

Health Impacts with Social Factors of Chitrak (*Plumbago zeylanica*): An Analysis of Ayurvedic herb with Economic Perspective in Indian Society and Healthcare 5.0

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ABSTRACT

In this presented manuscript, we provide detailed knowledge about the plant Plumbago zeylanica as per classic literature and modern literature as well. This manuscript will be helpful in revealing different facts of Plumbago zeylanica, especially in lifestyle disorders and as well. Currently, Ayurveda and herbal medicine are very popular. Descriptions of many divine medicines are found in Ayurveda. One of them is Chitrak. Its main action is on the Agni (metabolism) of the human body. It is a very good appetiser and digestive. Much clinical research has proved its anti-diabetic and antioxidant properties. It lowers blood glucose levels by decreasing insulin secretion and simultaneously reduces blood cholesterol. It also aids in reducing. Anxiety and calming brain activity, as it suppresses the central nervous system because of its relaxant properties.

1 INTRODUCTION

At present, numerous types of diseases are arising because of the changing lifestyle and its harmful effects. These mainly include thyroid, diabetes, heart disease, obesity, and hypertension. There is a need to focus on this growing problem.

MOTIVATION OF THE STUDY

Now it is the time when we all return back to our ancestral roots, and so on herbal medicine and traditional medicines are in trend. *Chitrak* is a medicinal herb which is frequently indicated in the treatment of various diseases in Ayurveda. As it works on 'Agni' it is used in metabolic disorders especially.

Thus, it may be useful in wellness tourism. Hence, this study shows the significance of knowledge of indigenous medicines. It also encourages us to be mindful of natural herbs and traditional medicinal systems. With the help of this study, we can explore *Chitraka* in detail, including its therapeutic importance.

Ayurveda, along with the rich knowledge of medicines, also provides us with a vast area for research. The plant, *Chitraka*, is found in the regions, and is described in Ayurvedic literature as an important medicine.

1.1 GLOBAL SCENARIO OF AYURVEDA

Numerous countries are stepping forward to integrate modern medicines and traditional medicines to maximize the quality of treatment and healthcare systems. Ayurveda is the ancient medicine system of India, and it has been practiced for thousands of years. At present, the government is understanding the value of Ayurveda and taking steps to integrate it with allopathic medicine (as per Figure 1) (Industry Research, 2022) [1].



Figure 1: Crude Medicinal Herbs Used in Different Ways as Described in Ayurveda. (Source URL: <https://shorturl.at/dgHQ2>)

From the long-time traditional medicine system is primarily used in the various countries and it's also dominating in the present time because of its holistic approach towards the disease. According to Ayurveda the crude medicinal herbs are used in the treatment of various diseases and disorders like pain relief, digestive disorders, anti-inflammatory, respiratory health, and skin disease (Firenzuoli, F. et al., 2007) [2].

Medicinal Plants are a boon for us - its 21st century, and it's the time of Ayurveda, medicinal plants and herbs are the amazing source of drugs and many world population depends on the plants based drugs because they know its benefits so to formulate the drugs different parts of the plants are used like Root, flower, bark, and stem (Hussain, M. J et al., 2022) [3]. Ayurvedic herbs focus on achieving balance and harmony in the body, mind, and spirit to promote overall health and well-being. Ayurvedic medicine uses a large range of herbs and natural substances in its treatment. It has been believed that these herbs have various therapeutic properties and are used in specific health conditions (as per Figure 2).



Figure 2: Gifts of nature that promote wellbeing and facilitate healing. (Source URL: <https://rb.gy/slxux>)

Some commonly used herbs are Ashwagandha, turmeric, ginger, holy, basil, Triphala. It's very important to know that Ayurvedic medicines have long history and still practice today, it is not regulated as same way as conventional medicines therefore its very crucial to consult and Ayurvedic Practitioner before taking any Ayurvedic herb (Pelkonen, O. et al., 2014) [4].

1.2. MORPHOLOGICAL STUDY

It is an important medicinal plant mainly in West Bengal and southern regions. It is found worldwide in tropical and subtropical countries. Its plant is small and bushy. It is an erect and long green plant. Its stem is hard, spread, round, straight and hairless. Its leaves

are about 3.8-7.5 cm long and 2.2-3.8 cm wide. Its flowers are blue-violet or light white in color.

The flowering period occurs in the month of September-November. The fruit production occurs in the month of October-December.



Figure 2.a: Benefits of Chitrak (*Plumbago Zeylanica*), Uses and Dosage. (Source URL- Anon, (2022). [online] Available at: <https://avedaayur.com/benefits-of-chitrak-plumbago-zeylanica-uses-dosage> [Accessed 29 Aug. 2023]) [5].

2 BACKGROUND AND SURVEY WITH LITERATURE REVIEW

Babita Shukla and her team (2021) demonstrated in their study that the present study aimed to highlight the phytochemicals present in *Plumbago zeylanica* linn and provide comprehensive data regarding its pharmacological potential. There was a deep pharmacological study done of Chitrak. Substantial literature surveys were undertaken to abridge the traditional medicinal uses of *Plumbago zeylanica* and its therapeutic properties containing information of various decades. Then there was screening as per the GRADE system incorporated studies evaluated. Then there is phytochemical profiling. Chitrak Phyto constituents are present in various parts of the plant. This study digs deep into the Anti-microbial activity, Anti-inflammatory activity, Antioxidant activity, hair growth promoter and regulator, An Anti-Obesity Anti-diabetic activity. *Plumbago zeylanica* was reported to possess protective effects against hepatic toxicity. *Plumbago zeylanica* is a good source of diverse Phyto constituents and has tremendous therapeutic properties (Shukla, B. et al., 2021) [6]. This study was done with the help of excursion trips that were planned to visit the area of plant **Chitrak (*Plumbago zeylanica*)** collecting sites to study the habitat and the distribution of medical plants. Regular field surveys were conducted, and studies were done. Initiated by consulting different literatures and previous works done in Bihar, checklist of medicinal

plants and ethnomedical importance of Valmiki Nagar. The study continues to review the root of *Plumbago zeylanica* and its numerous therapeutic uses. Its root is known for abortifacient and has vesicant properties. Then study continues to tell us about the different preparations of drugs. Its roots were collected to form two kinds of doses: Fresh drug root and Dry drug root, which are extracted juice paste (fresh dry root). Dry drug (Preparation of root powder as infusion) (Quiz Ajmal, et al., 2020) [7].

This study brings attention towards the importance of *Plumbago zeylanica* and its potential of pharmaceutical activity for the development of new herbal formulations. *Chitrak* also known as White leadwort is known to contain secondary metabolites like flavonoids, glycosides, and saponins. Pharmaceutical activities of *Plumbago zeylanica* are antimicrobial activity, Anti-diabetic activity, Anti-inflammatory activity, Anti-cancer activity, CNS activity, Hypo-cholesterol activity, Wound healing activity. This study indicates the need for an alternative process for mass propagation of this plant. *Plumbago zeylanica* shows various pharmacological activity against several diseases (Roy A, et al., 2017) [8].

Sadhana Singh and her team (2018) deeply review the medicinal properties of *Chitrak (*Plumbago zeylanica*)*. The study compiles the basic information regarding *Chitraka* like its Habitat, Habits, Roots, Leaves, Appearance of flowers etc. Then carry onto the chemical constituents of dried roots of *Plumbago zeylanica* including its *Ras*, *Guna*, *Virya*, *Vipaka*,

Doshkarma Karma and Karma (Deepan, Pachan, Lekhan, Uttejaka etc. Then proceeds to explain the material found regarding *Chitrak* and its properties and ends with naming various *Nighantus* (Singh Sadhana et al, 2018) [9]. The aim of reviewing this paper was to highlight the organoleptic features, physicochemical features and pharmacognostic characters of purified *Chitrak* powder for quality assurance in future studies and the reason for the purification is to remove the impurities or toxins from the raw drug to get the desired pharmacological action.

The *Chitrak* is a well-known medicinal plant, and it is required to go through several purification steps before we use it as drugs. It's a drug that can be used in the treatment of pain, inflammatory conditions, bacterial infections, fungal infections, and wound healing. The study also tells us that the purification was done in five batches with lime water. And the results before purification were noted and the average result was 98.07% yield after purification. The difference was found in the organoleptic and in organoleptic,

physicochemical parameters and pharmacognostical characters. Which displays the result of purification on *Chitrak*. In HPLC the Plumbagin content was 0.29% in unpurified *Chitrak* powder and after purification it was noted 0.98% (Bhinde, S. et al., 2020) [10].

Under literature study, Samhitadi texts of Ayurveda, Nighantus modern literature, articles, and current research papers have been studied. The conclusion has been established by doing the '**theoretical discussion of the *Chitrak***'. In this research work, detailed study of the following texts has been done for the proper study of *Chitrak*. Vedic Literature, Vrihatrayi, Available Nighantu, Texts of Modern Science Research Papers, it is often found abundantly in the plains of India, Pakistan, Sri Lanka etc. *Chitrak* (*Plumbago zeylanica*) is a medicinal herb belonging to the Plumbaginaceae family. The Latin name of the *Chitrak* is *Plumbago zeylanica*. Due to its medicinal properties, it is grown in most parts of India. *Chitrak* is described in detail in Ayurvedic literature.

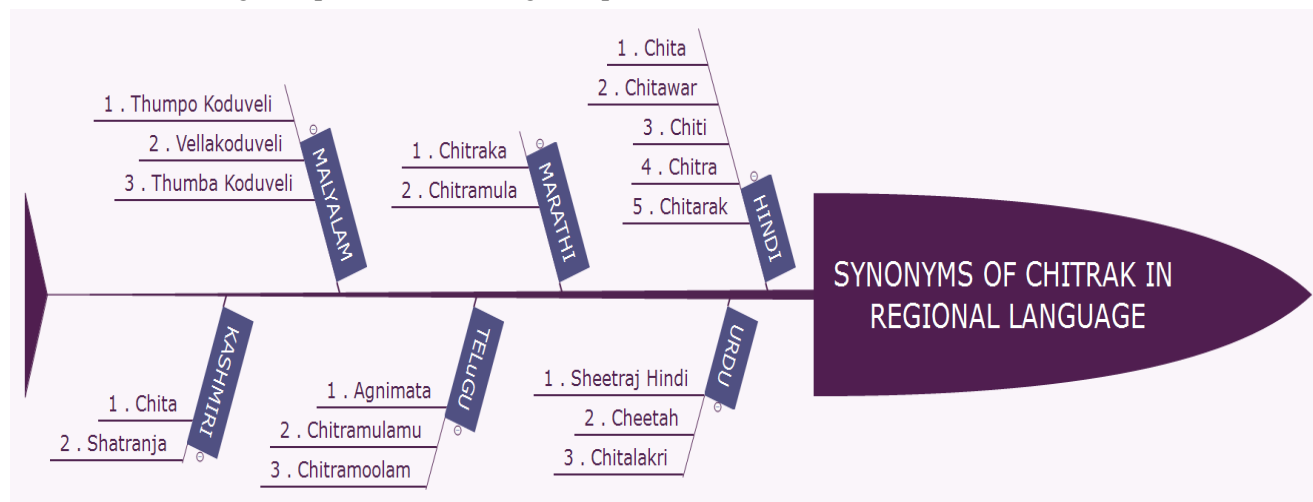


Figure 3: Synonyms of Chitrak in Different Regional Languages

2.1 VERNACULAR NAMES OF CHITRAK

Chitrak is known by different names in different regions of India because these regions have their own languages. *Chitrak*. In Hindi, *Chitrak* is known as Chita, Chitawar, Chiti, Chitra, Chitarak. In Urdu it's referred as Sheetraj Hindi, Cheetah, Chitalakri, Chitrak, Chitramula in Marathi and In Malayalam, it's known as Thumpo koduveli, Vellakoduveli,

Thumba Koduveli Pointing its medicinal root and historical need in Ayurveda. In Telugu it's known as Agnimata, Chitramala, Chitramoolam, Tella Chira. By these names they represent its cultural significance in the region. In Kashmiri it is known as Chitra, **Shatranja (pl. refer Figure 3)** (P.V. SHARMA *Dravya-guna vigyan*) [11].

2.2 CLASSIFICATION OF CHITRAKA IN SAMHITAS

In Ayurveda, *Chitrak* has been frequently described in Brihatrayi, Nighantus and other classical Ayurveda texts.

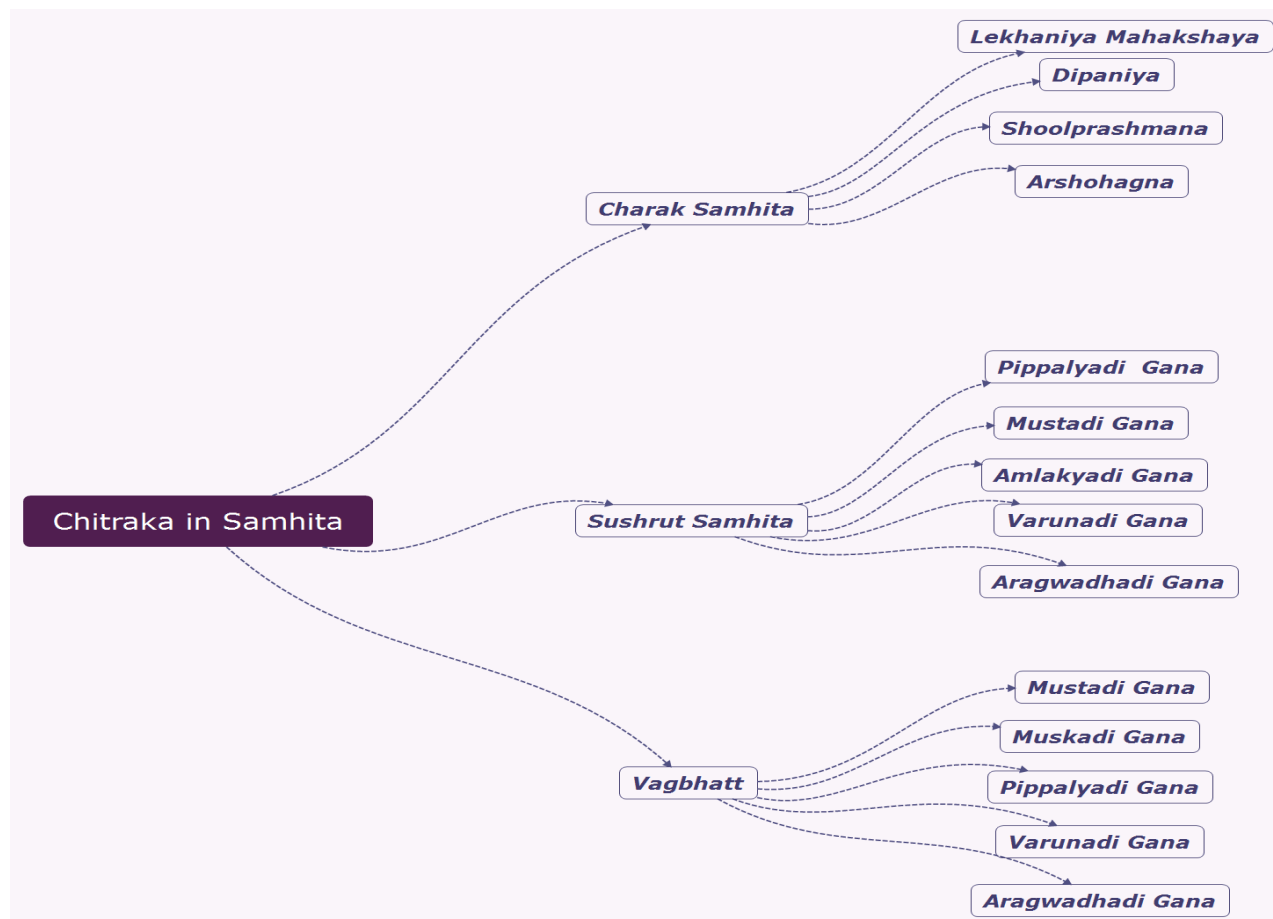


Figure 4: Classification of Chitrak in Samhitas

In Charak samhita, *Chitrak* term is used in different mahakashaya as Lekhaniya mahakashaya (Charak samhita, 1994) [12], Deepaniya mahakashaya. (Smita, S. et al., 2015) [13], Shoolprashmana mahakashaya (Charak samhita, 1994) [14], Arshogna (Charak samhita, 1994) [15]. and in Sushrut samhita, Chitak is described in Pippalyadi gana (Sushrut Samhita, 2014) [16], Mustadi gana (Sushrut Samhita, 2014) [17], Vrunadi gana (Sushrut Samhita, 2014) [18], Amlakyadi gana (Sushrut Samhita, 2014) [19] and Aragwadhya gana (Sushrut Samhita, 2014) [20]. whereas according to Vagbhatt, Chitrak has been described in Mustadi gana (Astanga Hrdayam 2007) [21], Mustadi gana (Astanga Hrdayam 2007) [22], Pippalyadi gana (Astanga Hrdayam 2007) [23], Varunadi gana (Astanga Hrdayam 2007) [24] and

Aragwadhadi gana (Astanga Hrdayam 2007) [25] (Pl. refer Figure 4).

2.3 NIGHANTUS

Nighantu is a particular type of Sanskrit glossary, containing brief annotations of obscure and difficult words grouped into thematic categories. There are many nighantus in which *Chitrak* has been described as in Dhanwantari Nighantu *Chitrak* comes in Shatpushpadi varga (Dhanwantri Nighantu, 2008) [26], and In Kaidev nighantu it is in Aoushadhi varga, In Priya nighantu (Sharma, P.V. et al., 1979), *Chitrak* is described in Pippalyadi varga (Sharma, P.V. et al., 2004) [28], and in Madanpal nighantu, Raj nighantu and Bhavprakash nighantu

Chitrak is in shunthyadi varga (Patiyala, Pt. et al., 1998)[29], pippalyadi varga (Tripathi. et al., 1982) [30] and haritakyadi varga (Chunekar, K.C. et al., 1982) respectively [31] (as per Table 1 and Table 2).

TABLE 1
CLASSIFICATION OF CHITRAK IN NIGHANTUS

S.No	Nighantus	Verga
01	Dhanwantri Nighantus [32]	Shutpushpadi Verga
02	Kaidev Nighantu [33]	Aoushadhi Verga
03	Priya Nighantu [34]	Pippalyadi Verga
04	Mandanpal Nighantu [35]	Shunthyadi Verga
05	Raj Nighantu [36]	Pippalyadi Verga
06	Bhavprakash Nighantu [37]	Haritakyadi Verga

TABLE 2
TAXONOMICAL CLASSIFICATION [32]

S.No.	Kingdom	Plant
01	Class	Magnoliopsida
02	Order	Ranunculae
03	Family	Plumbaginaceae
04	Genus	Plumbago
05	Species	Zeylanica

Name of substance Morphological study Chitrak is an important medicinal plant mainly in West Bengal and southern regions. It is found worldwide in tropical and subtropical countries. Its plant is small and bushy. It is an erect and long green plant. Its stem is hard, spread, round, straight and hairless. Its leaves are about 3.8-7.5 cm long and 2.2-3.8 cm wide. Its flowers are blue-violet or light white (please see Table 3).

Its flowers are white and are kept in clusters on the peduncle. The fruit is in a sticky, glandular permanent sheath. Its root is as thick as a finger and there are small bumps on the bark. It is bitter, pungent in taste and its smell is unpleasant. The flowering period occurs in September-November.

TABLE 3
MANY ACHARYAS HAD CALLED CHITRAKA IN MANY WAYS.

Types	Nighantu
Two-White, Red	Raj Nighantu [30]
Four - White, yellow, Blue, Black	Madanpal Nighantu [24]
Three-White, Red, Yellow	Vagbhatta [33]

As per Table 3; in Ayurvedic literature, types of Chitrak are different as in Vagbhatt Chitrak is of three types-White, Red, Yellow and in Raj Nighantu

Chitrak is of two types-white and red, in Madanpal Nighantu, it is of four types-white, yellow, blue, and black. These all are based on the color of flower.

Three types of *P. zeylanica* (Red, Blue, White)
According to some Acharyas , Chitrak is of three types-

1. *Plumbago Indica*

2. *Plumbago Auriculata*

3. *Plumbago Zeylanica*



Figure 5: *Plumbago indica* Linn (Source URL: Citation-Recregarden (2013). Recregarden: PLUMBAGO INDICA. [online] Recregarden. Available at: <http://recregarden.blogspot.com/2013/11/plumbago-indica.html> [Accessed 29 Aug. 2023].)



Figure 6: *Plumbago auriculata* Linn. (Source URL–Citation-PLANTBOOK (n.d.). PLANTBOOK: *Plumbago auriculata* – PLANTBOOK. [online] Available at: <https://www.plantbook.co.za/plumbago-auriculata/>.)



Figure 7: *Plumbago zeylanica* Linn. (Source URL: Citation-Friday, J.B. (2002). Flickr: *Plumbago zeylanica* flower. [online] Flickr. Available at: <https://www.flickr.com/photos/jbfriday/5224692501/> [Accessed 29 Aug. 2023].)

CHEMICAL COMPOSITION - It mainly contains an element called plumbagin. Which is bitter, yellow, and crystalline, it is 0.91 percent. Apart from this, there is free grape sugar, fruit sugar, and protease and invertase enzymes (as per Figure 5, 6 and 7).

2.4 GUNA KARMA STUDY OF CHITRAK

If we discuss ayurveda, the action of the drugs on its *rasa panchaka* means their qualities and actions, I.e., *rasa* (taste), *virya* (power), *vipaka* (post- metabolic test) and *karma* mean the therapeutic actions. All the

drugs work according to their *rasa panchaka*. According to Nighantus, different acharyas mention *rasa, guna, veerya, vipaka* and *Prabhava* and *doshkarma*. Based on its properties as *ras, guna, veerya, vipaka* and *Prabhava, acahitrak* do karma on *doshas*.

According to Nighantus, different acharyas mentioned *rasa, guna, veerya, vipaka* and *Prabhava* and *doshkarma* based on its properties as *ras, guna, veerya, vipaka* and *Prabhava, a chitrak* do karma on *dosha* (as per Table 4).

TABLE 4
PROPERTIES OF CHITRAK IN NIGHANTUS

Karma	Bhavprakash Nighantu [31]	Dhanwantri Nighantu [26]	Raj Nighantu [30]	Madanpal Nighantu [29]	Priya Nighantu [28]
rasa	Katu	Katu			
guna	tikshna, laghu, ruksha	tikshna		ruksha, laghu	ruksha, laghu
vipaka	Katu				
Veerya	ushna	Ushna	ushna	Ushna	Ushna
doshkarma	Vaatkaphnashaka	kaphnashamaka	kaph hara	tridoshhara	vaatnashaka

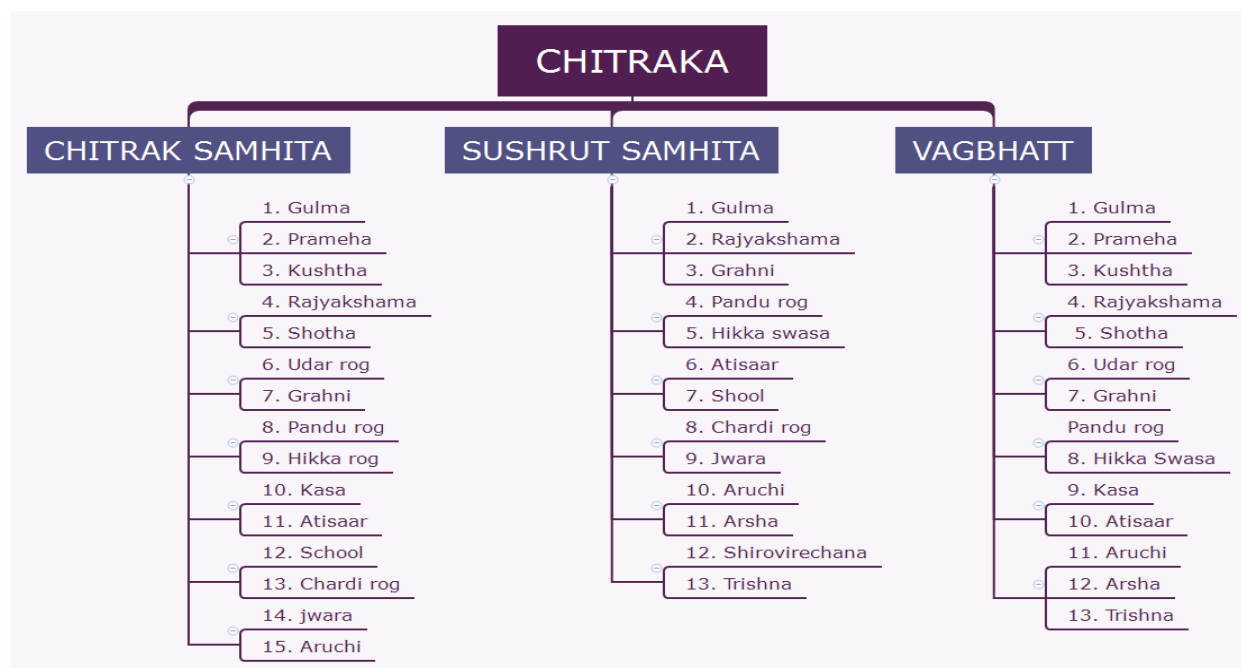


Figure 8: Uses of Chitrak in Different Diseases in Samhitas.

2.5 USES OF CHITRAK IN DIFFERENT DISEASES IN SAMHITAS

According to Ayurvedic medical text, there are so numerous karmas of chitrak have been mentioned but the main karmas are like- lekhanaya, Arshodhana, digestion, Jvaraghna, krimighna etc. **(Please see Figure 8)** The above table shows the multiple uses of *Chitrak (Plumbago zeylanica)* for treatment in Different Diseases like *Jwara* (Fever), *Atisaar* (Diarrhea), *Shotha* (Inflammation), *Pandu rog* (Anemia), etc.

If we look closely, diseases like *Aruchi* (Anorexia), *Udar rog* (Abdominal diseases), *Trishna* (Pathological thirst), *Kasa Swasa* (Cough & Dyspnea), *Shool* (Pain), *Grahani* (irritable bowel syndrome) are most likely to be associated with tourists.

Hence, it can treat our lifestyle disorders or improve the quality of tourism by upgrading their hospitality and care through the use of *Chitrak (Plumbago zeylanica)*.

2.6 USES OF CHITRAK IN DIFFERENT DISEASES

Chitrak is a classical Ayurvedic herb that has been used for the treatment of various diseases from a long time in nighantus as in Bhavprakash Nighantu, Acharya used *Chitrak* as Shophshamaka (inflammation), Vaat rog, Arshoagha, Grahani, etc. Like that, in Dhanwantri Nighantu (Singh, Palamrit. et al., 2008) [26], *P.zeylanica* in the treatment of Kandu (Itching), Udar rog (Abdominal disorder), Kshaya rog (Tuberculosis), Pandu rog (Anemia), Dipaka, Pachaka etc. According to Raj Nighantu (Tripathi. et al., 1982) [30], Priya Nighantu (Sharma, P.V. et al., 2004) [28] and Madanpal Nighantu (Patiyala, Pt. rt al., 1998) [29] text *Chitrak* is used in other diseases as in Krimi rog (Antihelminthic), Aamdosha, Kasa (cough), Pachaka, Grahani rog, etc. All diseases are directly related to disorders which are in tourists and *Chitrak* helps to cure all these, so it is very useful for hospitality and wellness tourism (Pl. refer Table 5).

TABLE 5
Chitrak in Different Diseases

Karma	Bhavprakash Nighantu37	Dhanwantri Nighantu32	Raj Nighantu36	Madanpal Nighantu35	Priya Nighantu34
Shophshamaka	+	+	+	+	+
Vaat rog	+	+	+		
Udar rog		+	+	+	
Arshohagna	+	+	+		+
Grahani	+	+	+	+	+
Kshaya rog		+			
Pandu rog		+			
Agnivardhaka	+		+	+	+
Pachaka		+	+	+	
Rochaka		+	+	+	
Aamdosha				+	
Kushthagna	+		+	+	+
Kriminashaka	+		+	+	
Kandughna		+			+
Kasaghna	+			+	
Grahi	+			+	

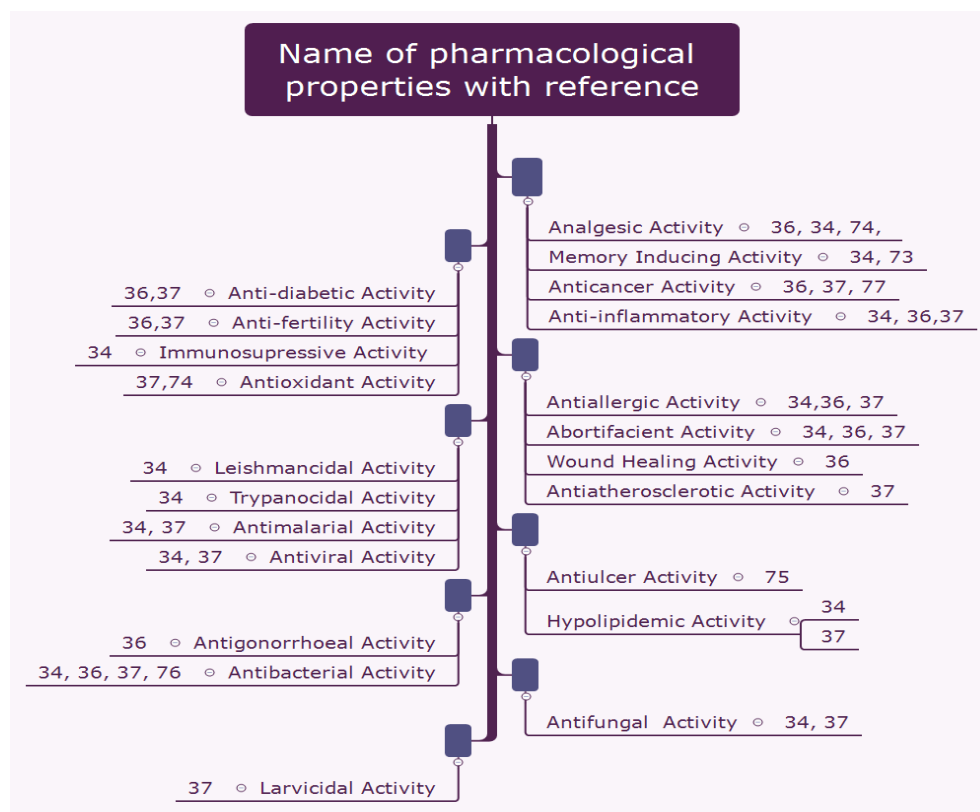


Figure 9: Name of Pharmacological Properties of *Plumbago zeylanica*.

2.7 Part Used

Chitrak's root, and leaves are its main parts-

Dosage- Its quantity- 1-2 grams

Specific formulations- Chitrakadi Gutika, Chitrakadi Gutika, Chitrakadi Ghrita, Chitrakadi Churna.

2.8 Pharmacological Activities of Chitrak (*Plumbago zeylanica*)

Chitrak, the plant, possesses a multitude of medicinal properties. *Chitrak* has been used to support digestive disorders. It contains anti-inflammatory activity (Vishnukanta et al., 2011) [34], which reduces inflammation and swelling, the application of *Chitrak* pastes on the wound for better healing. It can be used in the treatment of symptoms of pain as well as to enhance memory (Deshmukh, RR. et al., 2011) [35].

Chitrak also has antifertility (Singh, Mukesh. et al., 2011) [36], anticancer (Ganesan, Kumar. et al., 2013) [37], antioxidant, immunosuppressive (Singh, Mukesh. et al., 2011) [36], antiallergic (Ganesan, Kumar. et al., 2013) [37], (Vishnukanta, et al., 2011) [34] and antiulcer, activities due to which it can be used in the treatment of ulcers (Mitta. Vineet, et al., 2010) [38] (please see Figure 9).

3. USES OF CHITRAK IN DIFFERENT AYURVEDA TEXTS

Chitrak (Plumbago zeylanica) is mentioned in many Indian texts, both modern and traditional. Various Nighantus and Koshas discuss *Chitrak* with various synonyms. Every text discusses the different properties of *Chitrak* with various names. The study of any drug or dravya in ayurveda is conducted upon the

composition of that drug's *Rasa (katu)*, *Guna (laghu, ruksha, tikshna)*, *Virya (Ushna)*, *Vipaka (Katu)*, *Dosh Karma (Kaphavatashamak)* and *Karma (Deepan, Pachan, lekhan, Grahi)*.

In traditional Indian texts, Chitrak uses in various ailments like *Gulma*, *Shoola*, *Udar Rog*, *Gudashotha*, *Rajoroga*, *Prasutivikara*, *Kushtha*, *Jirna Jwar* and many more.

In modern studies, chitrak has been identified as a powerful antioxidant, anti-inflammatory drug, anti-obesity drug, anti-microbial drug, anti-viral drug, an efficient hair growth promoter and regulator and as an anti-diabetic drug.

3.1 CHAKRADATTA

Acharya has recommended the use of Chitrak Ghrita (Dwivedy, R. et al., 2015) [39]. in the treatment of duodenum, gulum, inflammation, abdominal diseases, spleen, colic, and hemorrhoids. have instructed. Yograj Guggulu (Dwivedy, R. et al., 2015) [40]. and Chitrakgud (Dwivedy, R. et al., 2015) [41] are used in the treatment of Rheumatism and Agnimandya, and Navayas Loha (Dwivedy, R. et al., 2015) [42] and Chavyadi Kalka (Dwivedy, R. et al., 2015) [43] are used in the treatment of Panduroga and Urustambha. In addition, Acharya has used Katukadi Kwath (Dwivedy, R. et al., 2015) [44], Chitrakadi Gutika (Dwivedy, R. et al., 2015) [45], Bilwadi Ghrita (Dwivedy, R. et al., 2015) [46] has been used for the treatment of cough and duodenum respectively. Various ghrithas of Chitrak have been used in inflammation. Punarnavadya Ghrita (Dwivedy, R. et al., 2015) [47], Panchkola Ghrita (Dwivedy, R. et al., 2015) [48], Chitrakadya Ghrita (Dwivedy, R. et al., 2015) [49], Shlipadadhna Lepa (Dwivedy, R. et al., 2015) [50] made from Chitrak have been used in the treatment of Shlipada disease.

3.2 SHARGDHARA SAMHITA

Acharya Shangardhara has used Chitrak in various fictions- Chavyadi Kwath (Sharangdhara Samhita, 2012) [51], Vasadi Kwath (Sharangdhara Samhita, 2012) [52] in abdominal diseases, and Punarvadi Kwatha (Sharangdhara Samhita, 2012) [53] in eye diseases. Acharya has also described many powdered imaginations of the painter. Panchkol Churna (Sharangdhara Samhita, 2012) [54], and Navayas Churna (Sharangdhara Samhita, 2012) [55], etc. are the main powdered concepts. These are especially used in the treatment of indigestion, anah, duodenum, anorexia, stomach disease, flatulence and pandurog, heart disease etc. Acharya has described Vyoshadi Gutika (Sharangdhara Samhita, 2012) [56] and Kantakaryavleha (Sharangdhara Samhita, 2012) [57] in breathing, cough therapy. Apart from this, Chitraka's *Yog Changeri Ghrita* (Sharangdhara Samhita, 2012) [58], *Kshirshatpaladhrita* (Sharangdhara Samhita, 2012) [59] in the treatment of diarrhea and duodenum, and *Shadbindu Ghrita* (Sharangdhara Samhita, 2012) [60] have been used in dysentery and purgation. *Chitrak* has been used in *Arishta Rohitkarishta* which is used in *Arsha* (Sharangdhara Samhita, 2012) [61].

3.3 BHAISHAJYA RATNAWALI

Acharya has used *Chitraka's* powder imagination more extensively. *Shunthyadi Churna* is used in *Amatisar*. *Jatifaladi Churna*, *Markandeya Churna* in *Kshaya Kaas* breathing, *Sangrahani Agnimandya* etc. *Vyoshadi Churna*, *Agnimukhalvan Churna*, *Lavandadi Churna*, *Shothari Churna*, have been specially used in *Arsh*, *Agnimandya*, *Gulm*, *Pandu* etc. respectively, Acharya has used *Chitrakamultvak*, *Takra* in *Arsh*. *Kalyangud*, *Kushmand Gud*, and *Dashmool Gud* have *Chitraka* as an ingredient, which is used in the treatment of duodenum, leprosy and hemorrhoids respectively. *Sridamaranandabhra Ras* and *Shwasbhairav Ras*. have been used in hoarseness, cough, and respiratory diseases (see Table 6).

TABLE 6
PREPARATION AND FORMULATION OF PLUMBAGO ZEYLANICA LINN

Sr. No.	Preperation name	References
1.	Yograj Guggulu	25,19
2.	vedicSaptvimsati Guggulu	25
3.	Punarnava Guggulu	25
4.	Panchtikta Guggulu	25
5.	Vyoshadi Guggulu	25
6.	Chitrakadi Vati	15,17,20,26,27
7.	Chitrak Ghrit	26,27
8.	Chitrak Haritaki	15,17,20,26
9.	Dashmularishta	26,27
10.	Drakshasava	17,26
11.	Lauhasava	17,26
12.	Ashwagandharishta	17,26
13.	Yakritpleehari Lauh	17,26
14.	Chitrakadi Tail	17, 26
15.	Chitrakadi Churna	16
16.	Agnitundi Vati	20
17.	Chitrak Rasayana	27
18.	Ailadi Ghrit	26
19.	Abhayadi Modaka	29
20.	Tejovatyadi Ghrit	32

Ayurveda uses Chitrak in various forms such as herbal powder (*churna*), paste (*kalka*) for external and internal use, herbal tea, decoction (*kwatha*), cold infusion (*him*), fermented liquid (*asawa*, *arishta*), herbal *ghee* (*grita*) and oil (*tail*). So, there are some preparations are here as *chitrakharitaki* used in chronic respiratory condition, *chitrakadi vati* used in indigestion, *chitrakadhyaklyangulam* used in liver and skin condition. *Ailadi ghita*, *Dashmularishta*, *Drakshasava*, *Chitrak rasayana*, *Yograj guggulu*, *Chitrakadi tail* etc. are other preparations which are used in different diseases.

4. DISCUSSIONS

Scientific research conducted over the past several decades has proved that the above actions of Chitrak are because of its main active ingredient (Bioactive compound)—Plumbagin, which contains many bioactive constituents responsible for most of its therapeutic properties.

Plumbagin, a naphthoquinone, is a major constituent present in the root, which handles its therapeutic activity. *Plumbago zeylanica* contains a variety of phytochemicals, including flavonoids, alkaloids glycosides, steroids, triterpenoid, tannins, coumarins, phenolic compounds, saponins, naphthoquinone, etc.

According to one animal study, the root extract of *Plumbago zeylanica* reduced blood cholesterol levels and low-density lipoprotein (LDL). Plumbagin also

inhibits cholesterol and LDL accumulation in blood vessels and liver (**A review on multipurpose medicinal plant *Plumbago Zeylanica***) [62].

The antioxidant nature of the plant extract is also believed to be responsible for the wound healing activity. Native extract of *Plumbago zeylanica* showed protective benefits against paracetamol-induced liver damage in an animal model (poosarla, A. et al., 2007) [63].

Useful in the treatment of microbial infections- According to a study, the root extract of *Plumbago zeylanica* showed antibacterial activity against several bacteria such as *Staphylococcus aureus*, *E. coli* and multi-resistant strains of *Shigella*, *Bacillus subtilis*, *Salmonella typhi*, *Pseudomonas aeruginosa*. The crude extract of the leaves showed antimicrobial activity against *E. coli*, *Bacillus cereus*, *Staphylococcus aureus* and *Candida* (Dhale DA. et al., 2011) [64].

Chitrak benefits in the management of arthritis (*vejnav-ntjitpajpe*) According to an animal study, the root extract of *Plumbago zeylanica* can suppress collagen type 2-induced arthritis. The symptoms of gout can be reduced using root extracts (Tilak JC. et al., 2004) [65]. Benefits of *Chitrak* in birth control: Boiled aqueous extract of the root is used for fertility control (Aryan, N. et al., 2015) [66]. It has an anti-ovulatory effect. The leaf extract of *Plumbago zeylanica* also showed antifertility activity in rabbits. This antifertility action is reversible once treatment with the extract is discontinued. Patients of *medovridhi* are selected according to B.M. I standard height weight index. Anyone weighing up to 20% more than their standard weight was overweight and over 20% was obese. It can be concluded that the drugs *Chitrak* are effective against cardinal and the general signs and symptoms of *Medovridhi* in patients. Efficacy of *chitrak* was found to reduce the symptoms of *Medovridhi* (Poonam et al., 2020) [67]. Flowers of this plant are used as a digestant (Ganeasan, K. et al., 2013) [68] and decoction of seeds for reducing muscular pain (Chauhan, M. A et al., 2014) [69]. Its leaves have shown their effective role in treatment of digestive problems such as dysentery. Paste of leaves are topically applied in

painful rheumatic areas or in itchy conditions (Vishnukanta, s. et al., 2010) [70].

5. NOVELTIES

- The main aim of this manuscript was to uncover most of the facts and information regarding *Chitrak*.
- It not only covers the functions of *Chitraka* in Indian medicinal practice but goes on to tell its functions and effects it has or can have on the practice of modern medicine.
- It starts with the most basic facts about *Chitrak* like its habitat and habits, then goes on to uncover everything with detailed study and precision.

6. RECOMMENDATIONS

Read and back up every fact and information which they come across about this drug and tell friends and relatives about it. Given in the same document are references of every paper and journals mentioned, and readers are requested to go through these and get to know more and more about this *Chitrak*.

7. FUTURE RESEARCH DIRECTIONS AND LIMITATIONS

From the above information we know that *Chitrak* (*Plumbago zeylanica*) has very strong potential in helping to improve modern day lifestyle and cure a very wide range of diseases. Although *Chitrak* (*Plumbago zeylanica*) has some limitations which are described below along with future direction for our dear readers.

7.1 LIMITATIONS

Just like everything in this world, of course there are some limitations with this drug. As earlier the side effects of these drugs were mentioned and the thing is Ayurvedic treatment is strictly based upon both mental and physical nature of both patient and doctor, and in these modern times very few practitioners take note of

this thing. If not consumed properly this drug can be dangerous.

7.2 FUTURE DIRECTIONS

Science and studies never stop so there is a huge potential for both modern and ayurvedic practitioners to investigate the innate potential of this plant. Though one can feel that there is a need for an alternative processing of this plant to protect its natural constitution in its last formations.

8. CONCLUSIONS

Generally, only white Chitrak (*Plumbago zeylanica*,) is taken from the *Chitrak*. White *Chitrak* specifies all the three *doshas*, *Vata*, *Pitta* and *Kapha*. It pacifies phlegm because it is pungent, bitter, and hot to the stomach. Increases appetite, digests food, stops vomiting, kills intestinal worms. It purifies blood and mother's milk. It cures swelling. It ends typhoid fever. *Chitrak's* root (*Plumbago zeylanica* root) cures wounds and leprosy. It also cures dysentery, enlargement of the spleen, indigestion, itching, various skin diseases, fever, epilepsy, neuro disease, and obesity. White Chitrak strengthens the uterus, destroys bacteria and fungi, is anticarcinogenic, and heals liver wounds. Its root has various therapeutic properties like antioxidant, anti-malarial, anti-fertility, antibiotic and anti-carcinogenic. Thus, in this research paper, it was found that Chitrak (*P. zeylanica*) is a boon in the treatment of chronic diseases in our life.

Ethical Committee and Funding

The experiments don't include any human related experiments and so no ethical constraints have been violated. Though the subjects performing the study were humans and air quality directly affects them but the study doesn't violate any health related measures. The Project is not funded by any agency.

Declarations

The participants of the Survey have been informed duly that their data will be used only for Research

purposes. It will not be misused and commercialized as well.

All Patients were registered before study and duly consent have been taken from them to use their health data for research purposes, not for commercial use. It has been also informed in Ethical Statement.

Ayurveda is trusted and ancient Indian Therapy which has long term treatment process and no side effects. Modern science has accepted this so no potential risk is involved in study and so patients were not discussed about this.

Conflict of Interest & Disclaimer

Disclaimer (Artificial intelligence): Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript. **Also, there is no conflict of interest.**

REFERENCES

- [1] Industry Research (2022) Global Ayurvedic Market Size (2022-2028): Booming worldwide at a CAGR of 12.0%: Consumer demands, leading players updates, emerging technologies, dominant sectors, top countries data and qualitative insights till 2028: Industry research, GlobeNewswire News Room. Available at: <https://www.globenewswire.com/en/news-release/2022/04/12/2421136/0/en/Global-Ayurvedic-Market-Size-2022-2028-Booming-Worldwide-At-A-CAGR-of-12-0-Consumer-Demands-Leading-Players-Updates-Emerging-Technologies-Dominant-Sectors-Top-Countries-Data-and-Qu.html> (Accessed: 08 August 2023).
- [2] Firenzuoli, F. and Gori, L. (2007). Herbal Medicine Today: Clinical and Research Issues. *Evidence-Based Complementary and Alternative Medicine*, [online] 4(s1), pp.37–40. doi:<https://doi.org/10.1093/ecam/nem096>.
- [3] Citation- Hussain, M.J., Abbas, Y., Nazli, N., Fatima, S., Drouet, S., Hano, C. and Abbasi, B.H. (2022). Root Cultures, a Boon for the Production of Valuable Compounds: A Comparative Review. *Plants*, [online] 11(3), p.439. doi:<https://doi.org/10.3390/plants11030439>.
- [4] Pelkonen, O., Xu, Q. and Fan, T.-P. (2014). Why is Research on Herbal Medicinal Products Important and How Can We Improve Its Quality? *Journal of Traditional and Complementary Medicine*, [online] 4(1), pp.1–7. doi:<https://doi.org/10.4103/2225-4110.124323>.

- [5] Anon, (2022). *Benefits of Chitrak (Plumbago Zeylanica), Uses and Dosage*. [online] Available at: <https://avedaayur.com/benefits-of-chitrak-plumbago-zeylanica-use-s-dosage> [Accessed 29 Aug. 2023]
- [6] Shukla, B., Saxena, S., Usmani, S. *et al.* (2021). Phytochemistry and pharmacological studies of *Plumbago zeylanica* L.: a medicinal plant review. *Clin Phytosci* 7, 34, pp. 1-25. <https://doi.org/10.1186/s40816-021-00271-7>
- [7] Quiz Ajmal, et al, (2020). Ethnomedical And Therapeutical Importance of Chitraka (*Plumbago zeylanica* Linn.) In *Valmikinagar, Bihar: Int.J.Curr.Microbiol.App.Sci*, Special Issue-11: 3776-3785. <http://www.ijemas.com>
- [8] Roy A, Bharadvaja N. (2017). A review on a pharmaceutically important medical plant: *Plumbago zeylanica*. *Journal of Ayurvedic and Herbal Medicine*, 3(4):225-228.
- [9] Singh Sadhana et al., (2018). A Brief Review on Medicinal Properties of *Chitraka (Plumbago zeylanica)* From Koshas and *Nighantus*. *IJSRR* 2018, 7(2), 25-31. <https://www.researchgate.net/publication/326367853>
- [10] Bhinde, S. *et al.* (2020) 'Standard operating procedure of purification of Chitraka (*Plumbago Zeylanica* Linn.) along with pharmacognostical and analytical profiles of Plumbagin', *AYU (An international quarterly journal of research in Ayurveda)*, 41(2), p. 117. doi:10.4103/ayu.ayu_299_20.
- [11] *Dravya-guna vigyan, bhaag 2* by P.V. SHARMA, Chaukhambha Bharati Academy, Varanasi
- [12] Agnivesa, Elaborated by Charaka and Dridabala, (1994). Edited with 'Charaka-Chandrika' Hindi commentary along with special deliberation by Tripathi Dr. Brahmanand, *Caraka Samhita, sutrasthana, shlok no. 3/4, 3rd Edition*, Chaukhambha Surbharati Prakashan, Varanasi.
- [13] Agnivesa, Elaborated by Charaka and Dridabala, (1994). Edited with 'Charaka-Chandrika' Hindi commentary along with special deliberation by Tripathi Dr. Brahmanand, *Caraka Samhita, sutrasthana, shlok no. 6/4, 3rd Edition*, Chaukhambha Surbharati Prakashan, Varanasi.
- [14] Agnivesa, Elaborated by Charaka and Dridabala, (1994). Edited with 'Charaka-Chandrika' Hindi commentary along with special deliberation by Tripathi Dr. Brahmanand, *Caraka Samhita, sutrasthana, shlok no. 45/4, 3rd Edition*, Chaukhambha Surbharati Prakashan, Varanasi.
- [15] Agnivesa, Elaborated by Charaka and Dridabala, (1994). Edited with 'Charaka-Chandrika' Hindi commentary along with special deliberation by Tripathi Dr. Brahmanand, *Caraka Samhita, sutrasthana, shlok no. 12/4, 3rd Edition*, Chaukhambha Surbharati Prakashan, Varanasi.
- [16] .Shashtri Kaviraj Ambikadatt, (Translator), (2014), *Surśuta Samhita Vol I, Sutrasthana, shlok no.—22/38, Chowkhamba Sanskrit sanshthan*, Varanasi, 2010, 184
- [17] Shashtri Kaviraj Ambikadatt, (Translator), (2014), *Surśuta Samhita Vol I, Sutrasthana, shlok no.—21/38, Chowkhamba Sanskrit sanshthan*, Varanasi, 184
- [18] Shashtri Kaviraj Ambikadatt, (Translator), (2014), *Surśuta Samhita Vol I, Sutrasthana, shlok no.—8/38, Chowkhamba Sanskrit sanshthan*, Varanasi, 183
- [19] Shashtri Kaviraj Ambikadatt, (Translator), (2014), *Surśuta Samhita Vol I, Sutrasthana, shlok no.—60/38, Chowkhamba Sanskrit sanshthan*, Varanasi, 188
- [20] Shashtri Kaviraj Ambikadatt, (Translator), (2014), *Surśuta Samhita Vol I, Sutrasthana, shlok no.—6/38, Chowkhamba Sanskrit sanshthan*, Varanasi, 183[
- [21] Tripathi B, (Hindi commentator, (2007), *Astanga Hrdayam, sutra sthana, shlok no.40/15, Chowkhamba Sanskrit Pratishthan, Delhi*
- [22] Tripathi B, (Hindi commentator, (2007), *Astanga Hrdayam, sutra sthana, shlok no.32/15, Chowkhamba Sanskrit Pratishthan, Delhi*
- [23] Tripathi B, (Hindi commentator, (2007), *Astanga Hrdayam, sutra sthana, shlok no.1/15, Chowkhamba Sanskrit Pratishthan, Delhi*
- [24] Tripathi B, (Hindi commentator, (2007), *Astanga Hrdayam, sutra sthana, shlok no.21/15, Chowkhamba Sanskrit Pratishthan, Delhi*
- [25] Tripathi B, (Hindi commentator, (2007), *Astanga Hrdayam, sutra sthana, shlok no.17/15, Chowkhamba Sanskrit Pratishthan, Delhi*
- [26] Singh Palamrit, (2008). *Dhanwantari Nighantu, Shatpushpadi Varga, shlok no.80-81, chaukhambha Orientalia Delhi.94.*
- [27] Sharma, P.V. and Sharma G. (1979). *Kaiyadeva Nighantu, Aoushadh Varga, shlok no.1177-1181, Vol. I, Chaukhambha Orientalia, Varanasi; 217.*
- [28] Sharma, P.V (2004). *Priya Nighantu, Pipalliyadi Varga, shlok no.12, Chaukhambha Surabharati Prakashana, Varanasi. 59.*
- [29] Patiayala Pt. Ramaprasad, (1998). *Madanapala Nighantu with Hindi commentary, shunthiyadi varga, shlok no.21-22, Pub. by Khemraj Srikrishnadas Prakashana, Bombay.*
- [30] Tripathi Indradev. (1982). *Raj Nighantu, Acharya Vishwanath Durvedi, Pipalliyadi Varga, shlok no.45-49, Pub. Krishna Das Academy Varanasi, 143.*
- [31] Chuneekar, K.C. and Pandey C.S., Mishra Bhav (1982). *Bhavaprakash Nighantu, Haritakyadi Varga, shlok no.7071, 6th edition, Chaukhambha Bharati Academy, Varanasi; 21.*
- [32] Sharma P.V, (2003). *Dravya Guna Vigyana, Part 2, Chaukhambha Bharati Academy, Varanasi; (2).*
- [33] Tripathi B, (Hindi commentator (2007), *Astanga Hrdayam, sutra sthana, shlok no.21/15, Chowkhamba Sanskrit Pratishthan, Delhi*
- [34] Vishnukanta, Rana AC, (2011). *Plumbago zeylanica: A phytopharmacological review, Vol 2 Issue 2, 247-255*
- [35] Deshmukh RR, Rathod VN, Pardeshi VN, (April, 2011). *Ethanoveterinary medicine from Jalana district of Maharashtra State, Indian Journal of Traditional knowledge, Vol 10(2), 344-348.*

- [36] Singh Mukesh, Nagori Kushagra, Iyer shiv, Khare Gaurav, Sharwan Gotmi, Tripathi DK, (2011). Ethnomedicinal, Traditional and Pharmacological aspects of *Plumbago zeylanica* Linn, *Pharmacology online*, 3, 2011, 684-700.
- [37] Ganesan Kumar, Gani Sharmila Bani, (2013). Ethnomedical and pharmacological potentials of *Plumbago zeylanica* L – A review, *American journal of phytomedicine and clinical therapeutics*, 1(3), 313-337.
- [38] Mittal Vineet, Sharma SK, Pawan Jalwal, Hooda Anil, Mor J, (2010). *Plumbago zeylanica* roots: A potential source for improvement of learning and memory. *International Journal of Pharma and Biosciences*, V1(2), 1-6.
- [39] Dwivedy R, (2015). Chakradatta, Vidyaprabha Hindi Commentary, Slok no. ¼4@43½ Varanasi, Chowkhambha Sanskrit Bhavan.,
- [40] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. ¼25@25½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [41] Dwivedy R, (2015). Chakradatta, Vidyaprabha Hindi Commentary, Slok no. ¼6@72½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [42] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. ¼8@10½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [43] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. ¼9@24½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [44] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. ¼1@103½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [45] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. ¼4@9½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [46] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. Varanasi, Chowkhambha Sanskrit Bhavan., ¼4@44½
- [47] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, ¼39@29½ Varanasi, Chowkhambha Sanskrit Bhavan, reprint 2015,
- [48] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. ¼39@31½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [49] Dwivedy R, (2015). Chakradatta, Vaidyaprabha Hindi Commentary, Slok no. ¼39@33&34½ Varanasi, Chowkhambha Sanskrit Bhavan.
- [50] Dwivedy R, Chakradatta, (2015). Vaidyaprabha Hindi Commentary, Slok no. ¼42@5½ Varanasi, Chowkhambha Sanskrit Bhavan, reprint 2015,
- [51] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha, Slok no. ¼2@35&40½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [52] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha Slok no., (2/43-44), English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [53] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha Slok no. , (2/43-44), English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [54] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha, Slok no. ¼6@13&14½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [55] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha, Slok no. ¼6@161&163½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia..
- [56] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha, Slok no. ¼6@22&23½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [57] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha, Slok no. ¼8@5&9½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [58] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha Slok no. ¼9@21&24½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [59] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha Slok no. ¼9@60&65½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [60] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha Slok no. ¼9@61&65½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [61] Sharangdhara's Sharangdhara Samhita, (2012) Madyama Khandha Slok no. ¼9@75&78½, English translation by Pro. K.R. Srikantha Murthy, Reprint edition, Varanasi, Chaukamba Orientalia.
- [62] A review on multi&purpose medicinal plant *Plumbago zeylanica* and in&vitro production of plumbagin [Internet]-Available from% https://www-researchgatenet/publication/315379475_A_review_on_multi&purpose_medicinal_plant_Plumbago_zeylanica_and_in_&vitro_production_of_plumbagin.
- [63] Poosarla A] Kumar BV] Rao TR] Rao DN] Athota RR-(2007), Hepatoprotective effect of *Plumbago zeylanica* on paracetamol induced liver toxicity in rats [Internet]-- Available from% https://www. Alleviation of collagen&induced arthritis by Plumbago_zeylanica_in_mice- Pharmaceutical Biology, Jan;45¼1½%54-9-

- [64] Dhale DA, Markandeya SK,(2011). Antimicrobial and phytochemical screening of *Plumbago zeylanica* Linn (Plumbaginaceae) leaf, *Journal of experimental sciences*, Vol2, Issue3, 4-6.
- [65] Tilak JC] Adhikari S](2004) Devasagayam TPA- Antioxidant properties of *Plumbago zeylanica*] an Indian medicinal plant and its active ingredient] plumbagin- RedoÛ report % communications in free radical research [Internet]-[cited 2022 Feb 8];9¼½%219–27- Available from% <https://pubmed.ncbi.nlm.nih.gov/15479566/>
- [66] Arya N Sharma A.(2015). THE THERAPEUTIC AND TOXICOLOGICAL EFFECT OF CHITRAK kPLUMBAGO ZEYLANICA L-½& A REVIEW- AYUSHDHARA [Internet]-Dec 8;2¼½- Available from% <https://ayushdhara-in.deÛ-php/ayushdhara/article/view/78>
- [67] Poonam et al. (2020). CLINICAL STUDY TO ACCESS THE EFFICACY OF HARIDRA AND CHITRAK IN MANAGEMENT OF MEDOROGA (OBESITY); *World Journal of Pharmaceutical and Life Science*; Vol 6, Issue 12, pp. 187, www.wjpls.org.
- [68] Ganeasan K,Gani SB (2013)..Ethnomedical and pharmacological potentials of *P. zeylanica* L:A review.*Am J Phytomed Clin Ther.*:313-37.
- [69] Chauhan M.A , (2014). Review on morphology,phytochemistry and pharmacological activities of medicinal herb *Plumbago zeylanica* Linn.,*Int J Pharmacogn Phytochem.*:3(2);95-118.
- [70] Vishnukanta S,Rana C (2010).Plumbago zeylanica:a phytopharmacological review:*Int J Pharm Sci Res.*2010:247-55.
- [73] Deshmukh RR, Rathod VN, Pardeshi VN,(April,2011). Ethanoveterinary medicine from Jalana district of Maharashtra State, *Indian Journal of Traditional knowledge*, Vol 10(2), 344-348.
- [74] Nag Ambika, Galav Praveen, Katewa SS,(2007). Indigenous animal healthcare practices from Udaipur district, Rajasthan, *Indian Journal of Traditional knowledge*, Vol 6(4), October, 583-588.
- [75] Hiradeve Sachin, Danao Kishore, Kharabe Vijay, Mendhe Bibhilesh,(2010). Evaluation of anticancer activity of *Plumbago zeylanica* Linn. Leaf extract, *International Journal of Biomedical Research*, 1(2), 1-9.
- [76] Mittal Vineet, Sharma SK, Kaushik Deepak, Khatri Meenu, Tomar Kusum, (2010).A comparative study of analgesic activity of *Plumbago zeylanica* Linn callus and root extracts in experimental mice, *Research Journal of Pharmaceutical, Biological, and Chemical sciences*, 1(4), October-December, 830-836.
- [77] Poosarla A] Kumar BV] Rao TR] Rao DN] Athota RR-(2007), Hepatoprotective effect of *Plumbago zeylanica* on paracetamol induced liver toxicity in rats [Internet]-- Available from% <https://www. Alleviation of collagen&induced arthritis by Plumbago zeylanica in mice- Pharmaceutical Biology, Jan;45¼½%54–9->

ADDITIONAL READINGS

[A] Natural Compounds from *Plumbago zeylanica* as Complementary and Alternative Medicine

URL:

https://link.springer.com/referenceworkentry/10.1007/978-981-16-1247-3_33-1

[B] Anti-Inflammatory and Anti-Microbial Potential of *Plumbago zeylanica* L.: A Review

URL: <https://jddtonline.info/index.php/jddt/article/view/4445>

[C] Can Ceylon Leadwort (*Plumbago zeylanica* L.) Acclimate to Lead Toxicity?—Studies of Photosynthetic Apparatus Efficiency

URL: <https://www.mdpi.com/1422-0067/21/5/1866>

[D] Determination of antioxidant and antibacterial activities of leaf extracts of *Plumbago zeylanica* (Amira)

URL:

<https://www.tandfonline.com/doi/full/10.1080/23312009.2020.1831715>

[E] Extract of *Plumbago zeylanica* enhances the growth of hair follicle dermal papilla cells with down-regulation of 5α-reductase type II

URL: <https://onlinelibrary.wiley.com/doi/abs/10.1111/jocd.13355>

ANNEXURE

Key Terms and Definitions

CHITRAK– A profusely branched perennial shrub with alternate leaves. The plant is available throughout India wildy and is also cultivated in gardens for its brilliant inflorescence. The root and root bark of the plant are used in preparation of various Ayurvedic medicines. Leadwort is a potent medicinal agent used in the treatment of stubborn chronic rheumatoid arthritis, skin diseases and tumorous growths as recommended by Ayurveda. It also finds its use in correcting chronic menstrual disorders, viral warts, and chronic diseases of the nervous system. Extract of various fractions of Chitrakmool have been identified as anticancer drugs. Root Bark is also considered useful in obesity.

AGNI- Agni is the invariable agent in the process of *Paka* (digestion, transformation). Ingested food is to be digested, absorbed, and assimilated, which is unavoidable for the maintenance of life, and is performed by the *Agni*. Different examples are available in our classics to indicate that *Pitta* is the

same as *Agni*. According to the functions and site of action, *Agni* has been divided into 13 types, i.e., one *Jatharagni*, five *Bhutagni* and seven *Dhatvagni*. *Jatharagni* is the most important one, which digests four types of food and transforms it into *Rasa* and *Mala*. The five *Bhutagnis* act on the respective *bhutika* portion of the food and thereby nourish the *Bhutas* in the body. The seven *Dhatvagni* act on the respective *dhatu*s by which each *Dhatu* is broken into three parts. *Agni* converts food into the form of energy, which is responsible for all the vital functions of our body.

LIFESTYLE: Human are in a constant rat race to achieve the best, in between, they forget to focus on their health and wellbeing. In fact, with such a hectic lifestyle that humans expose themselves to stress and too many lifestyle disorders as hypertension, diabetes, anxiety, strokes, arthritis, cancer, obesity etc.

CHRONIC DISEASES: A disease or condition that usually lasts for 3 months or longer and may get worse over time. Chronic diseases tend to occur in older adults and can usually be controlled but not cured. The most common types of chronic disease are cancer, heart disease, stroke, diabetes, arthritis, obesity, hypertension etc.

AGNIMANDYA: *Agnimandya* is itself considered an independent digestive disease and a cause of a huge number of other diseases in Ayurveda. *Agni*- the digestive fire is responsible for the transformation of food we take into energy and nourishment to body tissues. It is responsible for our strength, energy, complexion, health, sustainability as well as immunity. There are four forms of the *Agni* – *Samagni*, *Visamagni*, *Mandagni*, and *Tikshagni*; among which *Mandagni* or *Agnimandya* is referred to as the root cause of all diseases. *Agni* literally translates to fire. *Manda* means weakness. So, *Agnimandya* means the weak digestive fire. While an ignited digestive fire is responsible for the overall good health of a person, a weak form of the same is a disease and origin of diseases. When the fire and the digestion are weak,

even light forms of food taken are not digested well resulting in indigestion. And when food is not digested well, the absorption, assimilation and tissue formation, nourishment and functioning are affected.

Authors' Profile



Dr. Preeti Sharma, basically from Bareilly district, Uttar Pradesh state. She is Associate Professor and Head of the department (Dravya Guna) in Rajshree Ayurvedic Medical college and Hospital, Bareilly (U.P). She is actively involved in various awareness and research programmes of Ayurveda. She contributes articles to e publication.

Currently She is doing Ph. d from Desh Bhagat University, Punjab and She is writing a book on poisonous plants.



Dr. Rohit Rastogi received his B.E. in CS from C. C. S. Univ. Meerut, 2003. Master's degree in CS of NITTTR-Chandigarh from Punjab University. He has obtained his doctoral degree from the Dayalbagh Educational Institute in Agra, India. He is serving as Professor in the CSE department of ABES Engineering College, Ghaziabad, India.

He has won awards in several areas, including improved education, significant contributions, human value promotion, and long-term service. He keeps himself engaged in various competition events, activities, webinars, seminars, workshops, research, and various other educational learning forums. He has guided around 100 Btech Students researchers and 5 M.tech. Thesis consequently 3 Ph.D. candidates. He is editor and reviewer member of several international Journals and conferences. He has 145+ publications in Scopus Indexed journals and conferences of international repute. He strongly believes that Transformation starts within self.



Dr. Bhavna Singh is Ayurvedic Practitioner and currently acting as Principal in Ayurvedic College, Hapur, U.P., India. She has a keen interest in studying herbs and their effects on the human body. She has done scientific experiments of different herbals and their vaporized state through Yajna on patient diseases. She is also fond of scientific

writings and establishing Indian Vedic wisdom through logical explanations.

She has been actively working in the Thought Transformation movement and strongly feels that science and spirituality can move

together to enrich each other. Her many papers are imprinted on various scientific journals.



Mr. Sandeep Kumar is currently pursuing his Bachelor of Ayurvedic Medicine and Surgery (BAMS) degree at GS AYURVEDA MEDICAL COLLEGE, Hapur. He has a keen interest in research studies, and he is passionate about Ayurveda and its holistic approach to healthcare, Disease prevention and treatment which emphasizes the use of natural remedies and lifestyle modifications.



Ms. Gunjan Nagar is currently pursuing Bachelor of Ayurvedic medicine and surgery (4th year) from GS AYURVEDA MEDICAL COLLEGE AND HOSPITAL, Pilkhuwa, Hapur. She is very passionate about Ayurveda as the legacy which has been passed down by generations and is really in awe of the power of nature and natural remedies.

She looks forward to working for Ayurveda and in Ayurveda. She aspires to make people aware of this precious inheritance of the Indian Subcontinent.



Mr. Prashant Rathore is currently pursuing Bachelor of Ayurvedic Medicine and Surgery (1st year) at Kritika Ayurvedic Medical College and Hospital, Bareilly. He has pure interest in Ayurveda because of its approach to the disease. He will continue to work for Ayurveda. His mission is to keep Ayurveda alive for humanity and to

make people benefit from its treasure.