



ORIGINAL RESEARCH PAPER

Ayurveda

INCREDIBLE MEDICINAL USES OF BLACK PEPPER: A VIEW

KEY WORDS: Black pepper, piper nigrum, antioxidant

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ABSTRACT

Piper nigrum, commonly called as black pepper, is a member of family piperaceae. The genus piper includes 700 species distributed in northern and southern hemispheres. It is also known as "The King of spices" and has major contribution in Indian Spice Export Scenario. The fruit of Piper nigrum, also called as pepper is an ancient and famous spice throughout the world. Piper nigrum is a native of Malabar seashore of India and has its utility as a redolent stimulant in cholera, flatulence, arthritis disease, dyspepsia and anti-periodic in malarial fever. Piper nigrum is familiar species of genus piper because of its high economic, commercial and medicinal values. The genus piper is having a rich phytochemistry and researchers showed the ample presence of alkaloids, amides and terpenoids. The various pharmacological activities of Piper nigrum are radical scavenging, antioxidant, anti-insecticidal, anticonvulsant, anti-inflammatory, anti-tubercular, antibacterial, antipyretic, exteroactive and antioxidant.

INTRODUCTION

P. nigrum is commonly known as Kali Mirch in Urdu and Hindi, Pippali in Sanskrit, Milagu in Tamil and Peppercorn, White pepper, Green pepper, Black pepper, Madagascar pepper in English. Hot and pungent peppercorns are obtained from Black pepper which is the most famous and one of the commonly used spices throughout the world. Black pepper is used as medicinal agent, a preservative, and in perfumery. In the recent years, phytoconstituents arouse curiosity in the mind of researchers as they are more biofriendly to cure and prevent human ailments. About 6000 plants are used in folk, herbal and traditional medicine in India and contribute about 75% of medicinal needs of the world. Phytoconstituents are nonnutritive compounds synthesized by plants and have protective or disease preventive activities. Plant synthesizes these compounds to defend itself but research reveals that many phytoconstituents can also protect humans against various ailments. Knowledge of the phytochemicals is required because such information will be valuable for the researchers to synthesize new complex chemical substances¹.

Botanical Description:

Piper nigrum is a perennial climbing shrub. Branches are hard, dragging and have roots at the nodes. Leaves are intact, 12.5 – 17.5 cm by 5.0 – 12.5 cm and have variable breadth. Fruiting spikes are having different lengths. Flowers are narrow at spikes and mostly dioecious. Fruits are spherical and lustrous red when ripen and belong to category drupe. Seeds are almost spherical².

Geographical Distribution:

The plant is indigenous to India and is a costly spice since ancient times. The plant is extensively found in Western Ghat forests. The plant adapts itself to huge altitudinal diversity up to an elevation of 1300 m almost from sea level and to a large range of soils and climatic conditions, thus the genus has a vast interspecies diversity³. It is distributed all over the tropics and subtropics of the world⁴. It grows in hot and moist places. Since biblical times, the history of the pepper is well explored and demonstrates the importance of the spice. Black pepper originates in Kerala in India. The other antediluvian countries growing the plant are Malagasy Republic, Sri Lanka, Brazil, Malaysia, South Pacific Islands, many South East Asian countries, Latin America and some African countries⁵.

Pharmacognosy:

Macroscopic:

The entire fruit is nearly spherical, brown-black in colour, 4-6.5 mm diameter; the surface is scratchy and aromatic with a pungent taste. Pharmacology: It is used as nervine tonic and against stultification, itchiness and flatulency⁴. It is familiar for

large number of therapeutic properties such as analgesic, antifeedant activities and antipyretic⁶, antiplatelet, antifungal, antidepressant and anxiolytic, anti-tumor, anti-bacterial, anti-inflammatory, anticonvulsant, antioxidant and hepatoprotective activities.



Fig: Varieties of P. Nigrum⁷

Phytochemistry:

The research in the field of Chemistry reveals that the genus piper has a great phytochemistry including long and short chain esters, alkaloids, flavonoids, terpenes, steroids, unsaturated amides, lignans, aristolactams and propenyl phenols. The alkaloid piperine is the biochemical component that attributes pungency to black pepper while the components responsible for its aroma and flavour are myrcene, sabinene, a- and b-pinenes, camphene, b-caryophyllene and limonene, etc. Many components of essential oil and its variability in various black pepper cultivars are found by investigators. Few researchers described the significant components of essential oil of Piper nigrum as limonene, b-pinene, b-caryophyllene and sabinene. Elemol was present in ample quantities in P. nigrum leaf oil. Limonene, Germacrene-D, a-pinene, b-pinene and b-cimene are present in major amounts in black pepper. Major components such as b-pinene, a-phellandrene and a-humulene as well as minor constituents such as elemicin, d-carene, b-phellandrene, bulnesol, T-muurolol and cubenol are significant for the characteristics odour of pepper. The major phytoconstituent contributes pungency to pepper oleoresin is piperine. The various phytoconstituents reported from the acetone extract of pepper are guineensine (3.23%), piper amide (3.4%), piperolein b (13.7%) and piperine (33.5%). Studies on essential oil of Piper nigrum leaves collected from Western Ghats of Kerala and Karnataka shows large diversity in nerolidol and b-caryophyllene. Diversity in chlorophyll and carotene percentage in the leaves of Piper nigrum over a narrow geographical range shows spatial

influence in its biochemical activities. The phenolic compounds present in leaves range from 0.3 to 0.8 mg/g. Many authors have reported that different black pepper cultivars have different amount of β-caryophyllene in berry oil⁵.

Medicinal Benefits⁶

Nutritional Source:

Black pepper is a rich source of minerals like manganese, copper, calcium, phosphorus, iron, potassium source, and vitamins like riboflavin, vitamin C, K, and B6. Black pepper has a high content of dietary fiber and has a moderate amount of protein and carbohydrates too.

Health Benefits:

Black pepper aids in weight loss, and treats sinus, asthma, and nasal congestion. It also reduces the risk of cancer, and heart and liver ailments.

Improves Digestion: Consumption of pepper increases the hydrochloric acid secretion in the stomach, thereby facilitating digestion. Proper digestion is essential to avoid diarrhea, constipation, and colic. Pepper also helps prevent the formation of intestinal gas, and when added to a person's diet, it can promote sweating and urination. Sweating removes toxins and cleans out the pores of the foreign bodies that may have lodged there and it can also remove excess water. In terms of urination, you can remove uric acid, urea, excess water, and fat, since 4% of urine is fat. A good digestion helps in weight loss, makes your overall body function better, and prevents severe gastrointestinal conditions. As black pepper is carminative in nature, it easily expels the gas out of the body in a healthy downward motion, as upward moving gas can be dangerous because it can strain the upper chest cavity and other vital organs.

Weight Loss:

The outer layer of peppercorn assists in the breakdown of fat cells. Therefore, peppery foods are a good way to help you shed weight naturally. When fat cells are broken down into their component parts, they are easily processed by the body and applied to other processes and enzymatic reactions, rather than settling in your body and making you overweight.

Skin Care:

Pepper helps to cure vitiligo, which is a skin disease that causes some areas of skin to lose its normal pigmentation and turn white. According to researchers in London, the piperine content of pepper can stimulate the skin to produce melanocytes pigment. Topical treatment of piperine combined with ultraviolet light therapy is much better than other harsher, more chemical-based treatments for vitiligo. It also reduces the chances of skin cancer due to excessive ultraviolet radiation.

Respiratory Relief: In Unani practices, pepper is added to tonics for treating cold and cough. Pepper also provides relief from sinusitis and nasal congestion. It has an expectorant property that helps break up the mucus and phlegm depositions in the respiratory tract. Its natural irritant quality helps you expel these loosened materials through the act of sneezing or coughing, which eliminates the material from the body and helps you recover from infection or illness that caused the deposition in the first place.

Antibacterial Activity:

The antibacterial property of black pepper helps fight against infections and insect bites. Pepper added to the diet helps keep your arteries clean by acting in a similar way to fiber and scraping excess cholesterol from the walls, thereby helping reduce atherosclerosis, the condition highly responsible for heart attack and stroke.

Antioxidant Property:

Antioxidants in pepper can prevent or repair the damage

caused by the free radicals and thus help prevent cancer, cardiovascular diseases, and liver problems. Free radicals are the by-products of cellular metabolism that attack healthy cells and cause their DNA to mutate into cancerous cells. Antioxidants neutralize these harmful compounds and protect your system from many conditions and even symptoms of premature aging like wrinkles, age spots, macular degeneration, and memory loss.

Enhances Bioavailability:

Black pepper helps in transporting the benefits of other herbs to different parts of the body, thus maximizing the efficiency of the other foods we consume. That is why adding it to food not only makes it delicious but also helps to make the nutrients more available and accessible to our system.

Improves Cognitive Functions:

Piperine, one of the key components of black pepper, has been shown in numerous studies to reduce memory impairment and cognitive malfunction. The chemical pathways in the brain appear to be stimulated by this organic compound, so early research demonstrates the possibility of pepper to benefit Alzheimer's patients and those suffering from dementia and other age-related or free radical-related malfunctions in cognition.

Peptic Ulcers:

A number of studies have shown that black pepper may have beneficial effects on gastric mucosal damage and peptic ulcers, due to its antioxidant and antiinflammatory properties. Asthma treatment: Pepper is a good treatment for respiratory conditions due to its properties as an expectorant, as well as its strong anti-inflammatory properties.

CONCLUSION

Pepper is identified as a medicine that helps in digestion, increases appetency, acts as a remedy for cough, cold, throat diseases, colic, dyspnoea, intermittent fever, dysentery, worms and piles. It is not only used as a spice but also have a broad spectrum antimicrobial property. Various species of genus piper have enjoyed considerable importance in Unani medicine numerous ailments, which has attracted the attention of research workers throughout the world. Attention is directed towards the evaluation of pharmacological and chemical properties. P.nigrum, like cinnamon and cloves is one of the oldest known spices with their excellent medicinal property as we discussed above and it was being used in India over 4,000 years ago. This reviews aims was to collect and study the variety of pepper, biological value and medicinal uses till date of P.nigrum plant in order to provide sufficient information for future research.

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