



E-ISSN: 2278-4136

P-ISSN: 2349-8234

www.phytojournal.com

JPP 2020; 9(6): 2300-2304

Received: 04-10-2020

Accepted: 24-11-2020

Qais Ajmal

Research Scholar, Department of Botany, Jai Prakash University, Chapra, Bihar, India

Manindra Upadhyay

Project Officer (Livelihoods), APMAS, Hyderabad, Telangana, India

Devendra Kumar

Faculty of Agriculture and Allied Sciences, UU, Prayagraj, Uttar Pradesh, India

Vinita Bisht

Assistant Professor, Department of Silviculture & Agroforestry, Banda University of Agriculture & Technology, Banda, Uttar Pradesh, India

Vishnu Solanki

Assistant Professor, JNKV, College of Forestry, Jabalpur, Madhya Pradesh, India

Corresponding Author:**Devendra Kumar**

Faculty of Agriculture and Allied Sciences, UU, Prayagraj, Uttar Pradesh, India

Ethnomedicinal and therapeutical importance of chitraka (*Plumbago Zeylanica* L.) in Valmikinagar, Bihar

Qais Ajmal, Manindra Upadhyay, Devendra Kumar, Vinita Bisht and Vishnu Solanki

Abstract

The present study on ethnomedicinal and therapeutical importance of Chitraka (*Plumbago Zeylanicum* L.) was conducted in Valmiki Nagar (Bihar). The study is based on the literature survey from various sources and it provides a comprehensive knowledge about the use of plants and their parts for has got numerous therapeutic uses by various local communities in Valmiki Nagar (Bihar). The present study has been done in Valmiki Nagar is based on the result of intensive survey of medicinal plants from different parts of Valmiki Nagar. Valmiki Nagar formally known as Bhaisalotan, is a famous tourist place located in the North-Western part of Sub-Division Bagaha under District West Champaran of State Bihar. It is located nearly 42 km from Sub-Divisional headquarter Bagaha and 100 km from Bettiah, headquarter of District West Champaran. The work was initiated, with the collection of plants in different parts like Lakshmpur Panchayat, Parsoni, Bherihari, Gardi, Dama Bari and Dhanha of this area. The present study provides the insight about the clinical utilization of *Plumbago Zeylanicum* plants parts by local communities throughout Valmiki Nagar for the cure of various human ailments.

Keywords: medicinal & aromatic plants, ethnomedicinal value, bioactive compound, therapeutic uses, age group, decoction

Introduction

India is the 12th mega biodiversity and 7th largest country of the world which is known for its rich source of medicinal plants. Today Ayurvedic, Homoeopathic and Unani Physicians always utilize a large number of medicinal plants as mentioned in "Materia Medica" (Narayana Rao and Thammanna, 1987) [1]. The medicinal value of any plants really depend on the presence of secondary metabolites like alkaloids, phenols, tannins, mucilage, flavonoids, volatile oils, minerals etc. and their active principles. The crude obtained from the plants are used to cure various human ailments. The drug so obtained are very effective up to a certain level which give very good result (Sudhakar and Madhava Chetty, 1998) [2]. Humans have been entirely dependent on nature for their basic needs like production of foods, shelter, clothing, transportation, fertilizers, flavours and medicines. Medicinal plants world is endowed with a rich wealth of medicinal plants. The medicinal plants are in demand since the beginning of human civilization and are the local heritage with global importance. The various plant products have features prominently in traditional therapeutics. Herbs have always been the principal form of medicine in India and presently they are becoming popular throughout the developed and developing world (Prajapati *et al.*, 2003) [4]. Medicinal plants also play an important role in the lives of rural people, particularly in remote parts of developing countries with few health facilities. In Unani, Ayurvedic, Allopathic and Homeopathic systems most of the drugs are obtained from plant sources (Kochhar, 1998; Prajapati *et al.*, 2003) [5, 4]. Over 25% of all drugs dispensed world over include plant constituents (Mehta, 1989) [6]. This dependency led the aboriginal people living in harmony with nature to evolve a unique system of knowledge about plant wealth by trial and error methods. Traditionally, this treasure of knowledge has been passed on orally from generation to generation without any written document (Perumal Samy and Ignacimuthu, 1998, 2000) [7, 8], and it is still retained by various indigenous people of different ethnic groups inhabiting various terrains. These indigenous groups possess their own distinct culture, religious rites, food habit and a rich knowledge of traditional medicine (John, 1984; Pushpangadan and Atal, 1984; Anuradha *et al.*, 1986; Harsha *et al.*, 2002; Parinitha *et al.*, 2003) [9, 10, 11, 12, 13].

Traditional herbal medicine is readily available in rural areas for the treatment of snakebite. Application of the plants or its sap onto the bit area, chewing leaves and back or drinking plant

extracts or decoctions are some procedure intended to counteract snake venom activity. The whole herb is worth more than the sum of its parts and scientific research is increasingly showing that the active constituents of many herbs, for example those of *Ginkgo biloba*, interact in complex ways to produce the therapeutic effect of the remedy as a whole. Plants contain hundreds of different constituent chemical that interact in complex way frequently, we simple do not know in detail how a particular herb works-even though its medicinal benefit is well-established. The pharmacological approach to understand how entire herbs work is like working on a Jigsaw where only some of the pieces have been provided. Furthermore, although, it is very useful to know that a plant contains certain active constituents, such information's can be misleading on its own. For example Tea (*Thea sinensis*-Theaceae) and coffee (*Coffea Arabica*-Rubiaceae) contain approximately the same levels of caffeine.

Materials and Methods

The excursion trips were planned to visit the area of plants collection site in the beginning of every seasons round the year. To study the habitats and the distribution of medicinal plants regular field surveys were conducted in the every seasons during the entire period of research work (September 2010 to August 2014).

The works gets initiated by consulting different literatures and previous works done in Bihar, check list of plants of medicinal and ethanobotanical importance of Valmiki Nagar is prepared. During field survey, status of medicinal plants has been observed by rough visuals evaluation of their existence. The local persons and the herb collectors were contacted and interviewed to get the first hand information of the *Plumbago zeylanica* Linn and its parts used in different diseases/ailments. Efforts were also made to gather informations about their mode and method of administrations, doses prescribed and any side effects. These informations were also verified by consulting physicians and medicinemen through literature. During field survey and collection of ethnomedicinal informations, the methods and techniques are followed as given by Jain (1981)^[14], Jain and Sastry (1981)^[15] and Jain (1989 & 1994)^[16, 17]. Several plants have been identified by herbal experts (Vaidyas and Hakims) and local and tribal people of the locality. The data on the pharmaceutical studies and therapeutic uses of the root of *Plumbago zeylanica* Linn. Was gathered from local healers of Valmiki Nagar, age old persons, farmers, mid-wives and other dwellers of that area having knowledge of herbal plants. The method of drug preparation, qualitative or qualitative ingredients used, quality of drug, colours used in the drugs, temperature variation in the preparation of drugs, shelf life and stability of the drug after its preparation, methods of preservation, mode of administration, therapeutic uses of the drug, age-wise dosage level, duration of treatment, toxic levels of the drug prepared, effective dosage, side effects and precautions regarding prepared herbal drugs are required (Thammanna, Narayana Rao and Madhava Chetty *et al.* 1994)^[3].

Results and Discussion

The root of *Plumbago zeylanica* L. (Chitraka) has got numerous therapeutic uses. The root is known to be abortifacient and to have vesicant properties. It is used as appetizer, diuretic, expectorant and used in the treatment and peptic ulcers. The root paste is applied topically for filarial leg

swelling. It is also used topically for early as maturation, rupture and healing of wounds. The root powder taken orally along with honey gradually reduces hypercholestraemia and improves blood formation (anaemia). It is used to reduce obesity, vitilago and ascitis. It is also used to relieve coryza (running nose), hoarseness of voice and sore throat. It is also used in the form of local applications for leucoderma, scabies, psoriasis, symptoms of leprosy and allied skin diseases. The decoction of the root is useful in checking and preventing spermatorrhoea.

The gradual accumulations of practical and systematic medical knowledge lead to the formation of Ayurveda, it is said to be a world medicine (Prajapati *et al.*, 2008; Nambair and Raveendran, 2008)^[18, 19]. Ayurveda, The Science of Life, Prevention and Longevity, is the oldest and most holistic or comprehensive medical system available. It was placed in written form over 2000 years ago. In Ayurveda about 2000 plant species of medicinal values are considered. The concept of medicines envisaged in the Ayurveda comes from the monumental scripture called Ashtanga Hridaya and Sahasrayoga (Narayanan and Sasidharan, 1978; Prajapati *et al.*, 2008)^[20, 18]. Ayurveda is said to have been first compiled as a text by Agnivesha (Agniveshtantra). This text was later revised by Charaka and renamed as Charaka Samhita (Completed by Dharidhaba and descriptions) which dealt with innumerable medicinal plants, their usage and descriptions. The Charaka Samhita (1000 BC) records the use of over 340 drugs of vegetable origin. Besides these, treatise like Sushruth Samhita and Ashtangha Hridaya Samhita are a few among other precious ancient texts. Thus, the three main ancient Ayurvedic texts still used today are, the Charak Samhita (Compilation), Sushrut Samhita and the Ashtangha Hridaya Samhita. These books are believed to be over 12,000 years old. Charak Samhita and Sushrut Samhita are two important works dealing with some 700 medicinal plants of India (Chopra *et al.*, 1956)^[21]. The practice of medicine adopted by them also varied with the availability of local flora but the basic principle of healing remained the same. Our information about traditional healer, their location and practices adopted by them is far from complete. The latest information available on the subject (Anjaria, 1984)^[22] is very old and requires improvement. However, various workers (Anjaria, 1997)^[23] predominantly describe the following tribes as animal healers who use herbs for animal cure. Toda tribes of Nilgiri forest, Kaviraj of Kamrup, Assam, Bhagar, Maldhari and Charan tribes of Gujrat; Raika of Rajasthan; Maria tribes of Bastar, Madhya Pradesh; Tharu tribes of Uttar Pradesh and Santhal tribes of Chhota Nagpur of Jharkhand.

Pharmaceutical studies and therapeutic uses

Preparation of drugs

The roots of *Plumbago zeylanica* Linn. were collected during flowering stage of plants and moulded pharmaceutically into two main categories of doses forms *i.e.* fresh drug root and dry drug root.

Fresh Drug Root: The fresh collected roots get converted into following forms of Therapeutic use:

Extracted Juice (=Chitraka Swarasam)

It is obtained by macerating the collected fresh root, which is being kept in a clean test tube. The so called juice is known as Chitraka Swarasam.

Therapeutic uses: The 5-10 ml extracted juice is mixed with the urine of cow measuring 15-30 ml and taken thrice a day

for three weeks to cure severe internal piles of ailing human beings.

Paste (= Chitraka Kalkam)

The fresh roots of *Plumbago zeylanica* Linn. were collected and ground into paste with the help of mortar. A little amount of water is also added. The existing paste is now called as Kalkam.

Therapeutic uses: The freshly prepared paste is used in the treatment of following human ailments:

*The existing fresh paste is applied externally in filarial legs affected by Elephantiasis.

*The fresh paste mixed with stem bark of *Erythroxylon monogymum* and *Moringa oleifera* Lam. In equal proportion and later on finally mixed with the urine of cow is applied externally in the treatment of oedema affected legs of ailing people.

*The freshly made paste mixed with cow's urine is applied externally after 24 hours in scabies affected part of human being give better result.

*Local administration of 3-5 gm paste into vaginal track for a period of 3-5 days gives abortifacient action.

Dry Drug Root

The dry roots of *Plumbago zeylanica* L. is prepared into following forms:

- | | |
|-------------------|------------------------|
| (I) Infusion | (II) Tablets and Pills |
| (III) Decoction | (IV) Hot Infusion |
| (V) Cold infusion | |

Preparation of root powder as infusion (= Chitramula Churnam)

The freshly collected roots of this plant are thoroughly cleaned by soaking in fresh water repeatedly to separate soil particles sticking on the roots. Then the roots excavated and cut in to small bits measuring 2-3 cm long. The pieces are then thoroughly shade dried and subjected to grinding to convert into fine powder. The so prepared powder is to be preserved in airtight container for usage as a single drug or it can be mixed proportionally with other plant drugs to prepare drug such as Chitrakadi vati (=pills) and Chitraka gutika (=tablets), Chitraka quatham (=decoction), Chitraka himam (cold infusion) and Chitraka plantam (=hot infusion). The churnam (=powder) should be used in dosage of about 2-3 gm twice or thrice a day preferably after meal with warm water.

Therapeutic uses:

*The paste made out of the 1-2 gm root churnam is taken with butter milk (30-60 ml), 2-3 times a day gives, quick relief in diarrhoea.

*The decoction prepared out of the root bark churnam is taken orally (30-60 ml) twice a day for two weeks gives relief from abdominal disorders, peptic ulcers, piles and improve appetite.

* The fine powder of Chitraka (=1 part), dry *Zingiber officinale* Rosc., *Piper longum* L. and *Piper nigrum* L. (=1 part each) were taken orally measuring 1-2 gms with honey used twice a day for four months gives good results in leucoderma and psoriasis.

Side effects:

*The excessive dose of powder taken use to produce severe irritation in the stomach cause vomiting and painful micturition (=burning urination) etc. It also produces ulceration in the stomach.

Preparation of Tablets (Chitrakadi vati) and Pills (=Gutika)

During the present survey, different prepared drug doses were tested as mentioned age groups which have potential use in the treatment of contrasting diseases (Table 1). Medicines prepared in the form of tablets/pills are known as vati and gutika respectively. These are made of one or more drugs of plants or mineral origin.

The above stated dried drugs mixed all together. The compound is thoroughly macerated by using fresh juice of *Citrus limon* (Linn.) Burm. f. or *Punica granatum* L. repeatedly till fine paste is obtained. The so obtained paste is to be dried under shade and to be converted into pills or tablets of desired size (=500 mg). The prepared pills or tablets should be preserved in airtight plastic containers or plastic bags for further use upto 1-2 years.

Therapeutic uses:

*The so prepared tablets or pills are taken twice or thrice a day after meal with luke warm water for period of 2-3 weeks in dyspepsia (=loss of appetite), peptic ulcer, dysentery and diarrhoea.

*The single drug made of the root of *Plumbago zeylanica* L. was taken (=2 pills) twice a day with warm water help in reducing excessive liquid levels in peptic ulcer, dysentery and diarrhoea.

*The single drug made of the root of *Plumbago zeylanicum* L. was (=2 pills) twice a day with warm water help in reducing excessive liquid levels in our blood *i.e.* reduce obesity.

Preparation of Decoction (Chitraka Quatham)

When fresh drug is not available, the dry drug were made is to be made into coarse powder and 16 times water was added in a container and then the contents of container was reduced to 1/4th by boiling, filter while warm and then, placed in a glass made bottle for further use.

Therapeutic uses: The decoction so prepared was taken in a dose measuring 30-60 ml twice a day for three weeks used to check and prevent spermatorrhoea.

Preparation of Hot infusion (Chitraka phantam)

Add 8 times more water to the coarse powder, soak for 30 hours and in the next day morning reduce to half volume by boiling, filter while warm and hot infusion is kept ready for use.

Therapeutic Uses:

The hot infusion (15-30 ml) is taken orally twice a day for a period of 10 days, gives positive result in peptic ulcers and indigestion.

Different ingredients were used as per age group for the preparation of chitrakavati and pills which they have extracted from root, rhizome, fruit, and juice respectively for the preparation of novel drugs mixed all together (Table 2). The compound is thoroughly macerated by using fresh juice of *Citrus limon* (Linn.) and *Punica granatum* L. repeatedly till fine paste is obtained. The so obtained paste is to be dried under shade and to be converted into pills or tablets of desired size (=500 mg). The prepared pills or tablets should be preserved in airtight plastic containers or plastic bags for further use upto 1-2 years.

Therapeutic uses:

* The so prepared tablets or pills are taken twice or thrice a day after meal with luke warm water for period of 2-3 weeks in dyspepsia (=loss of appetite), peptic ulcer, dysentery and diarrhoea.

* The single drug made of the root of *Plumbago zeylanica* L. was taken (=2 pills) twice a day with warm water help in reducing excessive liquid levels in our blood *i.e.* reduce obesity.

Preparation of Cold infusion (Chitraka Himam)

Four times more water was added to the coarse powder of the root of *Plumbago zeylanica* L. to soak for 24 hours and in the next day early morning, filtered to get cold infusion and were placed in a plastic container for further use.

Therapeutic uses:

* The cold infusion was taken 20-40 ml thrice a day for a period of 10 days which gives good result in bleeding piles.

* The cold infusion was also prepared by using 20 gm roots of *Plumbago zeylanica* L. and 40 gm turmeric powder mixed in cow's urine. The dose measuring 30-60 ml was taken twice a day for period of 3-4 months to give good result in the treatment of leprosy and allied skin affections.

Dietary precautions during treatment with Chitraka (*Plumbago zeylanica* L.)

Drug: Control of food habits of the patient under treatment is another important aspect of Indian medical system (=Ayurveda) in order to avoid crude interaction between the drug and food. To achieve positive results and for total effectiveness of the plant drug as well as for absorption, following precautions are required:

* Potato and root vegetables are avoided during the treatment of facilitate good absorption of the plant drug.

* Oil food stuff, spices and condiments to be reduced for effective absorption of the herbal drug.

* Plenty of water is to be taken in between meals and also while taking the plant drug for good absorption, bio-availability and good excretion of the plant drug.

* Vegetable food stuffs which have allied action with the plant drug should be taken during the course of treatment instead of incompatible foodstuff for synergetic action.

The root of *Plumbago zeylanicum* L. (Chitraka) has got numerous therapeutic uses. The root is known to be abortifacient and to have vesicant properties. It is used as appetizer, diuretic, expectorant and used in the treatment and peptic ulcers.

The root paste is applied topically for filarial leg swelling. It is also used topically for early as maturation, rupture and healing of wounds. The root powder taken orally along with honey gradually reduces hypercholestraemia and improves blood formation (=anaemia). It is used to reduce obesity, vitilago and ascites. It is also used to relieve coryza (=running nose), hoarseness of voice and sore throat. It is also used in the form of local application for leucoderma, scabies, psoriasis, symptoms of leprosy and allied skin diseases. The decoction of the root is useful in checking and preventing spermatorrhoea.

Table 1: Different ingredients used in the preparation of Tablets (=Chitrakadi vati) and Pills (=Gutika)

Ingredients	Parts used	Quantity
<i>Plumbago zeylanica</i> L.	Root	1 part
<i>Piper longum</i> L.	Root	1 part
<i>Zingiber officinale</i> Rosc.	Rhizome	1 part
<i>Piper nigrum</i> L.	Fruit	1 part
<i>Ferula asafetida</i> L.	Resin	1 part
<i>Carum copticum</i> Benth and Hook.	Fruit	1 part
<i>Piper cubeba</i> L. f.	Root	1 part
<i>Citrus limon</i> (Linn.) Burm. f.	Juice of Hesperidium Fruit	1 part
<i>Punica granatum</i> L.	Juice	For maceration
Impure potassium carbonate.	-	1 part
Impure Sodium Carbonate.	-	1 part
Sodium Sulphate+Sodium Chloride.	-	1 part
Rock Salt (<i>Saindhva lavana</i>).	-	1 part
Aluminium Sulphate + Magnesium + Sulphate + Ferric oxide.	-	1 part
Common salt.	-	1 part

Table 2: Age-wise dosage levels of its drug

Name of drug	Infants below one year	Children between 2-5 years	Children between 5-10 years	Adults
Swarasam	-	-	1 Tea Spoon	3 Tea Spoon
Kalkam	-	-	01-02 gm	2-3 gm
Churnam	100 mg	250 mg	01-02 gm	2-3 gm
Tablets/Pills	-	-	01-02 gm	2-3 gm
Capsules	-	-	-	1-2 gm
Quatham	-	-	10-15 ml	30-60 ml
Himam	-	-	15-30 ml	30-60 ml
Phantam	-	-	05-10 ml	15-30ml

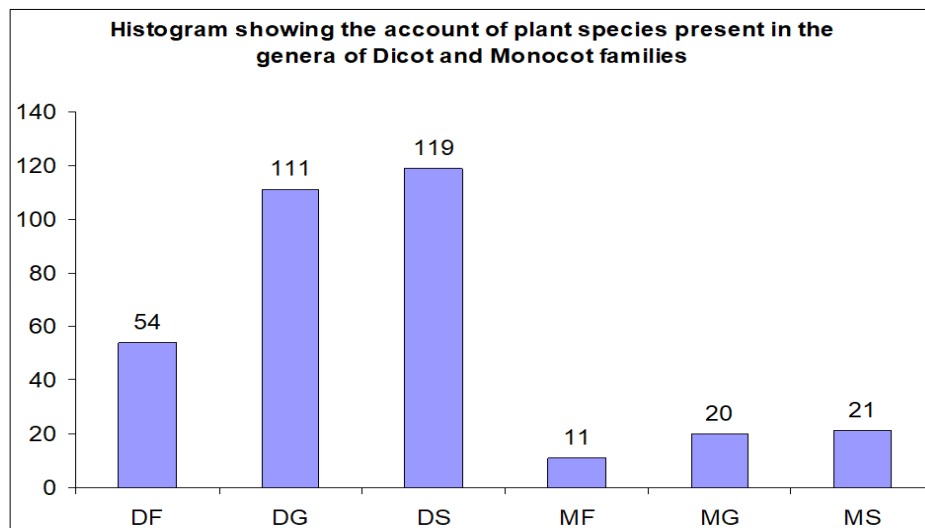


Fig 1: Plant species present in the genera of dicot and monocot Families

DF = Dicot Family; DG = Dicot Genus; DS = Dicot Species

MF = Monocot Family; MG = Monocot Genus; MS = Monocot Species

Reference

- Narayan Rao, Thammanna K. Medicinal Plants of Tirumala Hissl, Department of Garden, Tirumala, Tirupati Devasthanam, Tirupati, India 1987.
- Sudhakar A, Madhav C. Medicinal importance of some angiospermic weeds used by the rural people of Chittoor district of Andhra Pradesh, India. *Fitoterapia* 1998;69(5):390-400.
- Thammanna, Narayana Rao k, Madhava Chetty K. Angiospermic wealth of Tirumala Department of Gardens, Tirumala Tirupati Devasthanam, Tirupati, India 1994.
- Prajapati ND, Purohit SS, Sharma AK, Kumar. A Land book of Medicinal plants (A complete source book). Agrobios Publishers, Jodhpur. India 2003, 1641.
- Kochhar SL. Economic Botany in The Tropics Rajiv Beri Publication, Macmillan India Ltd. New Delhi 1998.
- Mehta AR. Some recent developments in *in vitro* research of plant products, Proceedings of XVIII. Plant Tissue Culture Conference, NEHU, Shilong 1989, 111.
- Perumal, Samy, Ignacimuthu. Screening of 34 Indian medicinal plants for antibacterial properties. *Journal of Ethnopharmacology* 1998;62(2):173-82.
- Perumal Samy, Ignacimuthu. Antibacterial activity of some folklore medicinal plants used by Tribals in Western Ghats of India. *Journal of Ethnopharmacology* 2000;69(1):63-71.
- John. An Empirical Investigation of Some Antecedents of Opportunism in a Marketing Channel. *Journal of Marketing Research* 1984, 21(3).
- Pushpangadan P, Atal CK. Ethnomedical and ethnobotanical investigations among some scheduled caste communities of travancore, kerala, India, *Journal of Ethnopharmacology* 1986;16(2-3):175-190.
- Anuradha U, Kumbhojkar MS, Vartak VD. Observations on wild plants used in folk medicine in the rural areas of the Kolhapur district. *Ancient Science of Life* 1986;4(2):119-121.
- Harsha VH, Hebbar VS, Hedge GR, Shripathi V. Ethnomedicinal plants used by kunabi tribe of Karnataka in India. *Fototerapia* 2002;73:281-287.
- Parinitham M, Harish GU, Vivek NC, Mahesh T. Ethnobotanical wealth of Bhadra wild life sanctuary in Karnataka. *Journal of traditional knowledge* 2003, 3(1).
- Jain SK. A manual of Ethnobotany pub. Scientific Publishers, Jodhpur 1981.
- Jain SK, Sastry ARK. Techniques and constraint in Survey and conservation of threatened plants and habitat in India, In Haye Synge Edit. *The Biological Aspects of Rare Plants Conservation*, pub John Wiley & Sons Ltd. New York 1981, 59-66.
- Jain SK. Methods and Approaches in Ethnobotany, Pub. Society of Ethnobotanist, Lukhnow 1989.
- Jain SK. The role of a Botanist in Folklore Research, *Folklore* 1994;5(4):145-150.
- Prajapati V, Tripathi AK, Khanuja SPS, Kumar S. Anti-insect Screening of Medicinal Plants from Kukrail Forest, Lucknow, India. *Pharmaceutical Biology* 2008;41(3):166-170.
- Nambair R, Raveendran K. Marine mycoflora of Pondicherry and Mahe. *Ecochronicle* 2008;3:47-50.
- Narayana, Sasidharan. Floristic studies in Parambikulam Wildlife Sanctuary, KFRI Research report N0 1978;246:1-433.
- Chopra RN, Nayar RL, Chopra IC, Asholkar LV, Kakkar KK. Glossary of Indian Medicinal Plants. Council of Scientific and Industrial Research, New Delhi 1956, 174.
- Anjaria JV. Traditional (indigenous) systems of veterinary medicine for small farmers in India Other 1984. FAO Accession No: XF8764281.
- Anjaria JV, Parabia M, Bhatt G, Khamar R. Nature Heals A Glossary of selected indigenous medicinal plants of India, sristi Innovations, Ahmedabad 1997, 50.