

Phytomedicines for female infertility in Barpeta District of Assam, India

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Abstract

The present study enlists a total of 25 plant species covering 18 families that are being used in 12 different formulations to cure female infertility. Out of the total 18 families recorded, Malvaceae comprises highest number of species followed by Combretaceae in preparation of the herbal medicines. Regarding plant parts used, bark was found to be used in majority of the formulations followed by leaves and seeds.

Key words: Female Infertility, Phyto medicines, Barpeta district, Assam

INTRODUCTION

Various species of plants used in herbalism are thought to have medicinal properties. For many centuries, plants have been the primary source of medicines. The ancient record evidencing their use by Indians, Chinese, Egyptians, Greeks, Romans and Syrians dates back to about 5000 years (Rabe & Staden 1997). In India, it is reported that traditional healers use at least 2500 plant species and 100 species of plants serve as regular source of medicine (Pie 2001). There are around 400 families of flowering plants in the world of which at least 315 are represented the Indian flora (Sharma 2003).

Assam with its vast and with rich traditional ethno-botanical knowledge has huge potential and possibilities in the field of Phytomedicines (Kalita & Phukan 2010). Some of these medicinal species have been extensively used in the Ayurvedic, Unani and other traditional alternative medicine systems since the time immemorial (Satyavati *et al.* 1987). Barpeta, like most districts of Assam, is also housing rich natural flora and ethno-medicinal plants. Barpeta district is situated in between 26° 5' N to 26° N latitude and 90° 39' East to 91° 17' longitude and occupying an area of 3245 sq. km. In ancient times, Barpeta was part of Kamapitha division of Kamarupa. In colonial and post-colonial times, it became a part of Kamrup district till 1983, when new district of Barpeta was carved out. The area enjoys tropical monsoon climate having two distinct seasons viz. Summer and winter (Bora & Bhattacharjya 2009).

Female infertility refers to infertility in female humans. Infertility is caused by many reasons, including nutrition, diseases, and other malformations of the uterus. Infertility affects women from around the world, and the cultural and social stigma surrounding it varies. As per National Institute for Health and Care Excellence, UK (NICE) guidelines state that “A woman of reproductive age, who has not conceived after 1 year of unprotected vaginal

sexual intercourse, in the absence of any known cause of infertility, should be offered further clinical assessment and investigation along with her partner". According to the World Health Organization (WHO), infertility can be described as the inability to become pregnant, maintain a pregnancy, or carry a pregnancy to live birth. Infertility can further be broken down into primary and secondary infertility. Primary infertility refers to the inability to give birth either because of not being able to become pregnant, or carry a child to live birth, which may include miscarriage or a stillborn child. Secondary infertility refers to the inability to conceive or give birth when there was a previous pregnancy or live birth (Jones 1998).

Causes or factors of female infertility can basically be classified regarding whether they are acquired or genetic or strictly by location. Although factors of female infertility can be classified as either acquired or genetic, female infertility is usually more or less combination of nature and nurture. A woman's fertility is affected by her age. The average age of a girl's first period is 12 – 13 years but a woman's fertility peaks in the early and mid-20s, after it starts to decline with this decline being accelerated after age 35. A large number of all fertility cases are a result of woman either being underweight or overweight. There are many genes where mutation causes female infertility.

Many researchers, round the world worked on the traditional medicines to cure female infertility and other gynaecological disorders including Lukhoba & Siboe (2008), Bone *et al.* (1990), Khan & Khan (2003), Panduranga *et al.* (2011) Raut *et al.* (2012), and Sahu (2011). In North-east India workers like Jain & Borthakur (1980), Barua *et al.* (1999), Choudhury *et al.* (2011), Das *et al.* (2007), Sarma *et al.* (2001, 2002, 2006), Bhattacharjya (2008, 2012), Das *et al.* (2009), Sarkar & Das (2010, 2011), Borah & Bhattacharjya (2009), Singh & Bhattacharjya (2014), Lepcha *et al.* (2011), Tiwari *et al.* (1978), and Lukhoba & Siboe (2008), have made valuable contribution. The present study is an attempt to focus on the phytomedicines and their use against female infertility in Barpeta districts of Assam.

METHODOLOGY

Ethnobotanical surveys were undertaken for more than one year 2016 to 2018 in 24 interior rural pockets of Barpeta district to know most prevalent gynaecological disorders among women and to prepare a list of well-known Vaidis or medicine men from different communities including Koch-Rajvanshi, Nepali, Assamese and Bengali etc. Before the start of the survey mandatory PIC was taken from the informants. During oral interviews with local healers or aids, specific questions were asked according to the prepared questionnaires and the information supplied by the informants were taken to the field for the collection of plants for voucher specimens (Beer & Wyk 2011; Raut *et al.* 2012; Mesfin *et al.* 2013; Khan *et al.* 2014). Each medicinal practice was cross checked with at least 2 – 3 informants. Then Voucher specimens were collected and processed following Jain & Rao (1977) and identified by matching already existed herbarium of M.C. college then deposited in the Herbarium of the postgraduate Department of Botany, MC College, Barpeta, Assam. Scientific names were authenticated by consulting the website www.theplantlist.org.

RESULT

The present study enlists a total of 25 angiospermic species of plants covering 18 families. These plant species are being used in 12 different formulations to cure female infertility (Table 1). Table 1 includes scientific names of the plant species grouped according to the formulations used, followed by vernacular name, Family, plant part used, methods of preparation and dose of medicine used by the local people of Barpeta district of Assam. Out of the

total 18 families, Malvaceae and Combretaceae comprises of highest number of plant species (5 spp. each.) followed by 3 spp. by Moraceae and Solanaceae each in preparation of the herbal recipes (Figure 1). Out of the plant parts used, bark was found to be used from majority of the formulations (10 formulations) followed by leaves (8 formulations) and seeds (4 formulations) (Figure 2).

Table 1. Ethnobotanical treatment for female infertility in Barpeta district of Assam

Formul a No.		Plant species composition	Local name	Plant part	Method of preparation and dose of administration
1		<i>Nigella sativa</i> L. [Ranunculaceae]	<i>Kaljira</i>	Seeds	Make tablet of seeds and take one tab at empty stomach in morning and one tablet in night before meal.
2	A	<i>Tinospora cordifolia</i> (Willd.) Miers. [Memispermaceae]	<i>Sidhelota</i>	Leaves	Leaves of these three plants are grind to make tablets and taken with powder of ashwagandha and with juice of Ranga Joba during menstruation.
	B	<i>Leucas aspera</i> (Willd.) Link [Lamiaceae]	<i>Dron</i>	Leaves	
	C	<i>Smilax glabra</i> Roxb. [Smilacaceae]	-	Leaves	
	D	<i>Withania somnifera</i> (L.) Dunal [Solanaceae]	<i>Ashwagan-dha</i>	Fruit	
	E	<i>Hibiscus rosa-sinensis</i> L. [Malvaceae]	<i>Ronga Joba</i>	Leaves	
3	A	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn. [Combretaceae]	<i>Arjun gash</i>	Bark	Bark of these plants grind together and make paste. Mix this paste with 3 litre of hot water and juice is prepared. Take 2 teaspoonful daily twice for 45 days.
	B	<i>Cuscuta reflexa</i> Roxb. [Convolvulaceae]	<i>Akashilota</i>		
	C	<i>Terminalia bellirica</i> (Gaertn.) Roxb. [Combretaceae]	<i>Bhomora</i>	Bark	
4	A	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn. [Combretaceae]	<i>Arjun gash</i>	Bark	Mix all ingredients and grind them to make tablets and take one tablet twice a day for 30 days.
	B	<i>Andrographis paniculata</i> (Burm.f.) Nees [Acanthaceae]		Leaves	
	C	<i>Rhynchostylis rectusa</i> (L.) Blume [Orchidaceae]	<i>Kopouful</i>	Bulb	
	D	<i>Alstonia scholaris</i> (L.) R.Br. [Apocynaceae]	<i>Soitan gas</i>	Bark	
5	A	<i>Phyllanthus emblica</i> L. [Phyllanthaceae]	<i>Amlokhi</i>	Fruit	Mix all fruit, bark and leaves with sugar candy and made into a powder; take ½ teaspoonful of this powder twice daily.
	B	<i>Terminalia chebula</i> Retz. [Combretaceae]	<i>Silikha</i>	Bark	
	C	<i>Terminalia bellirica</i> (Gaertn.) Roxb. [Combretaceae]	<i>Bhomora</i>	Bark	

	D	<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult. [Apocynaceae]	<i>Anantaful</i>	Leaves	
6	A	<i>Cynodon dactylon</i> (L.) Pers. [Poaceae]	<i>Duburibon</i>	Leaves	All raw materials are crushed and their juice should be separated and with the solid part mix <i>til</i> into it and make pills; mix a pill in half cup of juice extracted and take twice daily for 7 days.
	B	<i>Ficus religiosa</i> L. [Moraceae]	<i>Ahatgash</i>	Leaves	
	C	<i>Artocarpus heterophyllus</i> Lam. [Moraceae]	<i>Kathal</i>	New flower	
	D	<i>Sesamum indicum</i> L. [Pedaliaceae]	<i>Til</i>	Seed	
7	A	<i>Artocarpus heterophyllus</i> Lam. [Moraceae]	<i>Kathal</i>	Inflorescence axis	Dried Inflorescence axis of species grind with rice and make pill. One pill after dinner for 7 days.
8	A	<i>Abroma augusta</i> (L.) L.f. [Malvaceae]	<i>Utkamal</i>	Root	Past of root take 1 teaspoonful twice for 3 to 4 days.
9	A	<i>Zingiber officinale</i> Roscoe [Zingiberaceae]	<i>Ada</i>	Bulb	Take seed of jalum with juice of Ada once daily for 7 days.
	B	<i>Piper longum</i> L. [Piperaceae]	<i>Jaluk</i>	Seed	
10	A	<i>Abroma augusta</i> (L.) L.f. [Malvaceae]	<i>Utkamal</i>	Stem	Take stem and seeds and crush them and made into pills; take 1 pill once daily in empty stomach for 3 months.
	B	<i>Piper longum</i> L. [Piperaceae]	<i>Jaluk</i>	Seeds	
11	A	<i>Bombax ceiba</i> L. [Malvaceae]	<i>Simala</i>	Bark	Bark of all plants crushed to make pill; take one pill daily in empty stomach.
	B	<i>Mangifera indica</i> L. [Anacardiaceae]	<i>Aam</i>	Bark	
	C	<i>Litsea glutinosa</i> (Lour.) C.B. Rob. [Lauraceae]	<i>Bhagnala</i>	Bark	
	D	<i>Sida rhombifolia</i> L. [Malvaceae]	<i>Saruboiral</i>	Bark	
12	A	<i>Solanum torvum</i> Sw. [Solanaceae]	<i>Konthagiri</i>	Root	Root juice of both plants take daily in empty stomach.
	B	<i>Datura stramonium</i> L. [Solanaceae]	<i>Datura</i>	Root	

DISCUSSIONS

The families Malvaceae, Combretaceae, Solanaceae and Moraceae etc. along with others have contributed much of the species towards the preparation of herbal recipes in treating the Infertility problems. Out of all the plant parts used in the preparation, leaves, roots and barks are of maximum use in the herbal formulations. The study indicates that wide spectrum of remedies are used by local healers for women to regulate the Infertility issues. It is however very important to collect correct part of plant during collection since a specific part may be toxic whilst another may have no harmful effect due to a differences in the concentration of active ingredients in different parts of the plants. Dosage form as well the method of preparation and administration are very important (Nadkarini 2001). Most of the medicinal plants are prepared as either powders, infusions or decoctions which are taken orally.

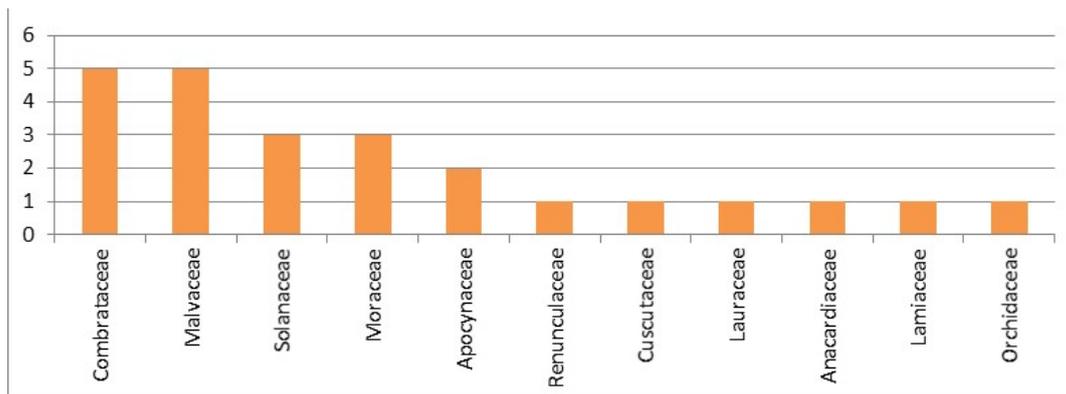


Figure 1. Family wise distribution of species used in different formulations

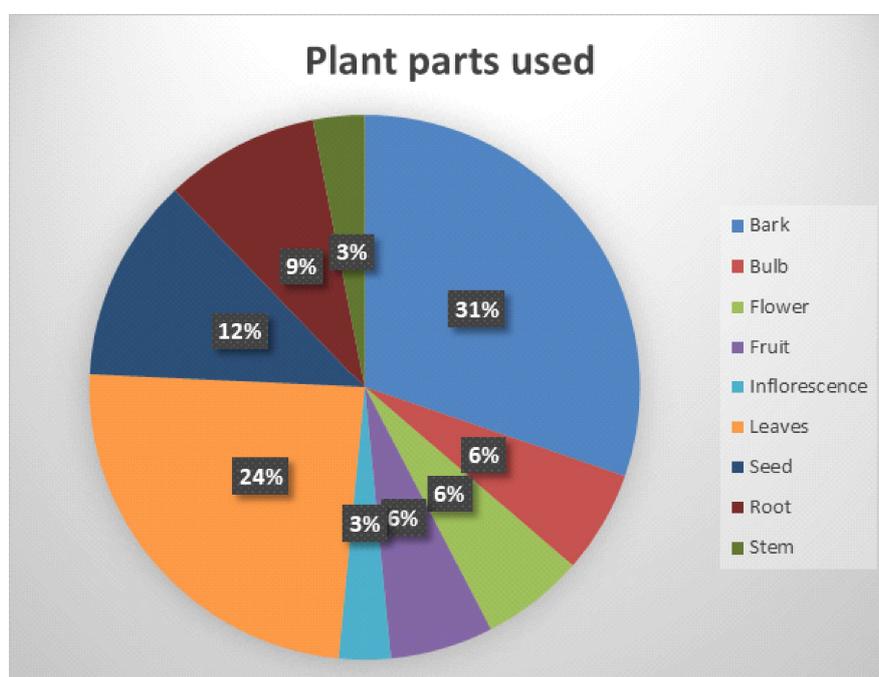


Figure 2. Percentage frequency of different plant parts used in different formulations

The study indicates that wide spectrum of remedies are used by local healers for women to regulate the Infertility issues and are effective in many cases. The study also shows light on, how young generation is not interested in learning the uses of these phytomedicines, so it becomes very important to document this knowledge before it get lost forever. Author feels the requirement of biochemical analysis of plant species to find out the active compounds, which are responsible for curing the problem. This will establish a link between phytomedicines and their effect against particular problem. This will help in discovering new drugs in future. Author also feels the need of conserving important plant species by preventing over exploitation and by commercial cultivation of the same.

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