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EXPLORING THE THERAPEUTIC POTENTIAL OF TRIKATU: A REVIEW

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ABSTRACT

Trikatu is a compound herbal formulation described in the *Bhaisajyaratnawali*, consists of the three *katu*/bitter herbs in equal quantities. *Trikatu* is preliminary present in household for the purpose of dietary aspect in the form of spices. Dried fruits of *Piper nigrum* (*Maricha*) and *Piper longum (Pippli)* and dried rhizomes of *Zingiber officinale (Sunthi)* are used to prepare this. In *Ayurveda* it is widely used for the therapeutic and prophylactic purpose. *Trikatu* have antiinflammatory, mosquito larvicidal, digestion enhancer, gastroprotective, antioxidant, rejuvenative, antiviral, anticancerous, anthelmintic, hypoglycemic, hypolipidemic, carminative, immunomodulatory effect, antidyslipidemic, antihypothyroidism, antifungal, antibacterial, and much more functions have been established. The most potent and diversified study has proved that it enhances the bioavailability of drugs.

KEYWORDS: Dried fruits of *Piper nigrum* (*Maricha*) and *Piper longum (Pippli)* and dried rhizomes of *Zingiber officinale (Sunthi)* are used to prepare this.

INTRODUCTION

Trikatu as the name itself indicates its meaning, "*tri*" in Sanskrit stands for three and "*katu*" stands for pungent and sharp. The three acrid herbs *Maricha* (Black pepper), *Pippli* (Long Pepper), and *Sunthi* (Ginger), are combined in equal quantities for making of *trikatu*. *Trikatu* is an Ayurvedic formulation mentioned in Ayurveda for a number of ailments. In *Bhaisajyaratnawali*, *Trikatu* is described as the best drug for *Aruchi*(tastelessness), *Agnimandhya*(indigestion), *Aam dosha*, *Urdhvajatrugata roga*(URTI), etc. *Trikatu* is also

very beneficial for diseases vitiated by *Kapha Dosha* and *Meha Dhatu*. It has *Katu rasa* (pungent taste), *Ushna veerya* (hot potency), *laghu* (light), *ruksha* (dry), *deepana*(stimulating), *Kapha-Vatahara* property. *Trikatu* effects on overall digestive system along with its curative effects on respiratory, urinary, immunity, skin, and metabolic systems of our body. The ability of *trikatu* to increase the bioavailability of drugs and minerals is very promising. *Trikatu* contains many phytochemical components such as alkaloids, flavonoids, phytosterol and many other compounds. Thus, giving it high microbicidal properties. *Trikatu* has amazing medicinal advantages for enhancing health, avoiding disease, and treating symptoms. This article is going to discuss some miraculous properties of *trikatu.*

Pippali (piper longum linn).

Pippali (Piper longum), commonly referred to as Javanese, Indian, or Indonesian long pepper, is grown for its dried, spice-useful fruits.[1] The plant grows wild in the drier regions of India, from the Central Himalayas to Assam, up to the lower hills of West Bengal. This little shrub has a substantial woody root system and multiple creeping, jointed branches that thicken at the nodes. The alternate, spreading, irregularly sized, and stipule-free leaves of *Piper longum* have an alternate arrangement. Fruits are rectangular, blunt, and blackish green in color, while flowers occur on solitary spikes. For commercial use, mature spikes are collected and dried. The term "*pippalimoola*" refers to the root radix.[2] *Pippali* has katu rasa (pungent taste), *anushnasheet virya*, *Madhur vipaak*, and *laghu*, *snigdha* and *Tikshna gun. Pippali* is described by *Charaka* in *Kasahara, hikkanigrahan, shirovirechana, vaman, truptighna, deepneeya*, and *shoolprashaman mahakashaya*, and *pippliyadi*, and *shirovirechana gana* of *Sushrut*.

Chemical composition of P. longum

Piperine is the major and active constituent of long pepper. The piperine content is 3–5% (on dry weight basis) in P. longum. The fruit of P. longum contains a large number of alkaloids and related compounds, the most abundant of which is piperine, methyl piperine, iperonaline, piperettine, pellitorine, piperlongumine, piperlonguminine, asarinine, piperundecalidine, refractomide A, pipercide, piperderidine, longamide and tetrahydropiperine, terahydro piperlongumine, dehydropipernonaline piperidine, pregumidiene, brachystamide, brachystamide-A, brachystine, terahydropiperlongumine, and trimethoxy cinnamoylpiperidine. Lignans Sesamin, pulvuatilol, fargesin, and others have also been isolated from the fruit of P. longum. Volatile oil of the fruit P. longum is a complex mixture.

Major components of essential oil are caryophyllene and pentadecane (both about 17.8%) and bisaboline (11%) along with volatile piperine. Other components include thujine, terpinoline, p-cymene, p-methoxy acetophenone, and dihydrocarveol.[3]

Maricha (pipper nigrum linn's)

Piper nigrum, often known as Indian black pepper, is a flowering vine in the piperacea genus. Fruits are grown on it, and after drying, it is used as a spice and seasoning. it mostly found in India, Srilanka, Indonasia and Malasia. It is well-known for its strong flavor, which is a result of piperine, a chemical Hans Christian discovered in 1819. It is referred to as "King of Spices"20 because of its pungency. It originated in the current South India. It is a typical spice that adds taste to cuisine. The chemical piperine is responsible for the spiciness. *Maricha* has *Katu Ras, Ushna Virya, Katu Vipaak, Laghu* and *Tikshna Guna*. *Charaka* has described it in *deepneeya, shulprashaman, krimighna*, and *shirovirechana mahakashaya*. *Sushrut* also mentioned it in pippaliyadi and *triusna gana.*

Chemical Composition of *P. nigrum*

P. nigrum contains lignans, alkaloids, flavonoids, amides, and other aromatic compounds along with approximate 3.5% of volatile oil. Components of essential oil include sabinene, pinene, linalool, limonene, and phellandrene. Piperine is an alkaloid and the chemical marker of P. nigrum. Chavicine which is an isomer of piperine is also present. Piperine and Chavicine are not responsible for the aroma of the black pepper. Piperine is responsible for pungency of the black pepper.[5]

Shunti (zingiber officinale)

Ginger is a flowering plant whose rhizome, often known as ginger root or ginger, is frequently used as a spice and one of the primary medications used in the formulations of *ayurvedic* treatments. The ancient Greeks and Romans utilized it as the first spice to be exported from Asia to Europe through the spice trade. The dried rhizome of *Zingiber officinale Roxb* is known as *shunti*. Widely grown in India, rhizomes are taken between January and February. Buds and roots are plucked, soaked in water for an entire night, and occasionally treated with lime before being dried.[6] *Shunthi* has *Katu Ras, Ushna Virya, Madhur Vipak, Laghu* and *Snigdha Guna*. *Charaka* has described *Shunti* in *truptighna, arshoghhna, deepaneeya, shoolprashaman*, and *trushna-nigrahana mahakashaya* and *pipalyadi* and *trikatu gana* by *Sushrut.*

Chemical Composition of *Z. officinalis*

Exhaustive chemical screening of ginger reveals that it contains over 450 compounds. The major composition of ginger rhizomes is carbohydrates (50–70%), lipids (3–8%), terpenes, phenolic compounds, amino acids, raw fiber, ash, protein, phytosterols, vitamins, and minerals. Volatile terpenoidal constituents of Z. officinale include zingiberene, β-bisabolene, α-farnesene, α-curcumene, and β-sesquiphellandrene. Phenolic compounds include gingerol, paradols, and shogaol. Gingerols and shagols are responsible for pungency of Ginger. These gingerols and shogaol are found in higher quantities of up to 20–25%. Other gingerol- or shogaol-related compounds (1–10%), which have been reported in ginger rhizome, include 6-paradol, 1-dehydrogingerdione, 6- gingerdione and 10-gingerdione 4- gingerdiol, 6-gingerdiol, 8-gingerdiol, and 10-gingerdiol, and diarylheptanoids. The characteristic odor and flavor of ginger are due to a mixture of volatile oils such as shogaols and gingerols.[7]

DISCUSSION

Trikatu is a potent anti-inflammatory agent. *Trikatu* exerts potent anti-inflammatory effect in gouty arthritis inflammation.[8] Possess immunomodulatory, antiviral, expectorant, carminative, hypolipidemic, hypoglycemic, antiemetic and anti-inflammatory potential. The three ingredients of *trikatu* are warming and expectorant which makes the combination effective in respiratory infection and due to bronchodilator properties effective in respiratory problems. By stimulating the various enzymes in the stomach, it helps in improving digestive fire and digestion. Due to detoxifying properties, it is useful in joint pains and stiffness in case of gout.[9]

Different extracts and fractions of *Trikatu* possess Antioxidant, Antihyperlipidemic, Antianorectic, Antitumor, Hepatoprotective, Antimicrobial, Anthelmintic, Analgesic, Antifungal, Immunomodulatory, Antiallergic, Antiarthritic and Anti-inflammatory activities.

CONCLUSION

Trikatu is having anti-viral, anti-fungal, anti-helminthic, antioxidant, analgesic, antibacterial, mosquito larvicidal, thyroxin stimulation, CNS stimulant, hepatoprotective, adjuvant in absorption and assimilation of drugs, antiobesity, antiemetic role in the body. Hence it is concluded that due to the preventive and therapeutic approach and multifunction of trikatu it is beneficial in many bodies' metabolic functions.

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