

A little about the underrated Himalayan nutritious fruit-Kaphal

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A sub-temperate evergreen moderate bush of 20–25 feet height commonly known as kaphal (Morella esculenta) is found abundantly growing in vicinity of mid-himalyan regions of Mandi, Kullu, Solan, Sirmour districts of Himachal Pradesh and Kumaon and Garwhal region of Uttarakhand. Fruit has delicious sweet and sour taste but it does not retain for very long period (not even more than 2 days). It contains numerous active chemical components such as myricetin, myricitrin and glycosides. This plant is often used to cure a range of illnesses, including diarrhea, typhoid and dysentery. It is extensively known for its antifungal, antibacterial and anti-inflammatory activities. The growing utilization of this tree as a fruit and in medicines led in a seasonal decline in its output. Despite the fact that this particular fruit is regarded minor, it is vital to conserve this wild fruit for future usage.

Keywords: Ailments, Fruit, Himalayas, Shrub, Underutilized

DUE to enormous variance in altitude and topography, the Himalayas possess a wide range of climatic conditions, making this region home to a diverse range of plants. Himachal Pradesh has the highest yield of important drugs derived from various medicinally important plants in India. Large shrub found in hilly regions of Uttarakhand (Garhwal and Kumaon), Himachal Pradesh, Southern Bhutan, and western Nepal possesses a gem fruit known as kaphal. It is also known as bayberry and has little seed, vivid deep crimson in hue developing nearly purple at full maturity. kaphal is a tall and spreading evergreen tree and is one of the most delicious sub-Himalayan wild fruit. This fruit has a high commercial value, with its fruit worth thousands of rupees sold in various Himachal Pradesh towns each year. Although, kaphal is not cultivated, it is still widely available in the state markets of Himachal Pradesh, particularly in Mandi.

Morphological characters

It is a medium to a large woody, dioecious, evergreen tree that ranges in height from 20–25 feet. The male and female trees resemble each other in appearance. The bark is brittle and soft. The leaves are conjoint, almost cluttered towards the end, branched and lance late, 1–2 feet long, with leaflets in pairs of 6–9 and 14 inch width. The flower comes in two varieties, according to ayurveda: Shweta (white) and Rakta (red). The flower is small, sessile, solitary, and bracteate; septum is absent or not visible, and petals are absent or not visible. It has two stamens with extremely short filaments and a raceme inflorescence. The fruits are globose, succulent drupes with a firm endocarp that are small, seedy, and brightly colored. The seeds have an astringent taste and are triangular; they are 9 m long, 5 mm in diameter, and have a volume of 131 microlitres.

Flowering and fruiting

The flowering season begins in the first fortnight (14 nights; 2 weeks) of February and lasts until the second fortnight of April. The fruit development begins during the 1st week of May and usually lasts until the last week of the month.

Chemical constituents

The bark is yellow and includes the chemicals myricetin, myricitrin, and glycosides. Myricetin is a key chemical ingredient of kaphal. Myricetin 50, a yellow-beige powder crystalline powder flavonol with a 3-hydroxyflavone backbone and 6 hydroxyl groups, was isolated from the species' leaves and fruits. According to a reviewed literature, there are several health advantages of Myricetin due to its broad range of biological properties, such as antioxidant and free radical scavenging capabilities. Myricetin is anti-cancer, anti-mutagenic, and anti-inflammatory. Flavone-4'-hydroxy-3', 5, 5'-trimethoxy-7-

o-beta-1-D-glucopyranosy, beta-sitosterol, and quercetin are all found in the plant's leaves. The leaves are also said to contain 4-hydroxy-1,8-cineole, 4-O-Dapiofuranosyl-(1→6) (1S,2S,4R)-2-hydroxy-1,8-cineole,-D-glucopyranosie-D-glucopyranoside, corchoionoside C, (6S,9R)-roseoside, myricanol, 5-O-Dglucopyranosylmyricanol, arjunolic acid, arjunglucoside, 3-epi-ursonic acid, 3-O-(E)-caffeoylursonic acid, myricetin, myricitrin³⁶ and myricetin³⁶. Fruits contain a variety of minerals, including sodium, potassium, calcium, manganese, copper, iron, and zinc. Thirteen compounds were isolated by silica gel column chromatography and recrystallization in a study on the chemical constituents (myricitrin, myricanol, myricanone, gallic acid, ethyl-Dglucopyranoside, 3-hydroxybenzaldehyde, isovanillin, 4-methoxybenzoic acid, 4-hydroxymethyl phenol, -sitosterol, daucosterol etc). For the first time, Myricanol conformation was determined using X-ray diffraction in this work.

Uses

The plant has several benefits for curing different ailments in the form of paste, oil and powder. The paste is applied to wounds, lymphadenopathy (irregular lymph node hypertrophy), toothache, joint aches, ataxia, and vascular constriction (constriction of a blood vessel). In cases of consciousness and rhinitis, oil is utilized as nasal drops (inflammation of mucous membranes of nose). The powder is crucial in the cure of nerve ailment and pain relief. It aids in the improvement of the gastrointestinal system and improves hunger; it also aids in enhancing blood circulation. It is quite beneficial

in assisting uterine contraction during labor and birth. It is also an effective aphrodisiac (arousing and intensifying sexual desire). It is also beneficial in the treatment of skin issues. Kaphal is rich in various biochemical compounds having various antimicrobial, anti-inflammatory, antihelminthic, anxiolytic properties. These compounds are helpful for stabilizing mast cells, treating high blood pressure, and have hepatoprotective and anti-asthmatic properties.

In Ayurveda and Yunani system of medicines, this tree is utilized for its bark, flowers, fruits, and roots. However, Ayurvedic Samhita mentions kaphal be harmful to the liver and spleen. In contrary to this, oil extracted from the flowers acts as a tonic and has been used usefully in earache, headache, diarrhea, and paralysis. Fruit constituents exhibit healing properties in case of different ulcers; also find application in retention of the placenta and bone fracture. In the present drug manufacturing industry, there is a constant rising demand for herbal drugs. Due to the high medicinal values, the leaves and bark of this medicinally important tree are imported and exported. Fruits are utilized in food industries in the Himalayas in different forms like syrups, jam, and squash. Indians utilize the tree as timber, for fuelwood and as a wild edible fruit in their diet. Even the yellow color extracted from the bark is used as a medicinal colorant. Traditionally, it was found that the bark of the tree has been used as a fish poison.

Benefits of Kaphal fruit

Kaphal leaves and seeds are used in Ayurveda, whereas the flowers and fruits provide medicinal

benefits. kaphal can be used as a home remedy for headaches caused by a hectic schedule and work stress. Making a powder of the bark of kaphal and breathing it through the nose relieves headaches caused by phlegm. Also, nutmeg oil can soothe migraine and coryza pain when 1–2 drops are put in the nose. Many diseases affect the eyes, including common eye pain, night blindness, redness, etc. The use of kaphal is very useful in all of these types of problems. Making kajal by mixing cow urine, ghee and kaphal with Himalayan salt, and applying it into the eyes can provide relief from the symptoms of many eye diseases. kaphal provides relief from ear pain due to cold cough or any disease by putting 1–2 drops of jackfruit oil mixed with kaphal fruit in the ear.

Kaphal tree bark can relieve toothache by pressing it between the teeth and chewing it. If you rub kaphal powder on your teeth and grind it in vinegar, and consume kaphal in this manner, quick relief from toothache is experienced. Gargling with a decoction of kaphal fruit can cure goiter, toothache, and throat infection. Those suffering from cough due to the change of season which is not improving with any medicine then it may be treated with kaphal. In cough, fever, and phlegm-related diseases, licking the powder (1–2 g) made from kaphal mixed with honey is beneficial. Kaphal with honey can be very useful in diarrhea caused by spicy food, packaged food, or food from outside. Taking 1–2 g of tamarind powder mixed with honey twice a day provides relief in diarrhea.

Possible threat and conservation

Kaphal, a wild fruit, has swamped the market of a Himalayan area. Every year, around 15–20 tonnes of fruit worth ₹25–30 lakh are sold in different marketplaces. Kaphal is not grown, although it is widely available in the Himalayan area, particularly in Himachal Pradesh. As a consequence, the yield of this fruit decreases with each season. If the government does not take action



Kaphal fruit

to save the species, it will go extinct in the future. People should also be aware of the need of cultivating not just this wild species, but also every other valuable therapeutic plant. Every year, several pharmaceutical firms extract vital medications from medicinal plants, but no steps have been taken to cultivate them. As a consequence, we must maintain or restore these critical species for future generations. Myricetin extracted from kaphal is a naturally occurring molecule that may be utilized to treat diabetes, brain diseases, and other problems. It is highly beneficial to employ this substance in other pharmacological investigations since medicinal herbs

have achieved a large function in health systems all over the globe for both people and animals not only in sick conditions but also as a potential material for keeping appropriate health. Due to over-exploitation, kaphal has become an endangered species, different measures should be made to protect the species from extinction.

SUMMARY

The small seedy fruits of Kaphal are very much liked by all for their taste and juiciness. Huge quantities of this wild fruit are picked by the villagers from the forests and sold in towns providing extra income to the villagers. Its juice has a very

attractive sparkling red colour, and possesses high nutritive value with tonnes of medicinal uses. Efforts should be made to standardize a technique for its utilization as its shelf-life does not exceed 2–3 days. Another problem in the case of this fruit is that the harvesting period is too long and fruits from a single tree have to be harvested in many pickings. However, this is the only cost involved in the case of this fruit, the numerous trees bearing which are growing wild in the forests hence, this cost can be overlooked.

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