

SOLANUM NIGRUM: LOST IN THE MIDST OF WEEDS

Pushpa Chethan Kumar

Scientist, Division of Postharvest Technology and Agriculture Engineering
ICAR-Indian Institute of Horticultural Research, Hesaraghatta lake Post, Bengaluru

Corresponding author email: pushpa.chethan@icar.gov.in

ABSTRACT

Exploring the potential of underutilized leafy vegetables is much required for the current scenario. Changing traditional food habits increases the usage of underutilized leafy vegetables providing more nutritious food. Solanum nigrum is considered as medicinal plant apart from being used as a leafy vegetable. This plant has been extensively used in traditional folk medicine to treat various diseases. The proximate analysis of the leaves of Solanum nigrum shows that it is a rich source of proteins, fibre and minerals. Solanum nigrum being nutritionally rich, can be added to our daily diet to overcome many nutrient deficiencies and the inclusion of locally grown food provides sustainable nutrition security.



INTRODUCTION

We come across many leafy vegetables around us, whether on the farm or in the kitchen garden. Even though leafy vegetables are included in our daily diet still, many leafy vegetables are not explored, and thus they are still underutilized. Our ancestors were well acquainted with these underutilized green leafy vegetables due to their nutritional quality and medicinal properties. But as the food habit and crop cultivation is changing, these leafy vegetables are neglected. Owing to the current scenario of leading healthy lifestyle with emphasis on traditional food habits, these underutilized leafy vegetables play a major role. Among underutilized leafy vegetables, *Solanum nigrum* is not yet exploited its potential in terms of nutrition and medicinal properties.

Solanum nigrum, a native plant of India, belongs to the family Solanaceae, commonly called night black shade and its local name in the Indian Himalayan region is Makoi. It is called as ganake soppu (kannada), manatakkali (tamil), mokoi (hindi), mulaku thakkali (malayalam), kasaka (telugu) (www.flowersofindia.net). It generally grows as a weed. It has been used in

ethnomedicine to treat diabetes as a hepatoprotective agent and lactagogue and is believed to have various biological properties. Even though it has been used as a leafy vegetable in India, it is still considered underutilized as it is not cultivated commercially like other leafy vegetables. However, its fruits are also edible and are consumed as fresh.

NUTRITIONAL PROPERTIES AND BIOACTIVE PRINCIPLES PRESENT IN *SOLANUM NIGRUM* LEAVES

Many studies have been done to explore the nutritional quality of this plant. The proximate analysis of the leaves of *Solanum nigrum* shows that it is a rich source of proteins, fibre and minerals (Table 1). Liv.52, an Ayurvedic herbal preparation containing several herbs, including *Solanum nigrum*, was given to stimulate appetite in children to overcome malnutrition due to anorexia. Improvement in appetite in the Liv.52 consumed group was observed, resulting in increased food intake. Both body weight and height started showing significant improvements after a month and continued throughout the study in the treated group. Because of the high nutritional quality of *Solanum nigrum*, it is beneficial to include these leafy vegetables to get balanced nutrition and to address micronutrient deficiency among vulnerable groups such as children, adolescent girls, pregnant women and elders.



A pic of *Solanum Nigrum*

Solanum leaves are not only rich in proximates. Many studies on extracts of leaves of *Solanum nigrum* showed that leaves also contain an appreciable amount of bioactive compounds such as phenols, flavonoids, carotenoids and others. When leaves were extracted with different solvents such as acetone, methanol and water extracts, it was found that the leaves

of *Solanum nigrum* had a total polyphenol content of 9.64 mg/g of dry plant material, total flavonoid content of 1.41 mg/g of dry plant material, proanthocyanidins content of 2.10 mg/g

Table 1: Proximate and minerals content of the leaves of *Solanum nigrum*

| Constituents | Quantity % |
|---------------------------------|------------|
| Moisture | 68 |
| Ash | 13 |
| Protein | 18.2 |
| Fat | 8.5 |
| Carbohydrate | 37.2 |
| Crude fiber | 23.1 |
| Energy (Kcal) | 298 |
| MACRO AND MICRO MINERALS | |
| MG/100G DRY WEIGHT BASIS | |
| Magnesium | 246 |
| Calcium | 17.33 |
| Potassium | 41.69 |
| Phosphorus | 75.22 |
| Sodium | 2.90 |
| Iron (ppm) | 13.01 |
| Zinc (ppm) | 0.09 |
| Copper (ppm) | 16 |
| Manganese (ppm) | 1.52-83 |
| Sulphur | 8.55 |

Source: Jimoh *et al.* 2010; Akubugwo *et al.* 2007

of dry plant material and total flavonol content of 0.68 mg/g of dry plant material (Jimoh *et al.*, 2010). The phenols present in leaves have been shown to have antioxidant activity. Apart from these compounds, a high amount of total carotenoids, which is a precursor for vitamin A (35.25 mg/100g edible portion) and β -carotene (14.05 mg/100g edible portion), was found in leaves with retinol equivalent of 2.34 mg/100g edible portion (Rajyalakshmi *et al.*, 2001). This shows that the leaves act as a very good source of vitamin A, which is essential for vision, skin and other metabolic activities in humans.

THERAPEUTIC PROPERTIES OF *SOLANUM NIGRUM* LEAVES

Solanum nigrum is considered a medicinal plant from being used as a leafy vegetable. This plant has been extensively used in traditional folk medicine to treat various diseases. The extracts of these plants have been reported to contain many polyphenolic compounds which show antioxidant activity. The leaves were shown to inhibit oxidative DNA damage. However, the effect was dependent on the concentration of leaf extracts.

Studies on human cancer cell lines in the laboratory have shown that leaf extract showed a cytotoxic effect on human cancer cells. Thus *S. nigrum* can become a promising cytotoxic agent against the selected cancer cell lines. The diet containing cooked leaves of *S. nigrum* increased the concentrations of essential amino acids and other nutrients in the rats. The study concluded that adding *S. nigrum* to the diet improves the quality and quantity of some nutrients such as vitamin C, β -carotene, protein and amino acids, which probably favour an increase in the activity of liver drug-metabolizing enzymes. *Solanum nigrum* leaves and fruits can treat different types of anaemia and boost the immune system.

CONCLUSION

Exploring the potential of underutilized leafy vegetables is much required for the current scenario. Moving towards traditional food habits increases the usage of underutilized leafy vegetables providing more nutritious food. Apart from that, the medicinal properties help mitigate many diseased conditions at the initial level. *Solanum nigrum* being nutritionally rich, can be added to our daily diet to overcome many nutrient deficiencies and the inclusion of locally grown food provides sustainable nutrition security.

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