A REVIEW OF MEDICINAL PROPERTIES ON MALLOTUS PHILIPPENSIS MUELL

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ABSTRACT

Ayurveda is the branch of science which deals with the diseased persons as well as healthy individuals. The treatment along with proper diet are the main things to achieve normal healthy life and the physician should have utmost knowledge regarding herbs to become successful in the field of treatment as herbs are backbone of Ayurveda. Kamppilaka (Mallotus philippensis) belonging to Euphorbiaceae family is a very common perennial shrub or small tree found in outer Himalayas. Kamppilaka is composed of Mallotophillippen A and B, Mallotophillippen C, D and E, 3´-prenylrubranine, Mallotus-A, Mallotus-B, Mallotucin C, Mallotucin D etc. which are responsible for the various therapeutical effects. It is also having Katu rasa, Laghu, Ruksha, Tikshna guna, Ushna veerya and Katu vipaka with Kapha-Pitta hara and Kapha-Vata shamaka properties. The drug has the potency to have the pharmacological action likes Anthelmintic Activity, Anti-allergic Activity, Anti-bacterial Activity, Anti-filarial Activity, Anti-fungal Activity, Anti-inflammatory Activity etc. Kamppilaka is used in Adhmana, Gulma, Krimi, Kustha, Prameha, Raktavikara, Shotha, Vibandha, Vrana etc. cases as having the Deepana, Grahi, Krimighna, Kusthaghna, Pramehahara, Raktashodhaka, Rechana, Twakdoshahara etc. properties So, a detail review of this medicinal plant with various aspects is definitely a good step ahead in a new direction in herbal medicinal field.
KEYWORDS: [Therapeutic effects, Pharmacological action, Chemical Constituents].

INTRODUCTION

In Ayurveda, the Drug has been designated the second place among four basic pillars of treatment, the Chikitsa Chatushpada.[1] As per Acharya Charaka, in this Universe there will be hardly any Dravya which is without medicinal properties, if the knowledge of herbs is acquired properly.[2] Acharya Charaka has also explained that, the use of drug without having proper knowledge can be as harmful as poison, weapons, fire[3] and thunderbolt while use of drug with having exact knowledge about this can be as comparable to the effect of ambrosia. As per Charaka school of thought, any stuff that relieves the patient of his ailments can be considered as “Aushadhi”. Hence sufficient attention should be given while selecting a drug.

Kamppilaka (Mallotus philippensis) belonging to Euphorbiaceae family is an important medicinal plant used in various Indian system of medicine. A detail description about this plant has been found from Vedic period to recent time in various Ayurvedic texts. It is a tree mostly found in the region of kampilla so it is named as Kampillaka. It is found throughout India, in evergreen and deciduous forests upto 1500 m. Kampplaka is a very common perennial shrub or small tree found in outer Himalayas, widely distributed in northern, central, western and southern India. In this important drug, the Major chemical constituents likes Rottlerin, 4-hydroxyrottlerin, 3, 4-dihydroxyrottlerin, Mallotophippen A and B, Mallotophippen C, D and E, 3’-prenylrubranine, Mallotus-A, Mallotus-B, Mallotucin C, Mallotucin D, Kamalachalcone A and B, C-methylated cinnamoyl chromen, Chromen, Isorottlerin etc are found. According to various classical textual, the drug Kamppilaka having the properties of Deepana, Grahi, Krimighna, Kusthaghna, Pramehahara, Raktashodhaka, Rechana, Sheetala, Twakdosahara, Vranaropana, Vranashodhana etc. along with Aphrodisiac, Cathartic, Lithotropic, Styptic properties as per the research. So, it is used in Adhmana, Gulma, Kandu, Krimi, Kustha, Pama, Prameha, Raktapitta, Raktavikara, Shotha, Udara, Vibandha, Vrana, Abdominal diseases, Bronchitis, Spleen enlargement, Tape worm etc. conditions. The drug also posses pharmacological action like Anthelmintic Activity, Anti-allergic Activity, Anti-bacterial Activity, Anti-fertility Activity, Anti-filarial Activity, Anti-fungal Activity, Anti-inflammatory Activity, Anti-Leukaemic Activity etc. which is necessary for various therapeutical effects.
The plants are used as diet as well as medicines by the society. The classical textual of Ayurveda has also explained that, a single drug posses potent ability to cure multiple diseases but for that it needs to be authenticated scientifically. Therefore, a review on Kamppilaka (Mallotus philippensis) has been compiled here to highlight the importance of this drug which will provide a new direction for researchers in the future.

MATERIALS AND METHODOLOGY
Review of various classical textual and Journals have been carried out to compile the medicinal properties of Kamppilaka (Mallotus philippensis). In addition to this, by the help of Internet and Goggle search a comprehensive data has been generated and compiled here on Mallotus Philippensis.

Classification \[4,5,6,7,8,9,10,11,12\]
- **Charaka Samhita**: Virechana
- **Sushruta Samhita**: Adhovagahara, Shyamadi
- **Bhavaprakasha Nighantu**: Haritakyadi
- **Priya Nighantu**: Haritakyadi
- **Madanpal Nighantu**: Abhayadi
- **Dhanwantari Nighantu**: Chandanadi
- **Sodhala Nighantu**: Chandanadivarga
- **Kaiyadeva Nighantu**: Aushadhadivarga
- **Raj Nighantu**: Suvarnadi varga

Scientific Classification \[13\]
- Kingdom: Plantae
- Subkingdom: Tracheobionta
- Superdivision: Spermatophyta
- Division: Magnoliophyta
- Class: Magnoliopsida
- Subclass: Rosidae
- Order: Euphorbiales
- Family: Euphorbiaceae
- Genus: Mallotus
- Species: Mallotus philippensis Muell.
Vernacular Name\textsuperscript{[14,15,16,17,18,19]}

- **Assam:** Lochana, Jorat, Losan, Gangai, Puddum
- **Bengali:** Kamalagudi, Kamala
- **English:** Kamala Tree
- **Gujerati:** Kapilo
- **Hindi:** Sindur, Kamala, Kabila, Kamila, Rohini, Kambhal
- **Kannad:** Kunkumadamara, Chandrahettu, Kampillaka, Kapila, Kapilathettu
- **Malayalam:** Sinduri, Manjana, Kuramatakku, Kampipala, Kampipalu, Kuramdaaku,
- **Marathi:** Shendari, Shindur, Kapila
- **Oriya:** Sinduri, Kunkumo, Kamalagundi, Bosonto-gundi, Kumala, Sundragund
- **Punjabi:** Kamila, Kumila, Kamal, Kambal, Kamela
- **Tamil:** Manjanai, Kunkumam, Kamala, Kunkuma maram, Kapi, Kungumam, Kurangumanjanatti, Kapli, Kungumam
- **Telegu:** Sundari, Sinduri, Vasanta, Kunkumamu, Kunkuma, Kampillamu, Chendriramu, Chendri-sinduri, Kapila, Vassuntagunda
- **Urdu:** Kamila

Synonyms\textsuperscript{[6,7,9,10,11]}
The various synonyms of Kampilaka are Bahupatra, Bahuphala, Chandra, Chandrasahvaya, Kamila, Kampilla, Kampillakah, Kampilya, Karkasha, Karkasha, Kavila, Lohitanga, Nadivasa, Rajanaka, Raktachurnaka, Raktanga, Raktaphala, Raktarenu, Raktashamana, Ranjana, Rechanakah, Rechi, Rochana, Vireki, Vranasodhana.

Morphology\textsuperscript{[14,15,16,17,18,19]}

- **Habit:** A much branched ever green, a perennial scandent shrub or small tree, 5-6 m tall, branches smooth or tuberculate, somewhat angled.
- **Bark:** Slender branch bark is pale and the younger branch is covered with rust-red.
- **Leaves:** Simple, alternate, ovate-lanceolate, 8-20×3-9 cm, 3-nerved at base, glabrous above, Pubescent and with many red glands beneath, petiole bearing two glands near apex.
- **Flowers:** Small dioecious, male in erect terminal spikes forming elongated Paniculate racemes. Females solitary in short spikes. Ovary covered with red glands.
• **Fruits:** Globose, 3-lobed, 8-12mm in diameter, covered with bright red powder and minute hairs which can be easily nubbed out.

• **Seeds:** Subglobose, 2.5 to 3.5 mm in diameter, seed irregularly trigonous, the testa is hard, crustaceous, granulate, brittle, somewhat pitted, blackish to dark brown in colour, smooth, ventral surface is slightly flat, and exhibits a ridge of raphe, extending from the whitish papery, diamond shaped carbuncle up to hillar end. Taste is bitter and disagreeable, odour none.

**Habitat**[14,15,16]

- It is found throughout India, in evergreen and deciduous forests upto 1500 m. A very common perennial shrub or small tree found in outer Himalayas. Widely distributed in northern, central, western and southern India; it is scarce in Andaman and Nicobar Islands. Common in Sal and other forests along with shrubberies and hedges in plains of tropical India. It is also found in China, Myanmar, Srilanka, Thailand and throughout Malasiya to Australia.

**Chemical Constituents**[19,20]

The Major chemical constituents are Rottlerin, 4-hydroxyrottlerin, 3, 4-dihydroxyrottlerin etc. and the other constituents include; Mallotophillippen A and B, Mallotophilippen C, D and E, 3-’prenylrubranine, Mallotus-A, Mallotus-B, Mallotucin C, Mallotucin D, Kamalachalcone A and B, C-methylated cinnamoyl chromen, Chromen, Isrottlerin, Kamalins I and II, C-methylated cinnamoylchromene and flavanone chromene, Kamaladiol-3-acetate, friedelin, 2’, 2’, 6’-trihydroxy-2’, 2’,4’-dihydroxy-6’-methoxy-3’-prenylchalcone, 2’’- dimethylpyrano-6’’, 5’’, 4’, 5’-chalcone, 5,7-dihydroxy-6-methyl-8-prenylrubranine, 5,7-dihydroxy-6-phenyl-8-flavanone, 5,7-dihydroxy-6-methyl-8-flavanone (fruits), 18-hydroxy stearic acid (seed oil), Phorbic acid (leaves), Bergenin (leaves), Tannins (leaves), proteins (leaves), acetyl aleurifolic acid (bark), α-amyrin (bark), β-sitosterol glucoside (bark), Bergenin (bark), Betulin-3-acetate (heartwood), Lupeol (heartwood), Lupeol acetate (heartwood), β-sitosterol (heartwood), Bergenin (heartwood).

**Ayurvedic Properties**[21,22]

- **Rasa:** Katu
- **Guna:** Laghu, Ruksha, Tikshna
- **Veerya:** Ushna
• **Vipaka:** Katu
• **Doshaghnata:** Kapha-pitta hara, Kaphavata shamaka

**Karma (Action)**\(^{[6,9,10]}\)

According to various classical textual, the drug Musta possesses the *Ashmaribhedana, Deepana, Garbhanirodha, Grahi, Krimighna, Kushtaghna, Pramehahara, Raktashodhaka, Rechana, Sheetala, Twakdoshahara, Vatanashaka, Virechana, Vishaghna, Vranapaha, Vranaropana, Vranashodhana* action. The research also suggests that, it has Aphrodisiac, Cathartic, Lithotropic, Styptic properties too.

**Pharmacological Action**\(^{[13]}\)

The various pharmacological action found in Kamplillaka are Anthelmintic Activity, Anti-allergic Activity, Anti-bacterial Activity, Anti-cancer Activity, Anti-cestodal Activity, Anti-fertility Activity, Anti-filarial Activity, Anti-fungal Activity, Anti-HIV Activity, Anti-inflammatory Activity, Anti-Leukaemic Activity, Anti-lithotropic Activity, Anti-microbial Activity, Anti-oxidant Activity, Anti-proliferative Activity, Anti-radical Activity, Anti-spasmodic Activity, Anti-tuberculosis Activity, Anti-tumour Activity, Cardiac depressant Activity, Haemostatic Activity, Hepatoprotective Activity, Hypoglycemic Activity, Immunoregulatory Activity, Purgative Activity, Stimulant, Wound healing Activity.

**Phyto-Chemical Properties**\(^{[19]}\)

• **Foreign matter** : Not more than 2 percent
• **Total ash** : Not more than 6 percent
• **Acid-insoluble ash** : Not more than 4 percent
• **Alcohol-soluble extractive** : Not less than 50 percent
• **Water-soluble extractive** : Not less than 1 percent

**Indication**\(^{[6,7,8,9,10,21,22,23,24]}\)

The drug Kampillaka is used in Adhma, Anaha, Ashmari, Gulma, Kandu, Kasa, Khalitya, Krimi, Kushtha, Pama, Prameha, Raktapitta, Raktavikara, Shoola, Shotha, Udara, Vibandha, Visha, Vrana, Abdominal diseases, Bronchitis, Spleen enlargement, Tape worm conditions as per the classical texts.
Uses
The glandular hairs are bitter, anthelmintic, cathartic, lithontriptic, styptic, vermifuge, alexipharmic and depurative.

- They are useful in treatment of intestinal worms, constipation, flatulence, wounds, ulcers, renal, vesical calculi, haemorrhages, poisonous affections, scabies, ringworm, herpes and other parasitic skin infection.
- *Kampillaka* 5 gm, taken with jiggery fells all the worms out of the bowels.
- In *Paittik Gulma*, one should take extract of *Draksha* and *Haritaki* mixed with jaggery or *Kampillaka* mixed with profuse honey in order to induce purgation.
- In *Raktagulma*, the powder of *Kampillaka* mixed with sugar and honey should be given which also eliminates faeces.
- Oil cooked with *Durva* juice or *Kampillaka* or the paste of *Daruharidra* bark is an efficacious wound-healing drug.
- One suffering from *Prameha* caused by *Kapha* and *Pitta* should be powdered flowers of *Kampillaka, Saptaparna, Sala, Bibhitaka, Rohitaka, Kutaja, and Kapittha* mixed with honey or the paste thereof in dose of 10 gm. With the juice of *Amalaka*.
- It is also used as an oral contraceptive.
- The powder and other parts of this plant are used externally for healing of ulcers and wounds. It is used to treat parasitic affections of the skin like scabies, ringworm, and herpes.

Therapeutic uses [25]

**Gulma**

- *Kampillaka* mixed with honey and taken orally to induce purgation and cures *Pittaja Gulma*. (V.M 30/14).
- The powder of *Kampillaka* is given with sugar & honey to facilitate bowel and cures *Raktaja Gulma*. (BP.Chi32:49).

**Worms**

- Half *Tola* of *Kampillaka* powder is given with jaggery expels all types of worms from the bowels without any types of doubt (*Bh. P Chi* 7/22).
**Prameha**

- To treat the *Kapha-Pittaja Prameha*, powder of *Kampillaka, Saptaparna, Shala, Bibhitaka, Rohitaka, Kutaja* and flower of *Kapittha* is given with honey or paste in the dose of 1 *Tola* with the juice of *Amalaki*. (*Ch. Chi 6/35-36*).

**Wound**

- The oil prepared from *Kampillaka* or cooked with *Durva* juice is used externally for wound healing. (*Ch. Chi 25/93*).

**Parts Used**[^26]

- *Phalaraja* (Dry powder of glands & hairs of fruits)
- Glands

**Dose**

- 0.5-1 gm. (Powder)
- 0.5-1 gm. (fruit hairs)
- 1-3 gm.

**Important Formulations**

- *Dhanwantara ghrita*
- *Kamplilaka churna DN*
- *Krimighatini Vatika*
- *Misraka sneha*

**Substitutes and Adulterants**

The various species of genus are used as substitutes & adulterants of *Mallotus philippensis* which are mentioned below:

- *Bixa orellana* Linn.
- *Casearia tomentosa* (Stem bark powder)
- *Carthamus tinctorius* (Flower powder)
- *Ficus benghalensis* (fruit powder)
- *Flemingia macrophylla* (hairs of fruits)

**Toxicities**

- Hazards and/or side effects not known for proper therapeutic dosages.
Large doses may cause colic, cramping, diarrhoea, GI distress and nausea.

It may cause mild nausea, occasional vomiting and loose motions.

Seeds of M. philippinensis ethereal extract have adverse effect on various parameters of female rats. Even the extract reduces serum levels of gonadotropins in treated animals at high dose of 100mg/kg body weight. Reduced weights of ovary and uterus, follicular development, and increased atretic follicular in the ovary are due to subnormal levels of steroid hormones. Thus, pregnancy is very difficult in female rats treated with kamala seed extract.

Safety Aspects: The drug is traditionally to be safe in the dosage mentioned.

CONCLUSION

This review gives a bird’s eye view on the therapeutic uses of various parts and extract of Kamppilaka (Mallotus philippensis) to enrich our knowledge about this plant. In spite of emergence of modern medicines as most popular acceptable drugs among all, still a large segment of world population believe in & depend upon the drugs of plant origin. Kamppilaka is an important traditional Indian medicinal plant used in wide range of medical treatments. Therefore, there is an urgent need to investigate the biological activity of its phytoconstituents for development of an effective, safe and cheap herbal drug. It is the right time to do more work on this herb to further explore the wonderful therapeutic properties for the benefit of the mankind.

REFERENCES


