



Herbal care for reproductive health: Ethno medicobotany from Uttara Kannada district in Karnataka, India

H.V. Hegde^{a,*}, G.R. Hegde^b, S.D. Kholkute^a

^aRegional Medical Research Centre (ICMR), Nehru Nagar, Belgaum 590 010, Karnataka, India

^bDepartment of Botany, Karnatak University, Dharwad 580 003, Karnataka, India

KEYWORDS

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Summary Traditional herbal medicine is predominantly practiced by the rural people of India, especially remote areas such as the Uttara Kannada District in Western Ghats of Karnataka. Local traditional healers play an important role in the management of reproductive health problems of the native population due to socio-economical and geographical factors.

In the present study, 92 traditional medicine practitioners/healers from various regions of Uttara Kannada district were interviewed to collect information on the use of herbal treatments for a range of female and male reproductive disorders. Information was also collected on the method of preparation, dose and duration along with the botanical names, family and local names of the medicinal plants. The plants were then collected and identified. A total of 18 formulations from 25 plant species belonging to 17 families were identified, which are commonly used to treat 12 different reproductive ailments.

This study identifies herbal remedies not previously documented, that are used by indigenous people in the treatment of reproductive disorders. Additionally, the paper highlights the need to retain and explore the rich biodiversity associated with Indian rain forests that may result in the discovery of new medical treatments. Finally, this paper notes the continuing reliance on herbal medicines and healing traditions by local people in remote areas. Understanding and working with local healers and tribes provides a unique opportunity to learn about the use of potentially new herbal and plant medications.

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Introduction

Ethno botanical or ethnomedico—botanical inventories are usually the first phase of studies on traditional use of plants. The scientific documentation of herbal remedies has proved to be beneficial in

*Corresponding author. Tel.: 91 0831 2475477;
fax: 91 0831 2475479.

E-mail address: harshavh@rediffmail.com (H.V. Hegde).

the further multidirectional researches including drug development. Currently, there is increasing focus on global searches for new drugs derived from natural plant resources and tropical rain forests are perceived as the primary sources of rich biodiversity. Tropical forest plants have often developed complex chemical arsenals to survive against a myriad of attackers such as insects, fungi, viruses or bacteria. This makes them prime sources for medicinal research.¹

The Western Ghats in India is one of 25 biodiversity hot spots identified in the world. Approximately, 4000 species of flowering plants are derived from this area with 40% of these claimed to have some medicinal value. However, only 700 of these 4000 species are documented and few have been investigated for their pharmacological activities²⁶ to explore any potential medicinal benefits.

In India, especially in rural areas and tribal pockets, one of the least and most reluctantly discussed health topics concerns reproductive health. This cultural or social reluctance to talk about reproductive health has created a gap between patients and treatment. Traditionally, when local people require treatment, they confer with local herbal healers rather than a modern medical practitioner. This can be due to social or cultural taboos associated with reproductive disorders. Local healers tend to use traditionally established herbal medicines and since these healers know the people of the area, share their culture and speak the local language they are trusted. Thus herbal remedies that may not have been fully explored scientifically continue to be used to effectively treat reproductive health, despite the increasing availability of conventional medical treatments. In this respect it may be that local treatments may have a wider application for certain treatments, however, their potential can only be determined by research.

Today, many indigenous herbal remedies remain largely undocumented or recognized as potential forms of treatment and consequently continue to be used by only small groups of indigenous populations.

This study was undertaken to document the 'medicinal' plants of Western Ghats and their use in local traditional medicine. In particular, the use of 'folklore remedies' for reproductive disorders in the Uttara Kannada district, Karnataka, India.

Study area and ethnology

Uttara Kannada is one of 27 districts of Karnataka state. It is located between 13° 55' N and 15° 31' N latitude and 74° 09' E and 75° 10' E longitude (Fig. 1)

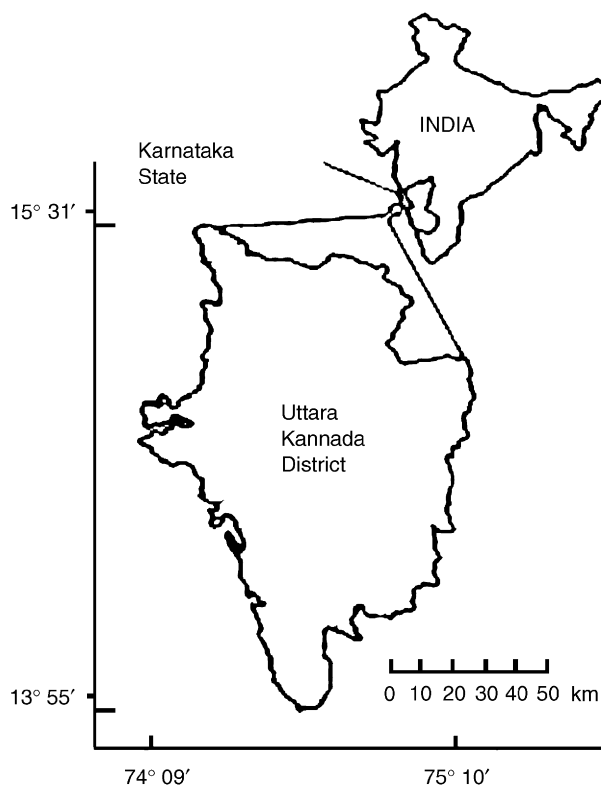


Figure 1 Map of the study area.

with a total area approximately 10,220 Km². The district is located in the hearts of Western Ghats and considered as a biodiversity hotspot. Average rainfall of the district is about 2741 mm per annum and the temperature fluctuates between 37°C in mid summer and 15°C in winter and typified as a Monsoon climate. The vegetation of this region can be broadly categorized into littoral vegetation, evergreen forests, moist deciduous forests and shrub and thorny forests.

The total population of the district is around 1,218,000 with more than 75% of the total population living in rural areas. The dominant native communities are Brahmana, Harijanas, Idiga and Nadava. In addition, the thick evergreen forests are home to several tribal communities such as the Siddis, Gowlis, Kunbis, Halakki Okkaligas and Kare Okkaligas. The representatives of most of the ethnic groups were involved in the present study.

Methodology

In all, 92 traditional healers, residing mostly in rural areas, were consulted for the study. Their localities were selected in such a way so as to represent the entire district, covering rural and tribal pockets of the study area. Each locality was

visited in different seasons to collect the information about the seasonal plants.

Data was collected through personal interviews followed by discussions with the local traditional healers. The plants mentioned were collected with the help of the healer, authentically identified and their herbarium specimens were deposited in PG Department of Botany, Karnatak University, Dharwad for future reference and study.

Results

Male conditions

In all, six formulations, consisting of 9 plant species are documented for 3 male reproductive ailments.

The herbal preparations of *Centella asiatica*, *Hemidesmus indicus*, *Hibiscus rosa sinensis*, *Dracaena terniflora*, *Phyllanthus fraternus* and *Cuminum cyminum* are used in treating spermaturia.

Evolvulus alsinoides and *Ocimum sanctum* are used to increase sperm count, while *Withania somnifera* is used to treat impotency (Table 1).

Female conditions

Twelve formulations incorporating 17 plant species were identified as being used for the treatment of female reproductive disorders. These were mainly associated with menstruation.

Celastrus paniculatus and *Hibiscus rosa sinensis* was used in the treatment of leucorrhoea, *Clerodendrum viscosum* and *Premna latifolia* to treat menorrhagia.

A range of herbs was identified to treat miscarriage: *Ensete superbum*, *Mirabilis jalapa*, *Securinega leucopyrus*, *Celastrus paniculatus*, *Gardenia gummifera*, *Zizyphus oenoplea*, *Erythrina indica*, *Ixora coccinia* and *Zizyphus rugosa*.

Ocimum basilicum and *Tabernaemontana divaricata* treating dysmenorrhoea; while *Saraca asoka*,

Table 1 Plants used for treatment of male reproductive disorders by traditional practitioners.

Plant name	Other Ingredients	Part/s used	Preparation and Dosage	Ailments
<i>Centella asiatica</i> (L.) Urb.		Whole plant	Equal quantities of ingredients are crushed in fresh milk. This mixture is given in the morning, once a day for a week	Spermaturia
	<i>Hemidesmus indicus</i> (L.) Schult.	Root		
	<i>Hibiscus rosa-sinensis</i> L.	Root		
<i>Dracaena terniflora</i> Roxb.		Roots	2-3 spoons of decoction is given twice a day for a week	Spermaturia
<i>Evolvulus alsinoides</i> L.		Whole plant	Crushed plant is boiled in water till it reduces to half. This decoction is taken twice a day for a month	To increase the sperm count
<i>Ocimum sanctum</i> L.		Seeds	Crushed seeds are boiled in half cup of milk. This is given twice a day for 10 days	To increase sperm count
<i>Phyllanthus fraternus</i> Webster.		Whole plant	20 gm of the plant crushed with a spoonful of <i>jeerige</i> . This mixture in milk is given twice a day for 8 days	Spermaturia
	<i>Cuminum cyminum</i> L.	Seeds		
<i>Withania somnifera</i> (L.) Dun.		Root	Paste is prepared in rice washed water and one spoon a day is taken for 45 days	Male impotency

Wrightia tinctoria and *Diospyros montana* were claimed to be generally useful in treating various menstrual disorders and irregularities (Table 2).

The plants used in male and female reproductive disorders are arranged in alphabetical order of their botanical names. The parts used, the method of drug preparation, dose and duration of the treatment has also been provided. Information about the other ingredients, if any, is also given wherever available (Tables 1 and 2). The family name, local name (in Kannada) and reported medicinal uses and pharmacology for the described plants are detailed (Tables 3 and 4).

Discussion

In summary, a total of 25 plant species were identified as being used by traditional healers for their curative properties in the area of reproductive health. Among these, 8 species are used for treatment of male reproductive disorders, 16 species are prescribed to treat female reproductive disorders, while *Hibiscus rosa sinensis* was noted to be used by many healers for both genders.

Among the plants reported in male reproductive ailments *Ocimum sanctum*, and *Withania somnifera* are proved to be aphrodisiac.^{2,4} (Table 3) and hence their usage to increase male potency appears to be supported.

The utility of *Hibiscus rosa sinensis*, *Evolvulus alsinoides* and *Phyllanthus fraternus* is also cited to treat various male reproductive disorders.²⁻⁴

Plants cited as tonics or cooling agents were *Centella asiatica*, *Hemidesmus indicus* and *Cuminum cyminum* and have also been noted by Jain³ and Sharma⁷. These plants were also reported to possess qualities to improve general health. However, to date there is no clear understanding of their mechanism of action on the reproductive health system and pharmacology. *Hibiscus rosa sinensis* is used to treat spermaturia and is reported to possess antifertility properties as well as antiestrogenic activity.^{10,17} Interestingly, in this study, it was noted that the root of the plant was used, while with earlier studies citing the flowers.

Use of *Dracaena terniflora* in the treatment of spermaturia is a new record to the Indian ethno botany.

As previously mentioned, *Diospyros montana*, *Hibiscus rosa sinensis*, *Ocimum basilicum*, *Saraca asoka*, *Erythrina indica*, *Ixora coccinea* and *Zizyphus rugosa* were commonly used for the treatment of female reproductive disorders (see Tables 3 and 4).

Both *Mirabilis jalapa* and *Wrightia tinctoria* have been cited by the previous literature as aphrodisiac.² *Zizyphus oenoplia* was described by healers as a blood purifier,³ while *Clerodendrum viscosum* and *Tabernaemontana divaricata* are perceived as cooling agents and used as tonics (Table 4).

The uterine stimulant activity of *Ensate superbium*, anti menorrhagial effect of *Saraca asoka* and aphrodisiac nature of *Celastrus paniculatus* are demonstrated (Table 3).

The documentation of *Premna latifolia*, *Securinega leucopyrus* and *Gradenia gummifera* in the treatment of female reproductive disorders is new to Indian ethno botany, which needs further pharmacological, toxicological and clinical evaluations (Table 2).

Significantly, contrary to initial perceptions, the study recognized that shrubs (11 species) were selected more frequently than herbs (6 species), trees (6 species) or twines (2 species). This finding also highlights the natural interdependence of plant biodiversity in rural rainforest areas.

It was also evident that roots are the major ingredients of most of the herbal formulations in the treatment of reproductive disorders (14 formulations); followed by bark and leaf (4 formulations each) with considerably less emphasis upon seeds or the whole plant is comparatively less (3 formulations each).

The manner in which herbs are collected, when they are collected, and which parts of the plant used also have a bearing upon their effectiveness. Many traditional therapies also have philosophical and religious underpinnings that challenge orthodox medical perspectives, and thus hinder attempts for scientific validation with conventional methodologies.¹⁸ Thus further research should take these issues into account. It is however, interesting that the range of plants and herbs used for managing reproductive problems in this area were similar amongst diverse geographical groups and by different healers living in a range of locales. Faith in healers rather than western medicine offers research an interesting challenge since it must also account for factors such as the climate and dietetic habits of the local inhabitants as well as a range of other variables.

The potential medicinal benefits of many of these herbal remedies clearly warrant further investigation. However, until this occurs, traditional medical practice in this region will continue to function in uncertainty and based largely upon the faith of local population. Thus it is logical to assume as Ernst¹⁸ notes, the level of uncertainty in traditional herbal medicine is considerably greater than that of the modern medicine.

Table 2 Plants used for treatment of female reproductive disorders by traditional practitioners.

Plant name	Other Ingredients	Part used	Preparation	Ailments
<i>Celastrus paniculatus</i> Willd.		Root/Bark	Root/bark is crushed in milk and given once a day for a week	Leucorrhoea
<i>Clerodendrum viscosum</i> Vent.		Leaves	Crushed leaves are mixed with milk. Half a cup of this milk is taken once a day for 8 days	Menorrhagia
<i>Ensete superbum</i> (Roxb.) Cheeseman.		Seeds	Powdered seeds are given in milk once a day for 9 days	To prevent misconception and early abortion
<i>Hibiscus rosa-sinensis</i> L.		Leaves	Crushed leaves is mixed with milk and filtered. Half a cup of filtrate is given in a day for 7 days	Leucorrhoea
<i>Mirabilis jalapa</i> L.		Roots	Crushed in milk and given once in morning for 5 days	To prevent miscarriage and misconception
<i>Ocimum basilicum</i> L.		Bark	Crushed in milk and given once in morning for 7 days	Dysmenorrhoea
<i>Premna latifolia</i> Dalz.		Fresh leaves	Decoction is given once a day in the morning for 5 days	Menorrhagia and associated weakness
<i>Saraca asoka</i> (Roxb.) De Willd.		Bark	Decoction is given once a day for 8 days	All types of menstrual disorders
			Paste is taken one spoon a day for a week	Amenorrhoea
<i>Securinega leucopyrus</i> (Willd.) Muell.		Root	Pastes of each is made separately and finally mixed in equal proportion. 2 spoons of this mixture is given in morning for 45 days	To prevent miscarriage and misconception
	<i>Celastrus paniculatus</i> Willd.	Root		
	<i>Gardenia gummifera</i> L.f.	Root		
	<i>Zizyphus oenoplea</i> Mill.	Root		
	<i>Erythrina indica</i> L.	Bark		
	<i>Ixora coccinea</i> L.	Root		
	<i>Zizyphus rugosa</i> Lamk.	Root		
<i>Tabernaemontana divaricata</i> (L.) R.Br.		Fresh Leaves	Crushed and mixed with buttermilk. This is taken once a day for 3 days	Dysmenorrhoea
<i>Wrightia tinctoria</i> R.Br.		Root	Equal quantity of pastes from both is mixed and given once a day for 10 days.	Menstrual irregularities
	<i>Diospyros montana</i> Roxb.	Root		

Table 3 Plants with known effects on reproduction/other pharmacological activities.

Botanical name (Family)	Local name	Reported Medicinal Uses	Reported Pharmacological Activities
<i>Celastrus paniculatus</i> Willd. (Celastraceae)	Gange balli	Used in anemia, as emmenagogue, aphrodisiac and abortifacient. ²⁻⁴	Aphrodisiac, brain stimulant and memory enhancing activities. ⁶
<i>Centella asiatica</i> (L.) Urb. (Apiaceae)	Ondelaga	Used in anaemia and nervine disorders, as cooling agent, tonic and blood purifier. ^{3,4}	Antifertility, sedative, antispasmodic and hypotensive. ⁷
<i>Ensete superbum</i> (Roxb.) Cheeseman. (Musaceae)	Kaadu baale	Used in debility and weakness, as coolant. ²	Antifertility and uterine stimulant activities. ⁸
<i>Hibiscus rosa sinensis</i> L. (Malvaceae)	Bili daasavaala	Used in menorrhagia, seminal weakness, uterine and vaginal discharges and menstrual complaints. ²⁻⁴	Antifertility, antiestrogenic antiovaratory activity in rats (alcoholic and benzene extracts). ^{9,10}
<i>Ocimum basilicum</i> L. (Lamiaceae)	Kaamakasthoori	Used in gonorrhea, as aphrodisiac and emmenagogue. ^{2,4}	Antimicrobial, in vitro anti-HIV and antioxidant properties. ¹¹
<i>Ocimum sanctum</i> L. (Lamiaceae)	Tulasi	Used in debility and weakness, genito-urinary ailments, as aphrodisiac, blood purifier and cooling agent. ^{2,4}	Antispasmodic, aphrodisiac, antimicrobial, immunostimulatory activities. ¹²
<i>Phyllanthus fraternus</i> Webster. (Euphorbiaceae)	Nelanelli	Used in allergy, gonorrhea, and genito-urinary disorders. ³	Antibacterial, antispasmodic, and uterine relaxant activities. ¹⁴
<i>Saraca asoka</i> (Roxb.) De Willd. (Caesalpiniaceae)	Ashoka	Used in uterine infections, menorrhagia and other menstrual complaints, as tonic. ²⁻⁴	Oxytocic, uterotonic, antioestrogenic properties and used against menorrhagia. ^{11,15}
<i>Withania somnifera</i> (L.) Dun. (Solanaceae)	Hiremaddina gida	Used in general and seminal debility, spermatorrhoea, as aphrodisiac and diuretic. ²	Hypotensive, relaxant, aphrodisiac, antispasmodic activities. ¹⁶

Thus there is a need for an integrated approach targeting scientific validation and pharmacological/toxicological evaluations of these traditional herbal medicines. This should occur alongside conservation of these species and preservation of both rainforests and biodiversity.

Conclusion

The study highlighted the central role of traditional herbal medicine for the reproductive health of rural inhabitants of the Uttara Kannada district.

Detailed documentation of traditional medicinal practices may serve to both record these rich herbal practices to develop our knowledge and understanding the mechanisms of action and their use in treating a range of medical disorders. Thus there continues to be a wide range of opportunities for the scientific community to explore indigenous herbs and to elicit phytochemical, pharmacological and clinical use.

Further studies documenting herbal usage and expanding upon current knowledge will enhance our understanding and hopefully, the development of safe, cost effective, traditional treatments for a range of reproductive disorders.

Table 4 Plants with known medicinal uses in reproductive diseases.

Botanical name (Family)	Local name	Reported medicinal uses
<i>Clerodendrum viscosum</i> Vent. (Verbenaceae)	Taggi	Used in syphilis and as a tonic. ^{3,4}
<i>Cuminum cyminum</i> L. (Apiaceae)	Jeerige	Used in gonorrhea, as a tonic, emmenagogue and coolant. ^{3,4}
<i>Diospyros montana</i> Roxb. (Ebenaceae)	Balagane	Used in menorrhagia and as an abortifacient. ^{3,4}
<i>Erythrina indica</i> L. (Fabaceae)	Bili Haalivaana	Used in menorrhagia and as an aphrodisiac and emmenagogue. ^{2,3}
<i>Evolvulus alsinoides</i> L. (Convolvulaceae)	Vishnukraanthi	Used in debility, syphilis, leucorrhoea, spermatorrhoea and as an aphrodisiac. ^{2,3}
<i>Gardenia gummifera</i> L.f. (Rubiaceae)	Bikke	Used in dyspepsia and as an antiseptic and tonic. ^{2,4}
<i>Hemidesmus indicus</i> (L.) Schult. (Asclepiadaceae)	Haala balli	Used in leucorrhoea, impotency, menstrual complaints, spermatorrhoea, as a tonic, aphrodisiac and cooling agent. ²⁻⁴
<i>Ixora coccinea</i> L. (Rubiaceae)	Hole daasaala	Used in gonorrhea, leucorrhoea and dysmenorrhoea. ^{2,4}
<i>Mirabilis jalapa</i> L. (Nyctaginaceae)	Madhyaahna mallige	Used in debility, as a tonic and aphrodisiac. ^{2,4}
<i>Premna latifolia</i> Dalz. (Verbenaceae)	Naravala	Used in gonorrhea and as a diuretic. ³
<i>Securinega leucopyrus</i> (Willd.) Muell. (Euphorbiaceae)	Bilihooli	Antimicrobial agent. ⁵
<i>Tabernaemontana divaricata</i> L. (R.Br.) (Apocynaceae)	Najabattala	Used in strangury and as a tonic. ^{3,4}
<i>Wrightia tinctoria</i> R.Br. (Apocynaceae)	Kodasa	Used in seminal weakness, as a tonic and aphrodisiac. ^{2,4}
<i>Zizyphus oenoplea</i> Mill. (Rhamnaceae)	Parige	Used as a blood purifier. ³
<i>Zizyphus rugosa</i> Lamk. (Rhamnaceae)	Mullannu	Used in menorrhagia and to treat syphilis. ²⁻⁴

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