

TRADITIONAL HERBAL REMEDIES USED FOR MANAGEMENT OF REPRODUCTIVE DISORDERS IN WAYANAD DISTRICT, KERALA

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ABSTRACT

The present study reports the medicinal plants commonly used by different tribal communities located in Wayanad district, Kerala to cure reproductive disorders. The plant parts utilized, methods of preparation of remedies, tribes associated, status, habit and the place where it was practiced are documented. The ethno botanical indigenous tribal knowledge was collected by visiting traditional healers and documenting the medicinal plants used. A total of 35 plant species belonging to 28 families were documented and identified as herbal remedies for reproductive problems. Most species used were from Fabaceae (17.14%), followed by Annonaceae and Moraceae (5.71%). The majority of herbal preparations for reproductive afflictions were prepared from the roots (20%) followed by bark (17.04%) while other plant parts are also used in varied percentage. It was observed that fresh plant material was used to prepare remedies and was prepared as mixtures of multiple ingredients from different plants. The information gained on frequently used traditional remedies will give some leads for future targets for further analysis in order to develop new drugs for reproductive disorders in humans.

Keywords: Medicinal Plants, Reproductive disorders, Wayanad, Tribes.

INTRODUCTION

Traditional remedies are part of the cultural and religious life of the tribal. WHO¹⁻² had earlier estimates that the usage of traditional medicine for primary healthcare in developing countries is 80% and most of which involve the use of plant extracts³. This is an indication that herbal medicine is important in primary health care provision in developing countries like India and it is also true with study area Wayand district, Kerala. Reproductive system and sexual disorders deals with the male and female reproductive system and any diseases associated with it such as syphilis, gonorrhoea, chlamydia and trichomoniasis. These diseases are considered to be responsible for acute symptoms, chronic infection and serious delayed

consequences such as infertility, ectopic pregnancy, cervical cancer and the untimely death of infants and adults and hence rank top five disease categories for which adults consult for health care⁴. Now a day due to exposure to toxic chemicals leukemia, brain and breast cancer, other childhood cancers, asthma, birth defect resulting in undescended testicles, learning and developmental disabilities along with difficulty in conceiving and maintaining a pregnancy is drastically increasing⁵. There are also reproductive ailments that local communities have been handling and treating for ages including sexual impotence, gonorrhoea, abortion, leucorrhoea, irregular menstruation etc. Plants and plant based medicaments are the basis of many of the modern pharmaceuticals

used today for our various ailments^{4,6}. In India, almost 95% of the prescriptions are plant based the traditional system of Unani, Ayurveda, Homeopathy and Siddha⁷. Traditional Medicine is used globally and is rapidly growing in economic importance and in developing countries, is often the only accessible and affordable treatment available.

A wide range of herbal traditional medicines are used to regulate the menstrual cycle, enhance fertility and as either abortifacients or anti abortifacients. The concept of reproductive health care has been focusing mainly on women disregarding men. In this study nature and range of traditional medicines used for reproductive disorders for both men and women by tribal people were discussed. Tribes located in Wayanad District of Kerala are known to have extensive medicinal plant knowledge which is unrecognized. Along with other splinter tribe groups especially five major tribes of this area Kurichia, Kuruma, Kattunaika, Paniya and Adiyani distributed in taluks Mananthavady,

Bathery and Vythiri of Wayanad district are depending on plant medicine for cure of different ailments. The present study attempts to give an overview on medicinal plant species employed in Wayanad district, Kerala as traditional remedies for reproductive problems.

METHODOLOGY

The ethno botanical survey was conducted in the tribal localities of three taluks Mananthavady, Bathery, and Vythiri of Wayanad district Kerala. The study areas, based on the total forest cover and tribal populations are ethno botanical hotspots of Wayanad. The study area Wayanad district [Figure 1] is located in Kerala. It lies between north latitude $11^{\circ} 27'$ and $11^{\circ} 58'35''$ and the east longitudes $75^{\circ} 47'50''$ and $76^{\circ} 26' 35''$. It has a salubrious climate. Since the Wayanad plateau lies at an average height of 900-1200 m above the mean sea level, it enjoys humid tropical climate, with almost uniform temperature throughout the year. The mean annual temperature is 23.8°C .



Fig. 1: Wayanad District: The study area

Tribal people in Wayanad district mostly inhabit in and around the deep forest area and depend on the forest resources for their livelihood. Some of them are resides in less accessible areas of the district and lead a primitive life. Each tribe has its ancient culture and traditional doctrine of utilization and conservation of plant resources. Only the medicine man (*Vaidya*), elder men and women have better knowledge about the traditional uses of their surrounding vegetation. Meetings and interviews with these traditional practitioners and tribal farmers were conducted to explain the purpose of the research. Eight traditional healers whose treatments are believed to be very effective were interviewed individually. These interviews yielded medicinal properties of plants and identification method in depth. The key areas of discussion were detailed information on plants used against reproductive disorders and were recorded including local name, indications, preparation, plant parts used, method of administration and dosage.

Identification of plants

The plants were identified by the taxonomic experts from M.S. Swaminathan research foundation Wayanad. Fresh plant specimens were used for identification. Some plants were identified at the natural habitat itself. The taxonomic keys of Sasidharan⁸ were mainly used for this purpose.

Documentation of the data

The collection of data related to traditional ecological knowledge related to plants, their botanical names in Malayalam, family, local names, parts used and all other information collected were compiled and documented. The photographs of the plants have been maintained in the soft copy. The plants and plant parts were air dried under shade and preserved in the form of herbariums and dried specimens. Herbarium of plants is deposited in Department of Studies in Environmental Science, Manasgangotri, University of Mysore, Mysore, Karnataka, India.

RESULTS AND DISCUSSION

Several types of reproductive related complications were reported during interview with traditional healers. The complications treated were sterility, menorrhoea, gonorrhoea, low sperm count, leucorrhoea, fertility problems, abortion, menstrual disorders, milk production, uterine infections, delivery problems, swelled testicles, to prevent pregnancy and after birth

bleeding. 35 plant species belonging to 28 families which are used by different tribes against these complications are recorded and tabulated in table 1. Among the plants used six plants belongs to Fabaceae (17.14%), two each from Annonaceae and Moraceae (5.71%) and other 25 plants belongs to different families of the plant kingdom. The majority of herbal preparations for reproductive afflictions were prepared from the roots (20%) followed by bark (17.04%) while other plant parts are also used in varied percentage.

The study revealed that roots of *Annona squamosa*, latex of *Carica papaya* and roots of *Hibiscus rosa-sinensis* were used for abortion, leaves of *Cipadessa baccifera* and seeds of *Diplocyclos palmatus* were used for infertility problem and seeds of *Cycas circinalis* were found useful to increase sperm production. The plants used for curing leucorrhoea were flowers of *Woodfordia fruticosa*, leaves of *Scoparia dulcis*, leaves of *Maranta arudinacea*, seed paste of *Ensete superbum*, rhizome of *Asparagus racemosus* and tender coconut of *Cocos nucifera*. Fresh inner jelly of *Aloe vera* was alone used to prevent abortion. Among the several ailments related to reproductive disorders many plants were found employed to regulate menstrual cycle and excessive bleeding. The plants used by the tribes for this purpose is decoction of *Aristolochia bracteolata*, roots of *Bombax ceiba*, bark of *Carallia brachiata*, roots of *Ciox lacrima*, *Diospyros candolleana* plant juice, bark and flower of *Erythrina indica*, flower of *Hibiscus rosa-sinensis*, seed decoction of *Mucuna pruriens* and bark of *Polyalthia cerasoide*.

There are reports indicating such study where tribal knowledge has been documented. *Dioscorea pentaphylla*, *Adiantum philippense*, *Tectona grandis*, *Cardiospermum helicacabum* and *Diplocyclos palmatus* were reported to be used against ovulation enhancement by Banjara tribe of Umarkhed region of Maharashtra against impotency⁹.

Lodh pathani (*Symblocus racemosa*), Sema Musli (*Salmalia malabaricum*) and Jal Jamni (*Cocculus villosus*) are some of the herbs used as the drug of choice by herbal vendors and they claim that these plants will serve as remedies for some gynaecological disorders in women such as menorrhagia, leucorrhoea and also to restore fertility among women who fall to conceive¹⁰, but these plants were not mentioned by any of the tribes consulted in the present study.

Among the several plants used it is interesting to note that different parts of the same plant are used for different problems. Seeds of *Abrus precatorius* after soaking in milk were used to prevent pregnancy whereas roots were used against gonorrhoea. In case of *Ciox lacrima* roots were used to cure menstrual disorders while seeds were used to cure uterine diseases. *Ensete superbum* seed paste along with milk was taken internally against urinary troubles and leucorrhoea, where as inner part of the bud was consumed to prevent pregnancy. Root was used to cause abortion and flower was mixed with milk for treatment to menstrual disorders in case of *Hibiscus rosa-sinensis*.

Gonorrhoea is an inflammatory disease of generative organs common in male and female, caused by the bacteria *Neisseria gonorrhoea*. Five plant species are commonly used by tribes in Wayanad to treat gonorrhoea. The kurichia and Adiya tribes in Mananthavady taluk used root powder of *Abrus precatorius*, Kattunaika tribes used the latex of *Ficus benghalensis* and kurichia and kuruma tribes used root paste of *Trichosanthes tricuspidata* to cure gonorrhoea. Root paste of *T. tricuspidata* was applied on the affected part to cure gonorrhoea. Kurichia, kuruma and kattunaika tribes used gum of *Kingeodendron pinnatum* and whereas same tribes except kattunaika also used seed paste of *Physalis minima* to prepare medicine to cure gonorrhoea.

The seeds of *Mucuna pruriens* are widely used for treating male sexual dysfunction in Unani medicine¹¹, the L-DOPA in this plant increased the sexual activity of male albino rats considerably and also reported to arouse sexual desire in the patients suffering from Parkinson's disease¹², the present study reports its usage to regularize menstruation adding a new medicinal value for this plant. In an antifertility program *Abrus precatorius* were studied with pregnant rats. A daily dose of 300mg showed a 40 -60 percent inhibition of pregnancy of rats¹³. *Abrus precatorius* is one of the important herbs commonly known as Indian licorice. It is reported to have a broad range of therapeutic effects, like anti-bacterial, anti-fungal, anti-tumor, analgesic, anti-inflammatory, anti-spasmodic, anti-diabetic, anti-serotonergic, anti-migraine, including treatment of inflammation, ulcers, wounds, throat scratches and sores. It is now considered as a valuable source of unique natural products for development of medicines against various diseases and also for the development of industrial products¹⁴. The present study

observed that kuruchia and adiya used seeds, while kuruma were employing roots of this plant to avoid pregnancy. This was scientifically reported to be valid by work carried out by Maiti et al.,¹⁵ and Rao¹⁶. They proved antifertility activity of chloroform/methanol extract of seeds of this plant in rat.

Roots of *Abrus* was reported to possess several chemical constituents such as abrol, abrasine, precol and precasine in roots and abrine, abraline, abrasine, abricin, abrin, abrusgenic-acid, abrusgenic-acid-methyl-ester, abruslactone, abrusic-acid, anthocyanins, calcium, campesterol, choline, cycloartenol, delphinidin, gallic-acid, glycyrrhizin, hypaphorine, N, N-dimethyl-tryptophan, N,N-dimethyl-tryptophan-metho-cation-methyl-ester, P-coumaroylgalloyl glucodelphinidin, pectin, pentosans, phosphorus, delphinidin, gallic-acid, glycyrrhizin, hypaphorine, N,N-dimethyl-tryptophan, N,N-dimethyl-tryptophan-metho-cation-methyl-ester, P-coumaroylgalloyl-lucodelphinidin, picatorine, polygalacturonic-acids, precasine, precatorine and protein trigonelline in seeds¹⁷⁻¹⁸. It is interesting to note that the seeds of this plant are poisonous, but tribal people are successfully using it to avoid pregnancy without any side effects, it could be because before use seeds of this plant are soaked in cow milk overnight to remove toxic effect, which warrants further research in this regard.

Adenocalymma alliaceum Miers is reported to possess antifungal activity¹⁹ and hypocholesterolemic efficacy²⁰. The present study documents for the first time its use as therapy against uterine disorder supported by tribal usage.

An ethnobotanical survey on medicinal plants used in reproductive health related disorders in Rangia subdivision, Kamrup district, Assam was conducted by Choudhury et al.,²¹. 22 plant species for 11 different reproductive disorders, namely leucorrhoea, excess uterine bleeding, infertility in female, night fall or wet dream, vomiting at the time of pregnancy, gonorrhoea, easy delivery of baby, increase of breast milk, irregular menstruation, infertility in male and female contraception. They reported that fruit of *Bombax ceiba* L. used against female infertility, whereas tribals surveyed in the present study reported to use roots of this plant to regulate irregular menstruation.

Clerodendron infortunatum Gaertn (Verbenaceae) is an important and widely used medicinal plant, reported to contain active bitter

substance like clerodin, has been widely used as tonic and antihelmintic agent in the country sides of North India. Though, variously used in Ayurveda, Unani system of medicine and Homeopathy in case of ailments like diarrhea, skin disorders, venereal and scrofulous complaints, wounds, post-natal complications, as vermifuge, laxative and cholagogue, for the removal of ascarids in anus, as external applications on tumours, etc.²². Its report on use of tender leaves of this plant is additional medicinal property reported in the present study. The thorough review of literature revealed that the plants *Bambusa arundinacea* (retz) roxb. *Carallia brachiata* (Lour.) Merr., *Centratherum anthelminticum* (L.) O. Ktze., *Ciox lacrima* jobi L., *Cocos nucifera* L., *Cipadessa baccifera* (Roth.) Mig., *Crotalaria retusa* L. *Cycas circinnalis* L. *Cyclea peltata* (Lam.) Hook. f. & Thoms. (Antidiabetic), *Diospyros candolleana* Wight. *Ensete superbum* (Roxb.) Cheesman. *Erythrina indica* Lam, *Ficus hispida* L.f. Supl. *Kingiodendron pinnatum* (Roxb. ex DC) Harms, *Maranta arundinacea* L. *Polyalthia cerasoides*(Roxb.) Bedd and *Trichosanthes tricuspidata* Lour., were not been reported earlier for its application in reproductive disorder management and hence present study adds these plants in the list of herbal remedies against reproductive disorder. It was also observed that *Aloe vera* (L.) Burm.f., *Aristolochia bracteolata* lam, *Bombax ceiba* L. *Diplocyclos palmatus* (L.) C. Jeffrey. *Ficus benghalensis* L. *Hemidesmus indicus* (L) R. Br., *Hibiscus rosasinensis* L., *Mucuna gigantia* Adans. (Srilanka), *Mucuna pruriens* (L). DC. *Physalis minima* L. *Scoparia dulcis* L. and *Woodfordia fruticosa* (L.) Kurz. were used by different tribal people of India for same ailment which supports further use of these plants to develop herbal remedies against these diseases.

The results of the present study support the presence of a comprehensive and highly formalized ethnomedical practices among tribal people. The several ethno biological studies conducted worldwide already expressed real concern on rapid and profound loss of transmission of traditional knowledge and skill to their next generations within their communities. The biocultural conservation can be successfully achieved through preservation of accumulated medicinal plant knowledge. Some time preserving knowledge of plants used in tribal medicine alone will not serve the purpose, because the healing tradition in tribals involve a complex art of diagnosis, examination,

communication, ritual and treatment, documenting these knowledge also help to understand more success of tribal medicine in large scale²³. The present study is hence successful in documenting such valuable knowledge for further utilization to develop effective formulations as herbal remedies for reproductive disorder.

CONCLUSION

Present study focuses on the utilization of plants available with the tribal people of Wayanad as traditional knowledge for the treatment of reproductive disorders. There is an urgent need for systematic documentation and scientific validation of this knowledge by using scientific tools.

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Table 1: Plants used by the traditional healers for treatment of reproductive disorders

SL NO	Botanical name	Local name used by the tribe	Family	Habit	Parts used	Mode of administration	Tribes associated	Taluk	Status
1	<i>Abrus precatorius</i> L.	Kunnimaram Kunnimara Kunnicchappu	Fabaceae	Tree	Seed	The seeds kept in cow milk for the period of overnight and the seed is given to woman in the morning at the end of menstruation cycle for preventing pregnancy	KR AD	MTDY	Common
					Root	Root powder is used in preparation of medicine for gonorrhoea	KU	BTRY	Common
2	<i>Adenocalymma alliaceum</i> Miers	Veluthullichedy	Bignoniaceae		Root	The root powder is an ingredient in the medicine to cure uterine disorders.	KU	MTDY	Common
3	<i>Aloe vera</i> (L.)Burm.f.	Kattarvazha	Liliaceae	Herb	Leaf	Intake of fresh inner jelly like part of the leaf prevent abortion	KU	BTRY	Common
4	<i>Annona squamosa</i> L.	Aatha Aathachakka	Annonaceae	Tree	Root	Dried root powder (5gm) is taken once in morning for five days by women for abortion of 3 to 4 months of pregnancy.	KR	MTDY	Common
5	<i>Aristolochia bracteolata</i> Lam.	Eecharamulla	Aristolochiaceae	Climber	Whole plant	Decoction of plant is to regularize menstrual cycle and excessive bleeding.	KU KR KT	MTDY	Common
6	<i>Asparagus racemosus</i> Willd.	Sathavary	Asperagaceae		Rhizome	The rhizome powder along with honey cures leucorrhoea.	KT	VTRY	Common
7	<i>Bambusa arundinacea</i> (retz) roxb.		Poaceae	Tree	Young leaf	Decoction of young leaves is used to clear uterus after child birth.	KU KT PN	MTDY	Common
8	<i>Bombax ceiba</i> L.	Poolamara	Bombacaceae	Tree	Root	Pasty mass of fleshy roots of young plant (1 gm) mixed with unboiled cow milk (2ml) is taken once a day in the early morning for a week by women to regulate irregular menstruation.	KR	MTDY	Common
9	<i>Carallia brachiata</i> (Lour.) Merr	Vancana	Rhizophoraceae	Tree	Bark	The grinded bark is boiled in water and concentrated, and taken internally in the treatment of menstrual problems.	PN	BTRY	Common
10	<i>Carica papaya</i> L.	Vallikkaramoosa	Caricaceae	Tree	Latex	The latex intake helps abortion	KR	MTDY	Common
11	<i>Centratherum anthelminticum</i> (L.) O. Ktze.	Kattujeerakam	Asteraceae	Herb	Root	Grinded root juice is taken internally against swelling the body after delivery.	KR AD	VTRY	Common
12	<i>Ciox lacrima jobi</i> L.	Poochakkuru	Poaceae		Root	Root powder mixed with honey cure menstrual disorders.	KR	MTDY	Common
					Seed	Seed paste intake cures uterine diseases	KU KR	MTDY	Common.
13	<i>Clerodendron infortunatum</i> Wight	Perukilam	Verbenaceae	Shrub	Tender Leaf.	The grinded leaf juice is applied around the vaginal opening of the pregnant	KU	BTRY	Common.

						lady to make delivery easy.			
14	<i>Cocos nucifera</i> L.	Elaneer	Araceae.	Tree	Tender coconut water	The tender coconut water is taken internally against leucorrhoea.	KR AD	VTRY	Common.
15	<i>Cipadessa baccifera</i> (Roth.) Mig	Kaipanarachi	Meliaceae	Shrub	leaf	The leaf powder is used to make a tablet which cures infertility	KU KR	MTDY	Common
16	<i>Crotalaria retusa</i> L.	Kilukilukki Kilukki	Fabaceae	Herb	Leaf	The squeezed juice of the leaves is applied on the affected region cures Maniveekkam (Swelling of the testicle.)	KU KR	MTDY	Common
17	<i>Cycas circinnalis</i> L.	Eanth	Cycadaceae	Tree	Seed	Eating the seed powder with ghee increases sperm production	KR.	MTDY VTRY	Vulnerable
18	<i>Cyclea peltata</i> (Lam.) Hook. f. & Thoms.	Padakkizhangu	Menispermaceae	Climber	Tubers	Dried tubers are made into paste, mixed with honey and taken orally to cure leucorrhoea.	KU	BTRY	Common
19	<i>Diospyros candolleana</i> Wight.	Karimaram	Ebenaceae.	Climber	Whole plant	Juice is a constituent of the medicine for menstrual problems.	KR	MTDY	Endemic
20	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey.	Uvakandassappu	Cucurbitace	Climber	Seed	Half teaspoon of seeds taken once a day for 10 - 15 days promote fertility	KU	MTDY	Common
21	<i>Ensete superbum</i> (Roxb.) Cheesman.	Kalluvazha	Musaceae.	Tree	Seed	The seed paste mixed with milk is taken internally against urinary troubles and leucorrhoea.	KR KU	MTDY VTRY	Endemic
					Bud	Eating the inner part of the bud of this plant helps to prevent pregnancy.	AD	VTRY	„
22	<i>Erythrina indica</i> Lam	Murikku	Fabaceae	Tree	Bark	The bark and flower mixed with milk and used for 2 days will cure menstrual disorder	KT KU AD	MTDY VTRY	Common
23	<i>Ficus benghalensis</i> L.	Peraal	Moraceae	Tree	Latex	The latex smearing cures Gonorrhoea	KT	MTDY	Common
24	<i>Ficus hispida</i> L.f. Supl.	Parakam	Moraceae.	Tree	Fruit	The fruit juice smearing cure uterine infections	AD	MTDY	Common
25	<i>Hemidesmus indicus</i> (L) R. Br.	Nannary	Periplocaceae	Climber	Root	Root paste (about 10gm) is taken in empty stomach continuously seven days for the treatment of leucoderma.	KR	MTDY	Common
26	<i>Hibiscus rosasinensis</i> L.	Vellachembarathi	Malvaceae	Shrub	Stem bark	Stem bark paste (15gm) is given to women continuously five days for causing, abortion.	PN KR AD	MTDY	Common
					Flower	The flower mixed with milk cures menstrual disorders	KU KR	BTRY	Common
27	<i>Kingiodendron pinnatum</i> (Roxb. ex DC) Harms	Ennapain	Fabaceae	Tree	Gum	The gum of this plant species is used in gonorrhoea.	KU KR KT	MTDY	Vulnerable Endangered
28	<i>Maranta arundinacea</i> L.	Kattukoova	Marantaceae		Leaf	Intake of grinded leaves of kattukoova reduces Leucorrhoea.	KU KR	MTDY	Common

29	<i>Mucuna gigantea</i> Adans.	Kattavally	Fabaceae		Seed	Seed powder to cure sexual problems		MTDY	Endemic
30	<i>Mucuna pruriens</i> (L.) DC.	Naikkurana	Fabaceae	Climber	Seed	Decoction of seeds is used to regularize menstruation.		MTDY	Endemic
31	<i>Physalis minima</i> L.	Njottanjotty	Solanaceae	Herb	Seed	The seed paste is used to prepare medicine to cure gonorrhoea	KU KR	MTDY	Common
32	<i>Polyalthia cerasoides</i> (R oxb.)Bedd.	Narela	Annonaceae.	Tree	Bark	The bark paste of <i>Polyalthia cerasoides</i> , Venga, Pezhu, Karimaram is taken internally to start menstruation in woman.	KT	MTDY	Common
33	<i>Scoparia dulcis</i> L.	Kallurukki Thumeru chappu	Scrophulariace	Herb	Leaf	The leaf juice in milk intake cures leucorrhoea.	KU	MTDY	Common
34	<i>Trichosanthes tricuspidata</i> Lour.	Kattu vellary	Cucurbitaceae	Climber	Root	The root paste is applied on the affected part to cure gonorrhoea	KU KR	MTDY	Common
35	<i>Woodfordia fruticosa</i> (L.) Kurz	Thathiri	Lythraceae	Shrub	Flower	Dried flower powder(5gm) with honey(1ml) is given to women once a day continuously one month for the treatment of leucorrhoea	KU	BTRY VTRY MTDY	Common

(KU; Kuruma, KT; Kattunaika, PN; Paniya, AD; Adiya, KR; Kurichia tribes, BTRY; Bathery, VTRY; Vythiri, MTDY- Mananthavady taluks)