

Nutritional Importance and Health benefits of Kainth (*Pyrus Pashia*) Fruit

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Abstract

Kainth (*Pyrus Pashia*) is important wild Himalayan fruit belongs to the family Rosaceae. The fruit is commonly found in the forests, around the roadside and the waste land of the villages. All parts of the kainth tree such as fruit, leaves, flowers, and bark are highly nutritious and have medicinal benefits due presence of functional components. The fruit possess anti-diabetic, anti-microbial and anti-inflammatory activities that help in reducing the risk of chronic diseases. This fruit has the potential for development of value-added products like jam, juice and pulp, but till date not much work has been reported on value addition of kainth fruit, which may be due to shorter shelf life of the fruit. The fruits having shorter shelf-life can be preserved better using food processing techniques. Therefore, the conversion of kainth fruit into different value-added products could help in the prevention of wastage, increase its consumption and shelf-life and make it valuable in fighting against various human ailments.

Keywords: Kainth, Chronic diseases, Phytochemical, Functional components, Value-added products

Introduction

Kainth (*Pyrus pashia*) fruits belongs to the Rosaceae family, commonly known as Indian/Asian wild pear, Himalayan pear, shegal, melu and mehal (Prakash et al., 2021). In India, the plant is commonly found in the northern states such as Himachal Pradesh, Uttarakhand and Punjab. Kainth is generally used as a rootstock for pear (Pandey and Pant, 2018). The fruit is best grown in the height range of 750 to 2600 m. The immature fruits are usually willow green in colour with a light brown spot on the outer surface and the fruits turn black and soft when they become mature (Figure 1). The fruit is high in nutrition and is a rich source of various phytochemicals, antioxidants, and bioactive compounds with promised health benefits (Wang et al., 2021; Vidakovic et al., 2022). Edible flowers of this fruit are used for treatment of cancer and cardiovascular diseases, the fruits are used against diarrhoea, GI disorders and other various

diseases (Riya et al., 2023). Decoction of the fruit with other plants is used to cure spleen and stomach-related ailments. The plant is also used as cattle fodder to improve milk production. The fruit has a shorter shelf-life due to high perishability during full maturity, therefore the fruits fall under the under-utilized fruit category. The fruits having short shelf-life can be preserved better using food processing techniques. Therefore, the conversion of kainth fruits to different value-added products by using food processing techniques could help in the prevention of wastage, increase its consumption, and shelf-life and make it valuable in fighting against various diseases and promoting good health.



Fig. 1: Kainth (*Pyrus pashia*) fruit

Chemical composition of kainth fruit

The chemical composition of kainth fruit varies with the variety and location where it grows. The ripened fruits were reported to be edible and highly nutritious. The fruit contains a moisture content (60.36%), total soluble solids (6-11°Brix), titratable acidity (6-11%), total carbohydrate (28.38%), reducing sugar (6.79%), crude fibre (16.18%), crude fat (1.62%), crude protein (3.29%), ash (1.10%), ascorbic acid (63.82 mg/100g), total phenols (173 µg GAE/ml), and total carotenoid (1847 mg/100 g) (Mawlein et al., 2023; Rymbai et al. 2023; Prakash et al., 2021; Sharma, 2022). The fruits contain various minerals, such as nitrogen (0.68 mg), magnesium (0.12 mg), potassium (3.21 mg), calcium (0.75 mg), and phosphorus (0.86 mg) (Prakash

et al., 2021). The ripened fruits of *P. pashia* have been reported to be nutritious and edible. Proximate analysis has demonstrated that the fruits contain $\sim 60.36 \pm 0.25$ moisture, $28.38 \pm 0.12\%$ total carbohydrates, 6.79% reducing sugars, 16.18% crude fiber, $1.62 \pm 0.20\%$ crude fat, $3.29 \pm 0.21\%$ protein and 1.10 ± 0.05 of total ash content. These nutritional values of *P. pashia* indicate that it is a nutritionally rich fruit. The fruits contain various minerals, such as nitrogen (0.68 mg), calcium (0.75 mg), magnesium (0.12 mg), potassium (3.21 mg), phosphorus (0.86 mg) and iron (traces) per 100 g dwb. The fruit is also rich in phytochemicals, such as gallic acid, chlorogenic acid and catechin (32,33). To date, there are no published reports available regarding its vitamin contents, at least to the best of our knowledge. The fruit is still an underutilized source of nutrition due to its short shelf life and limited awareness. Tag et al (34) studied the leaves of the *P. pashia* tree to determine its nutritional profile. The proximate analysis revealed that the leaves contained a low moisture content ($26.33 \pm 0.39\%$, dwb), ash ($4.40 \pm 0.19\%$, dwb), crude protein ($1.79 \pm 0.07\%$, dwb), crude fat ($0.89 \pm 0.07\%$, dwb), crude Fibre ($21.22 \pm 1.18\%$, dwb) and a total carbohydrate content of $66.61 \pm 0.42\%$, dwb. The mineral content analysis revealed that the leaves contain low amount of sodium (0.09%), phosphorus (0.13%) and an ample amount of potassium (0.80%) and calcium (0.65%). The leaves were also found to contain α -tocopherol (55.02 ± 0.35 mg/100 g) and carotenoids

Health benefits

Kainth fruit is used for the treatment of diarrhoea, eye-related problems, GI disorders and other various diseases. The flowers of this fruit are used for the treatment of cancer and cardiovascular diseases. The leaves and bark are used for the treatment of hair loss, gastric ulcers, and typhoid fever. Decoction of the fruit with other plants is used to cure spleen and stomach-related ailments. The fruit also possess anti-diabetic, anti-microbial and anti-inflammatory activities that help in reducing the risk of chronic diseases. The fruit is a good source of essential nutrients including vitamin A and vitamin C, minerals such as potassium, calcium and antioxidants which are beneficial for the overall health of the body.

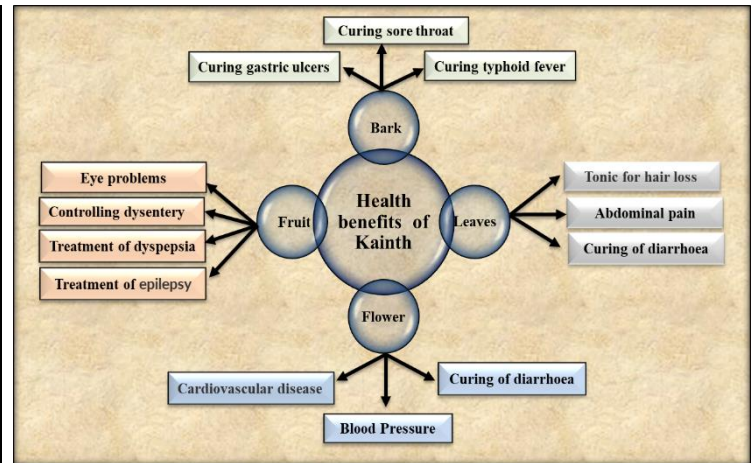


Fig. 2: Health benefits of Kainth fruit

Value added products

Kainth is one of the important wild Himalayan fruits which contains good amounts of antioxidant and bioactive compounds. Kainth fruit has a good potential to be processed into value-added products such as jam, juice, chutney, candy, powder and bakery products. These value-added products not only make kainth fruit more accessible but also extend the shelf-life and increase the consumption of the fruit.

Conclusion

Kainth is well known for its health benefits due to its antimicrobial, anti-fungal and anti-inflammatory properties. There has been extensive research in the field of medicinal and pharmaceutical properties of kainth fruit, but only a few researches have been reported on the application and use of kainth fruit in the food industry for the preparation of value-added products. The conversion of kainth fruit to different value-added products such as jam, juice, candy etc. can be useful for addressing nutritional security and creating new income generation opportunities for local people.

References

- Mawlein J, Verma V and Haz S. (2023). Standardization of vegetative propagation technique of wild edible Himalayas pear (*Pyrus pashia*) on newly identified local rootstock, RC Sohjhur-3. *Journal of Crop and Weed*, 19(1), pp.244-251.
- Pandey N and Pant J. (2020). Determination of physicochemical and pharmacological

- screening of leaves and flowers part of *Pyrus pashia*. Intl. J. Herb. Med, 8, pp.28-32.
- Prakash O.M, Chauhan A.S and Kudachikar V.B. (2021). Traditional uses, nutrition, phytochemistry and various pharmacological properties of Indian wild pear. International Journal of Functional Nutrition, 2(4), pp.1-13.
- Riya S.K. Kumar A. Prakash S. Kumar A and Dubey A. (2023). The standardization of method and time of propagation in pear (*Pyrus communis* L.). Interaction (Method× Time), 12(6.245), pp.4-416.
- Rymbai H. Verma V.K. Talang H. Assumi S.R, Devi M.B, Sangma R.H.C, Biam K.P, Chanu L.J, Makdoh B, Singh A.R and Mawleñ J. (2023). Biochemical and antioxidant activity of wild edible fruits of the eastern Himalaya, India. Frontiers in Nutrition, 10, p.1039965.
- Sharma S. (2022). Value addition to underutilized wild Himalayan Pear (*Pyrus Pashia*): Development, Composition, and sensory characteristics of jam. ScienceOpen Preprints.
- Vidaković A, Šatović Z, Tumpa K, Idžojić M, Liber Z, Pintar V, Radunić M., Runjić T.N, Runjić M, Rošin J and Gaunt D (2022). Phenotypic variation in European wild pear (*Pyrus pyraeaster* (L.) Burgsd.) populations in the North-Western Part of the Balkan Peninsula. Plants, 11(3), p.335.
- Wang L, Shi Y, Wang R.Su. D, Tang M, Liu Y and Li. Z (2021). Antioxidant Activity and Healthy Benefits of Natural Pigments in Fruits: A Review. International Journal of Molecular Sciences, 22(9), p.4945.

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