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## Leafy Mustard: A Healthy Alternative to Green Vegetables

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### Abstract

Mustard greens are low in calories yet high in fibre and many essential vitamins and minerals. It is rich in important plant compounds and micronutrients, specifically vitamins A, C, and K. As a result, eating them may have benefits for eye and heart health, as well as anticancer and immune-boosting properties. Mustard greens are a versatile leafy green that can add a peppery, bitter flavour to raw or cooked dishes and generally very safe to eat. However, as they're high in vitamin K and contain oxalates, large amounts may trigger side effects in individuals who take blood thinners or have a high risk of oxalate-type kidney stones.

### Introduction

*B* *rassica juncea* var. *rugosa*, often known as a leafy mustard/ laipatta, is a tall, slow-growing mustard with beautiful green leaves that ranges in hue from light green to dark purple. It's a green leafy vegetable native to Central and Eastern Asia that's eaten all across the world, from China to South America. Leafy mustard is grown and supplied mostly in Asian nations such as India, China, and Japan. It is grown in small patches in backyards, agricultural land, and hilly sections of Uttarakhand, as well as Arunachal Pradesh, Nagaland, Meghalaya, Mizoram, and Manipur in the North-eastern states (Pant *et al.*, 2020). Peppery, crispy leafy mustard features broad, soft leaves with high moisture content and a thick, flexible stem that may be used to make saag, and its seed is also used as a pickle and curry spice. Green leaves can be eaten raw or cooked in salads. They are high in a variety of phytonutrients such as vitamin A, B, C, and E, as well as iron, calcium, and protein, and have health-promoting and disease-preventive characteristics (Kumar *et al.*, 2020). Consumers who take green mustard as a vegetable on a regular basis are protected from iron deficiency, osteoporosis, and a variety of cardiovascular disorders. They also aid in the treatment of arthritis, asthma, and nervous system diseases. Its leaves are employed as diuretics, stimulants, and expectorants in a variety of folk remedies to treat a variety of ailments. Leafy mustard is also used to make a fermented pickle product known as 'Gundruk,' which is a well-known and widely enjoyed Nepali meal.

The mustard plant is most recognised for its tiny yellowish seeds, which produce mustard, one of the world's most popular condiments. However, a variety of cultures have used the plant's green leaves for food and health purposes for ages, including a/an:

- antiseptic and disinfectant to heal wounds;
- diuretic to support kidney function;

- detoxifying agent to purify and strengthen the blood;
- treatment for cough and sore throats.

Modern research backs up mustard greens' high nutritional value - they have more vitamin A than spinach and more vitamin C than oranges, according to studies. While studies don't recognise all of the greens' traditional usage, they do imply that they have a variety of health benefits. There are several different types of mustard greens available today, all of which impart a bitter, peppery flavour to any dish. Raw, boiling, steamed, or stir-fried are all options. Mustard greens are simple to incorporate into your diet.



Figure 1: Leafy Mustard

## Health Benefits

**M**ustard greens are high in vitamins and minerals that your body requires for good health. One serving provides nearly half of your daily vitamin C requirements. Vitamin C helps your body's immune system defend itself, so make sure you get plenty of it throughout the day. Cooked mustard greens can provide up to 100% of your daily vitamin A needs. Many physiological processes, including heart, lung, and kidney health, are supported by this vitamin.

The nutrients in mustard greens may support other health benefits like stated below.

### Lower Risk of Chronic Disease

**M**ustard greens are high in a variety of phytonutrients. These plant-based antioxidants protect your cells from the stress and damage produced by free radicals that build up in our bodies as a result of ageing, exposure to the environment, and lifestyle choices. Cell damage has been related to arthritis, immunological illnesses, cardiac difficulties, and cognitive impairment over time. Antioxidant activity has been shown in studies to improve immune defence and lessen the risk of numerous chronic diseases.

Mustard greens, like other cruciferous vegetables, contain glucosinolates, which give the plant its bitter flavour.

Glucosinolates may combat cancer cells and inhibit tumour growth, in addition to their antioxidant action, according to studies, although more research is needed to fully understand their effects.

### Support Good Heart Function

**S**tudies demonstrate that eating green leafy vegetables like mustard greens on a daily basis lowers your risk of heart disease. They also contain elements that help lower cholesterol levels, which is especially effective when the greens are cooked, and keep your arteries clear of plaque formation, which can contribute to heart disease and stroke. A serving of mustard greens also has enough vitamin K to last an entire day. This vitamin aids in blood clotting and cardiac function.

### Better Bones

**V**itamin K helps keep your bones strong in addition to its involvement in heart health. Vitamin K deficiency might increase the risk of osteoporosis and bone mineral abnormalities. According to research, consuming enough vitamin K in your diet can help you build stronger bones and prevent fractures. It also aids in the prevention of complications connected with osteoporosis, including as calcium build-up in the arteries, which causes them to stiffen.

### Eye Health

**M**ustard greens have lutein and zeaxanthin in their antioxidant profile. These two nutrients are critical for keeping healthy eyes and may help reduce age-related vision loss, according to research.

### Brain Function

**W**hile further research is needed, studies show that lutein may help brain tissue. This effect may contribute to improved cognitive function as well as a lower risk of mental deterioration.

### Nutrition

**M**ustard greens are high in antioxidants like beta carotene, which helps preserve your skin and reduce diabetes risk factors. Several B vitamins, including thiamine (B1), niacin (B3) and pyridoxine (B6) are abundant in the greens (B6).

A serving also offers high amounts of:

- Vitamin K
- Vitamin C
- Vitamin A
- Calcium
- Potassium

**Nutrients per Serving:** One cup of raw mustard greens contains-

- Energy: 33 kcal

- Protein: 3 g
- Fat: 0 g
- Carbohydrates: 6 g
- Fibre: 4 g
- Sugar: 0 g

### Portion Sizes

According to the USDA (2000), one should consume at least 18-21 cups of veggies every week. Dark green veggies like mustard greens should account for at least 1.5-2 cups of this total. Because mustard greens are strong in vitamin K, those on blood thinners should consult their doctor before incorporating them into their diet to ensure that their portions do not interact with the prescription. Oxalates, which are abundant in leafy greens, may increase the risk of kidney stones in persons with kidney disease (Santos *et al.*, 2012).

### How to Prepare Mustard Greens?

You can find different mustard greens at the grocery store, including red, purple, and many green varieties. In the vegetable markets, the three most popular mustard plants are:

- Curly-leafed mustard greens that resemble kale and have a spicy but subtle flavour.
- Flat-leafed mustard greens ranging from mild to zesty tastes.
- Mustard spinach that has a smooth, bitter taste like spinach.

You can eat mustard greens raw or cooked, but how you prepare them may alter the vegetable's nutritional content. Cooked mustard greens have higher levels of vitamin K, vitamin A, and copper, but the amount of vitamin C and E is reduced.

Add these leafy greens to your diet by:

- Mixing mustard greens into a chopped salad.
- Blending them into a smoothie.

- Adding them to soups and stews.
- Stir-frying the greens with a healthy fat and an acid like lemon juice to balance the taste.
- Roast mustard greens seasoned with garlic and spices as a side dish.
- Pickling the greens with sugar, vinegar, and salt.

### Conclusion

Mustard greens are rich in important plant compounds and micronutrients, specifically vitamins A, C, and K. As a result, eating them may have benefits for eye and heart health, as well as anticancer and immune-boosting properties.

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