974
<i>Randia dumetorum</i>	Seeds	Rat	Singh et al., 2000
<i>Ricinus communis</i>	Seeds	Rabbit	Salhab et al., 1999
<i>Rivea hypocrateriformis</i>	Aerial parts	Rat	Shivalingappa et al., 2001, 2002
<i>Solanum khasianum</i>	Whole plant	Rat	Kohli et al., 1971
<i>Taxus baccata</i>	Leaves	Rat	Choudhury et al., 1970
<i>Vicoa indica</i>	Leaves	Bonnet monkey	Rao et al., 1996
<i>Vitex negundo</i>	Seeds	Rabbit	Vohora et al., 1973, 1974
<i>Wilbrandia sps</i>	Rhizome	Mouse, Rat	Almeida et al., 1992

Saponins isolated from the seeds of *Albizia lebbek* (Vohora and Khan, 1974) and aqueous extract of *Aloe barbadensis* leaves (Gupta et al., 1971) have shown potent antiovulatory activity in rabbits.

Administration of polar and non-polar fractions of *Azadirachta indica* seeds produced significant reduction in follicles in albino rats (Roop et al., 2005).

The ethanol extract of *Crotalaria juncea* seeds have shown prominent antioviulatory activity in female albino rats (Vijaykumar, 2004).

The various extracts of *Citrus medca* seeds have shown prominent toxicity, abortifacient, antioviulatory, antiimplantation, estrogenic and withdrawn of reproduction activity in female albino rats (Sharangouda and Patil, 2007, 2009, 2008, 2010; Patil and Patil, 2010, 2013).

Flower extract of *Hibiscus rosa sinensis* (Murthy et al., 1997) and *Malvaviscus conzatti* (Bannerjee et al., 1999) and leaf extract of *Mentha arvensis* (Kapoor et al., 1974), have shown antioviulatory activity in mice, rats and rabbits respectively. Administration of polar and nonpolar fractions of seeds of *Melia azedarach* produced significant reduction in follicles in albino rats (Roop et al., 2005).

Phenolphthalein isolated from seed extracts of *Momordica charantia* has shown antioviulatory and antiimplantation activities in rats (Sharanabasappa et al., 2002, 2003).

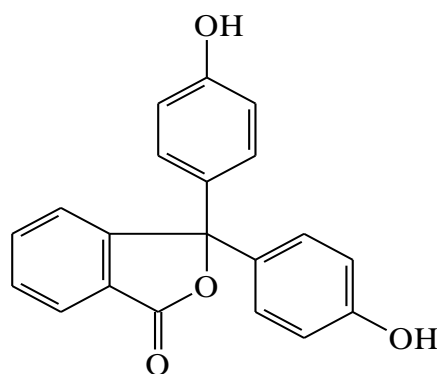


Fig. 1: Structure of Phenolphthalein

Petroleum ether extract of seeds of *Nelumbo nucifera* and *Polygonum hydropiper* roots have shown antioviulatory activity in mice and rabbits respectively (Majumadhar et al., 1992; Kapoor et al., 1974).

Aqueous extract of *Randia dumetorum* seeds (Singh et al., 2000) has shown antioviulatory activity in rabbits and rats. The female rabbit, a reflex ovulator showed reduction in the formation of corpora lutea, when treated with *Ricinus communis* (Castor bean) extract or / and its ricin-A-chain, for 10 consecutive days indicating the antioviulatory property of castor bean (Salhab et al., 1999).

The ethanol extract of *Rivea hypocrateriformis* aerial parts at a dose level 200mg/kg body weight administered orally has shown significant decrease in number of *Graafian* follicles and corpora lutea and increase in number of atretic follicles in treated rats indicating its antioviulatory effect (Shivalingappa et al., 2001, 2002).

Ethanol extract of the whole plant of *Solanum khasianum* showed potent antioviulatory activity in female albino rats (Kohli et al., 1971).

Leaf extract of *Taxus baccata* (Choudhury et al., 1970) and *Vicoa indica* (Rao et al., 1996) and seed extract of *Vitex negundo* (Vohora et al., 1973) have shown potent antioviulatory activity in various animal models.

The purified fraction of rhizome of *Wilbrandia* species that contained two non-cucurbitacin glycosides demonstrated potent antifertility effects in rats and mice. In regularly cycling mice, the treatment suppressed the incidence of estrous phase of the reproductive cycle, suggesting a possible antioviulatory effect (Almeida et al., 1992).

PLANTS AND THEIR PRODUCTS AS HERBAL APHRODISIACS

The available herbal drugs and treatments have limited efficacy, unpleasant side effects, and contraindications in certain disease conditions. There are many herbal drugs that have been used by men with erectile dysfunction with varying degrees of success. According to Ayurveda, some herbs have been traditionally used as Vajikaran Rasayana herbs because of their putative positive influence on sexual performance in humans (Neychev and Mitev, 2005).

Table 1: List of plants having aphrodisiac potential

Name of the plant	Part used	Animal model	References
<i>Chlorophytum borivilianum</i>	Roots	Rat, Human	Kenjele et al., 2008
<i>Crocus sativus</i>	Stigma	Rat	Rios et al., 1996; Madan et al., 1996
<i>Kaempferia parviflora</i>	Rhizomes	Rat	Chaturapanich et al., 2008
<i>Myristica fragrans</i>	Dried kernel	Nice	Tajuddin et al., 2003
<i>Panax ginseng</i>	Root	Rabbit	Chen, 1996
<i>Phoenix dactylifera</i>	Pollen	Rat	Bahmanpour et al., 2006
<i>Terminalia catappa</i>	Seeds	Rat	Ratnasooriya and Dharmasiri, 2006
<i>Tribulus terrestris</i>	Whole plant		Gouthaman et al., 2000, 2000a; Neychev and Mitev, 2005

The tuberous roots of *Chlorophytum borivilianum* (commonly known as safed musli) (family Liliaceae) possess immunomodulatory and adaptogenic properties and are used to cure impotency, sterility, and enhance male potency. The effect of lyophilized aqueous extracts obtained from the roots of *C. borivilianum*, on sexual behavior in male albino rats and compared with untreated control group animals (Kenjele et al., 2008).

The *Crocus sativus* L., commonly known as saffron, is a perennial stem less herb belongs to the family Iridaceae and is widely cultivated in Iran and other countries, including India and Greece. In traditional medicine, saffron is recommended as an aphrodisiac agent. Madan et al., (1996) studied the effects of saffron stigma extract and two active constituents, crocin and safranal, on sexual behavior in male rats (Rios et al., 1996; Madan et al., 1996).

Plant *Kaempferia parviflora* belongs to the family Zingiberaceae is a native plant of Southeast Asia, is traditionally used to enhance male sexual function. However, only few scientific data in support of this anecdote have been reported. The results showed that all extracts had virtually no effect on the reproductive organ weights even after 5 weeks. However, administration of the alcohol extract significantly decreased mount and ejaculatory latencies when compared with the control (Chaturapanach et al., 2008).

The dried kernel of broadly ovoid seeds of *Myristica fragrans* Houtt. (Nutmeg) of the family Myristicaceae has been mentioned in Unani medicine to be of value in the management of male sexual disorders. In a study by Tajuddin et al., (2003) it was found that administration of 50% ethanolic extract of a single dose of Nutmeg and Clove, and Penegra resulted in the increase in the mating performance of the mice. It was found that out of 6 control animals only 2 males mated (inseminated) 2 females and the remaining 4 males mated 1 female each during the overnight experimental period. Whereas, Nutmeg treated male animals mated 3 females each except 2 which mated 5 females each. In the Clove treated male animals 3 mated 2 females each, 2 mated 4 females each and remaining 1 mated 3 females each. In the Penegra treated animals 4 mated 5 females each and 2 mated 3 females each (Tajuddin et al., 2003).

Date palm, the *Phoenix dactylifera* belongs to family Palmae is a native to North Africa has been extensively cultivated in Arabia and Persian Gulf. The date palm pollen (DPP) is used in the

traditional medicine for male infertility. In an experimental study by Bahmanpour et al. (2006) investigated the effect of *P. dactylifera*, pollen, on sperm parameters and reproductive system of adult male rats. They observed that the consumption of DPP suspensions improved the sperm count, motility, morphology, and DNA quality with a concomitant increase in the weights of testis and epididymis. The date palm contains estradiol and flavonoid components that have positive effects on the sperm quality (Bahmanpour et al., 2006).

For many years, *Panax ginseng* belonging to family Aralaceae has enjoyed a reputation as one of the finest aphrodisiacs in the world. The word Panax, in fact, means "all-healing" in Greek and is thus a reference to the roots supposed revitalizing properties for the whole human-body. As the neurotransmitter inducing penile erection, no release was shown to be enhanced by GS in rabbit corpus cavernosum in vitro (Chen, 1996).

Terminalia catappa is a large tropical tree belongs to the family, Combretaceae a significant aphrodisiac potential. Also observed that *T. catappa* seeds at dose of 1500 mg/ kg or 3000 mg/kg, per oral for 7 days in rats had a marked improvement of aphrodisiac action, sexual vigor. In contrast, the higher dose (3 000 mg/kg, p.o.) reversibly inhibited all the parameters of sexual behavior other than mounting (Ratnasooriya and Dharmasir, 2006)

Tribulus terrestris (TT) is a flowering plant belongs to the family Zygophyllaceae, native to warm temperate and tropical regions. Administration of TT to humans and animals improves libido and spermatogenesis. Neychev et al. (2005) investigated the influence of *T. terrestris* extract on androgen metabolism in young males. The findings of study predict that *T. terrestris* steroid saponins possess neither direct nor indirect androgen-increasing properties (Gouthaman et al., 2000, 2000a)

WOMEN HEALTH RELATION WITH MEDICINAL PLANTS

Gynaecology, is the branch of medicine that deals with the condition of the female reproductive system (including the uterus, vagina, and ovaries). Gynaecology is a significant subspecialty that deals with the treatment of conditions that affect rural women, such as abortion, monthly irregularities, menopausal syndrome, morning sickness, leucorrhoea, infertility, delivery issues, etc. Many women are forced to get abortions due to social and economic conditions. Women are only left with the option of self-inducing abortion in nations where it is either prohibited or when the healthcare system is inadequate (Adhikari et al., 2018). In India, induced abortion was prohibited under the 1816-enacted Indian Phenol Code, which was drafted in accordance with British law at the time. An intentional miscarriage is what is meant by a "induced abortion." women's health care is crucial, according to WHO. Women in hamlets are extremely uneducated and economically underprivileged. Most rural pregnant women choose a qualified village midwife over a gynaecologist for delivery. They are unable to visit medical facilities or multispecialty clinics because of distance and a lack of funds. In many underdeveloped nations, traditional birth attendants (TBA) handle the majority of primary maternity care. Based mostly on experience and knowledge gained via the customs and practises of the community where they were born, TBA have been offering basic healthcare, support, and guidance throughout India during and after pregnancy and childbirth. They frequently work in isolated, rural, and other medically underdeveloped areas. Approximately 80% of world population depends on traditional herbal medicine for primary healthcare as plant and plant-based medication in the base of many of the today's pharmaceutical drugs used for various ailments. In India almost 95% of medications are plant-based formulations from the traditional system of Ayurveda, Homeopathy, Siddha and Unani their associate material largely depended on wild harvested plants (Khadka et al., 2011).

Herbal medication holds highly reputational position in the developing countries like India and China becoming popular among people of both urban and rural areas to their safety, efficacy and affordability. Almost 8,000 plant species are registered for their ethnomedicinal importance⁶ and traditional knowledge-based formulations or indigenous traditional medicine has played an elementary role in the innovation of novel healthcare products from plants. Many ethnobotanical

studies have been carried out on the medicinal use of herbal plants but very few quantitative studies have been performed on the use of traditional remedies for gynaecological care. Fortunately, the tradition of using traditional remedies to treat female healthcare problem is still very much alive. However, these traditional remedies have not been thoroughly documented. The creation of nuclear families where grand-mothers is absent, migration to cities easy availability of synthetic drugs and access to primary health centre's are some of the reasons for the less of traditional knowledge about traditional remedies. In this study, we have documented the traditional knowledge on plants used for treating gynaecological disorders (Upadhyay et al., 2011).

FERTILITY AND WOMEN'S HEALTH

High level of fertility exacerbated the health problems of Indian women. Fertility has been declining in India. Research has shown that the number of pregnancies and closely spaced births create health problems. Unwanted pregnancies terminated by unsafe abortions also have negative consequences for women's health. Reducing fertility is an important element in improving the overall health of Indian women. Increasing the use of herbal contraceptives is best way to reduce fertility. The knowledge of family planning is nearly universal in India, only 36 percent of married women aged 13 to 49 currently use modern contraception. There are numerous herbs used as contraceptives and herbal supplements are widely used and promoted by experts for the purpose of contraception. *Lithospermum ruderale* root is used by women in the Dakota tribe. The root is steeped in cold water for hours and then ingested daily for six months at a time. *Arisaema triphyllum* root, is similarly taken by women in the Hopi tribe after being mixed with cold water, *Cirsium vulgare* supposedly promote temporary sterility. They were boiled in water to create tea and consumed by women in the Quinault tribe. *Daucus carota* seed, is used as birth control, and traces its roots back to India. The seeds are taken for seven days after unprotected intercourse during the fertile period to help prevent fertilized eggs from implanting in the uterus (Kowsalya and Manoharan, 2017).

CONCLUSION

In search for herbal drug from medicinal plants is being familiar due to its lower side effects, its ready to get easily, simple preparation of drug and low cost. The available drugs and treatments have limited efficacy, unpleasant side effects, and contraindications in certain disease conditions. A variety of botanicals are known to have a potential effect on the sexual functions, supporting older claims and offering newer hopes. This review, while evaluating various factors that control sexual function, identifies a variety of botanicals that may be potentially useful in treating sexual dysfunction. All the plants in this review have exhibited significant pharmacological activity. Demands of natural contraceptives and aphrodisiacs require increasing studies to understand their effects on humans and safety profile. Due to unavailability of the safety data, unclear mechanisms, and lack of knowledge to support the extensive use of these substances, uses of these products may be risky to the human being. With more evidence of clinical data, proper biological action, safety, and their interaction with other organs and system may useful phenomenon to become aphrodisiacs or contraceptive plant treating against sexual disorder or safety sex can become highly recognizable and fruitful.

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