Critical Review of Maricha (Piper Nigrum Linn) in Brihat Trayi with Special Reference to Nighantus

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Abstract

Maricha (Black pepper) is considered the king of spices throughout the world due to its pungent taste and particular aroma and its medicinal value in day today life. Today, different parts of Maricha and their chemical components are used as drugs, preservatives, insecticidal, and larvadicid agent. Maricha has been used widely in traditional Indian medicine for a very long time. It has been known to Indian cooking since at least 2nd century BC and as a home remedy for relief from sore throat, throat congestion, cough etc. In Ayurvedic classics, it is recommended for various diseases due to Agnimandya (dimnution of digestive fire) such as Grahaniroga (sprue syndrome), Visuchika (choler), Ajirna (indigestion), Jwara (fever), Arsha roga (piles), Atisara (diarrhoea) etc. The renowned physician of Ayurveda, Maharshi Charaka, in olden period has described it as to be Shulaghana (anticolic/ analgesic), Deepniya (appetizer), Krimighna (vermicidal). Also, he has enumerated it as a Pranvaha srotas rasayan (rejuvenates respiratory system). Thus it is used frequently for the treatment of cough, corhyza, cold, asthma, hoarseness of voice, tuberculosis etc. It is used as a solo drug as well as an essential ingredient of numerous compound formulations and prescriptions of Ayurvedic medicine. Maricha is one of the ingredients of Trikatu. It is beneficial to increase the bioavailability of the drug. The objective of this article is to re-orientate the knowledge and information about Maricha in classical texts. This article highlights synonyms, pharmacodynamics, therapeutic actions and uses, and different formulations of Maricha as described in ancient Ayurvedic literature the Brihat trayi and the later text Nighantus etc.

Key words: Maricha, Brihat Trayi, Nighantus, Agni and Pramathi

Maricha (Black pepper) is the world's most traded spice. It is one of the most common spices added to the European cuisine and its descendants. It has been used since antiquity for both its flavour and as a medicine. Its Latin name is Piper Nigrum, and the family is piperaceae. Piper is known as Peperi in Greek which is derived from the Sanskrit word Pippali and nigra means black because its fruit is blackish grey in colour. Maricha (Piper nigrum) is a perennial climbing shrub native to the tropical and subtropical region of India, Malabar and Travancore coasts.

In the world there is an emerging interest to adopt the study of the traditional system and to flourish their potentials based on different healthcare systems. Proudly India has a heritage of an ancient traditional medicine in the form of Ayurveda. A large number of herbal drugs are described in Ayurveda, Maricha is also one of them. Maricha was held in high esteem by the ancient physicians of India. It is one of the herbs mentioned in almost all Ayurvedic scriptures. The etymological derivation of Maricha indicates thus – “that which nullifies poison is called Maricha” or which neutralizes all types of toxins (Sharma, 2000, p.151).

The great Ayurvedic classics, Charaka samhita, Sushruta Samhita, and Ashtanga Samgraha, collectively known as Brihat trayi have been extensively quoted Maricha among their classification. Acharya Charaka 2nd century BC, extensively described it as an appetizer,
carminative, vermicidal or antimicrobial (Ch.su. 4/6, 15, 27, 45). He states that Maricha enhances the Agni i.e. digestive power and regulates the function of Agni (Ch.su. 27/298). Agni and Agni vyapar all belong to digestion, absorption from the intestine, circulation of nutrients in the blood and metabolism at the microlevel i.e. the cellular level. He recommended it for the treatment of Aganidushat janit vikara (GIT disorders) such as aamdosh (improperly digested food stuffs acting as toxins), graham (sprue syndrome), gulma (abdominal mass) etc. Modern research has proved that Maricha and its active component piperine can stimulate the secretion of digestive juices, increases appetite and stimulates the digestive enzymes of pancreas and intestines and also increases formation of bile acid when orally administrated (Srinivasan, 2007). Recently Shamkuwar et. al., (2012) have also found that Aqueous Black Pepper Extract (ABPE) produced a significant dose dependent antidiarrhoeal, antimotility, and antisecretory effect. The extract of Marich was found antibacterial to all enteric bacterial pathogen. (Dahikar et al., 2010). Mode of action of its antimicrobial activity also has revealed by Vani & Laxmi (2010). During a study they have been found that black pepper altered the membrane permeability and inhibited the growth of gram positive bacteria Staphylococcus aureus, followed by bacillus cereus and Streptococcus faecalis and gram negative bacteria Pseudomonas aeruginosa followed by Salmonella typhi, and E. coli.

Maricha has many important active constituents like piperine, piperdine, pipermide and pipene etc. which exhibit potent therapeutic functions. It has been shown that piperine can dramatically increase absorption of selenium, vitamin-B, beta-carotene and curcumin as well as other nutrients (Dudhatra et al., 2012). Extracts from Maricha have been found to have antioxidant properties (Nahak & Sahu, 2011). And its anti-carcinogenic effects also reported (Nalini N. et al 2006). Piperine acts as a thermogenic compound and it enhances the thermos-genesis of lipid and accelerates energy metabolism in the body and also increases the serotonin and beta-endorphin production in the brain (Malini, 1999). During an experimental study on mice Matsuda et al., (2008) has found hepatoprotective activity of piperine.

MATERIAL AND METHODS
A detailed, critical review of the following classical texts was conducted for this study-

Brihat trayi
Charak samhita, Sushruta Samhita, Ashtang Sangraha and Ashtang hridaya

Nighantus
Dhanvantari nighantu, Madanpal nighantu, Kaideva nighantu and Bhavaprakash nighantu and Raja nighantu

Some other classical texts
Sharangdhara Samhita, Bhavaprakash Uttrardha, Yogratnakar, Chakradatta.

DISCUSSION
In the Vedic period, Maricha as a medicine was not so popular; however, in the Samhita period there was more awareness about the utility of Maricha and it was used extensively as a medicine. Brihat trayi have frequently quoted Maricha among their classifications of drugs. Brihat trayi- The great Ayurvedic classics, Charaka samhita, Sushruta Samhita, and Ashtanga Samgraha, are all collectively known as Brihat trayi.

Maharishi Charaka has classified Marich as in four Mahakashaya (class).
1. Dipaniya Mahakashaya – Group of drugs act as appetizer (Ch.su. 4/6).
2. Sulprashamana Mahakashaya – Group of drugs act as anticolic (Ch.su. 4/45).
3. Krimighana Mahakashaya - Group of drugs act as vermicidal or antihelminitic (Ch.su. 4/15).
4. Shirovirechana Mahakashaya - Group of drugs act as adjunctive to clean out nasal-roots (Ch.su. 4/27).

Acharya Charak described pharmacodynamics of Marich as katu (pungent in taste), laghu (light) and anushna (not hot) and by these virtues it pacifies kapha and vata dosha (Ch.su. 27/298). He attributes many pharmacological actions to Maricha such as shulahara (antispasmodic), deepan (appetizer), avrishya (non aphrodisiac), chedan (expectoret) etc. Charaka indicates Maricha for the treatment of kasa (cough), arsha (piles), grahani (dysentery) and kushta roga (leprosy). He specifically indicates Maricha powder with honey and ghrita for all types of kasa (cough) and svarabhedha (hoarseness of voice) (Ch.ci.18/180).

Acharya Sushruta classified Maricha as trikatu Group of three pungent drugs- Pippali, Marich, Sunthi and Pippalyadi gana (Su.su. 38/22). He described the pharmacodynamics of maricha as the same as Charak but he attributed the description of shweta maricha (white pepper) and Ardra (fresh) maricha. He said also, that Ardra (fresh) maricha is madhura (sweet) in vipaka, and guru (heavy) and increases mucus secretion, while the dried one is pungent in taste, hot and light, it pacifies kapha and vata (Su.su. 46/224). He claimed specifically that maricha is beneficial for the eye (Su.ut. 18/100). For the treatment of eye diseases such as pterygium and night blindness, it is applied with honey. Sodasha Varti is one of the famous preparations of maricha, used topically in various ophthalmic diseases (Su.ut. 18/105).

Acharya Vagbhata prescribed it especially for Pravahika (dysentery) and Nakandhya (night blindness). He indicated fine powder of maricha fruits with water for treating Jirna grahanni roga (chronic colitis) (Bapalal, 2005, p.354).

Brihatatrayi have quoted another variety of Maricha i.e. Sweta marica. Acharya Sushruta described the shweta maricha as neither hot nor cold and as acting an eye tonic and better than Maricha. Dalhana the commentator of Sushruta, state that Sweta maricha is nothing but Sigru bija i.e. seed of plant M. pterygosperma. Thakur ji Balbanta singh, state that Sita Maricha is either the Sigru bija or the decorticated and dried fruits of Maricha (Bapalal, 2005, p.354).

Acharya Chakrapani (10th century) frequently used maricha for the treatment of arochaka (anorexia), atisara (diarrhoea), and kasa (cough).

Acharya Sharangdhar (13th century) has quoted Maricha as an example of the drug which performs the action of Chedana i.e. eliminates the accumulations and Pramathi i.e. forcefully expel out of doshasa and mala from channels (Poorva Khand- 4/9, 23). He indicated Maricha for the treatment of periodic fever, headache, urticaria (Madhyama Khand-1/10, 17, 20). Sharangdhar introduced various formulations of Marich, one is Marichdi churna (powder) especially indicated for the treatment of chronic dysentery, splenomegaly, dyspepsia, piles and colic (Madhyama Khand- 6/54-55). Trikatu churna is beneficial for hyperlipidimia, leprosy, diabetes, and cold (Madhyama Khand- 6/12). Marichdi Gutika (tablet) is used to alleviate all types of kasa (cough) and Vyoshadivati is another famous formulation for shavas (asthma), kasa (cough), pinas (chronic cold) (Madhyama Khand- 7/13-15, 22-23). Marichdi Taila (oil) for all types of skin-diseases including leprosy. (Madhyama Khand- 9/148-152). And today it has also proved that Maricha may be helpful in treating vitiligo (Lin et al., 2007).
Vaidya Vrinda madhava indicated marich powder mixed with jaggary to treat acute cohrzya (Sharma, 2004, p.291). A new indication of usefulness of marich in fracture has been given in “Yogratnakhir”, a famous text of medicine from the 15th century. Shadushana, Aganikumara rasa, marichadi churna and marichadi gutilka are some other important formulations of maricha, described by Acharya Bhavaprakash (Pandey, 2012, p.10-11).

Maricha in Nighantus:
Nighantus are the classical texts of Ayurveda which give a detailed account of various types of medicinal plants, these are like the Ayurvedic pharmacopoeia. The era of Nighantu is very important from the aspect of ‘Systematic understanding of the drugs’ because the authors of Nighantu tried to give very detailed descriptions of the drugs by introducing their synonyms and Guna-Karmas as well.

According to Dhanvantari Nighantu (10th century) Maricha is pungent and bitter in taste and jantusantan-nashana (larvacidal) (Shatapushpadi varga, 78-79). In Madanpal Nighantu (14th century) maricha is described as laghu (light) guna, atushna (hot) virya and indicated in the treatment of kushtha (leprosy), gulma (colic), arsha (piles), piliharoga (disorders of spleen), and prameha roga (diabetes) (Shunthyadi Varga,10-11). Acharya Kaideva (13th century) gives a detailed account of Ardra and Shushaka which are both varieties of maricha. According to him Ardra maricha (wet/green pepper) as guru (heavy), madhur vipaki, and kaphakari (alleviate kapha dosha), while Sushaka marich is ushna (hot), katu (pungent), tikshna (sharp), laghu (light) and avrishya with therapeutic action dipan and rochana (appetizer), chedan (expel out of mucous), shulahara (anticholic), shavasahara (relief dyspnea), krimighana (wormicidal), soshahara, pacifies the vata and kapha dosha (Aushdhi Varga, 1161-1164). Acharya Bhavaprakasha (16th century) seems to follow Kaideva Nighantu, he states the same properties of shushaka (dry) maricha as in Kaideva Nighantu. But he had not described Ardra (fresh) maricha. Bhavaprakasa states that maricha is useful to treat indigestion, intestinal parasites and disorders of respiratory system (Haritakyadi Varga, 60). He indicated fine powder of maricha as a remedy for in all types of pinasa roga (chronic rhinitis). Only in Raja nighantu (17th century) Maricha is described as hridya (good for heart). Acharya Narhari, author of Rajanighantu introduced a total of seventeen synonyms for maricha and seven synonyms for shweta maricha as well. According to him shweta maricha is pungent in taste, hot and better than krishna maricha. He indicated shweta maricha as a remedy for eye diseases and a good Rasayana (rejuvenator). Nahak Gaytri et. al. has evaluated high antioxidant activity in Piper nigrum extracts as well. Acharya Narhari also indicated it for the treatment of Bhootbadha (psychological disorders) (Pippalyadi varga, 1). Wattanathorn (2008) observed an interesting study of piper on mood and cognitive disorders. He found that piperine possessed anti-depression like activity and cognitive enhancing effect. Therefore, piperine may be served as the potential functional food to improve brain function.

Synonyms of Maricha in the Classical texts:
In the classic texts the descriptions of herbs are available in the form of various synonyms which are based on their specific characteristics with reference to habitat, pharmacogony and pharmacology of that particular plant. There are many synonyms of Marich described in various Nighantu which denotes its different characteristics. Sharma (2000) has explained synonyms of Marich are described below (p.151):

Vellija: Fruit which grows on a climber.
Krishna: Because fruits are black when dried.
Vritta phala: Round fruits
Shirovrinta: Fruit with a minute cap on the top.
Ruksha: Having rough property
Tikshana (Sharp): It is tikshana in property
Ushna: It has (Ushna virya) hot potency.
Katuka: It is Katu (pungent) in taste.
Yavaneshtha: It is in great demand by yavan (foreigners)
Dharampattana: It is an important item for export and as such found in ports.
Viray: It is a potent drug.
Kaphavirodhi: Alleviate cough thus used in disorders caused by kapha dosha
Jantughna: It is able to destroy organisms
Shakanga: It is also one of the spices.

CONCLUSION
A careful and critical study of the classical Ayurvedic texts shows that Maricha is undoubtedly a very important and widely used herb in Ayurveda since ancient time. It is a plant of high commercial and economic importance and it is used in various formulations of Ayurveda as well as in modern science and medicine. The fruits of maricha have great medicinal value it is used both internally as well as externally. It reconciles the digestive and respiratory systems. Maricha is pungent in taste and pungent in the post digestive effect and has hot potency. It alleviates kapha and vata dosha, it possesses light and sharp attributes. It is the best appetizer. The therapeutic actions of Maricha described in different classics have been clinically proven today. Ahmad et al., (2012) has reported in a review study that Maricha possesses immunomodulatory, antiasthmatic, hepatoprotective, hypocholesteremic, anti-inflammatory antibacterial, anti-colon toxic, antidepressant, antifungal, anti-diarrhoeal, antimutagenic, anti-metastatic, antioxidative, antispasmodic, and ciprofloxacin potential activity etc.

In Briha trayi and Nighantu, Marich is specifically described as krimighan or jantunashan (antimicrobial) or even jantusantannashan (larvical) all these terms denote for its antimicrobial activity and recently many researches proved it as a good bio-enhancer and antibacterial (Vani & Laxmi, 2010). The facts which had been described in classics so many years back about the Maricha, are being prove clinically with the help of modern technology and re-establish today. The knowledge of our ancestors about herbal medicine was very vast and accurate.

Synonyms in different Nighantu:

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Dhanvantari Nighantu (DN), Madanpal Nighantu (MP), Ithavaparaksh Nighantu (BP), Raja Nighantu (RN), Kaiderva Nighantu (KN)
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Madanpali Nighantu, Shunthyadi Varga (10-11)
Raja Nighantu, Pippalyadi varga (1)
Sharangdhar Samhita, Madhyama Khand (1/10)
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