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*Review Article*

# A Review Paper on Benefits of Murraya Koenigii Plant in Covid-19 Pandemic

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**Abstract**

The most important agricultural products produced are spices and herbs. Botanicals are used to add flavor to foods all over the world. These priceless natural gifts are used sparingly and include a wide range of active ingredients. Chemical compounds give them their distinct aroma, color, and flavor. Spices add spice to meals, make them more appealing, and encourage people to eat more. Spices are also known for their antimicrobial, antioxidant, appetizing, and digestive properties. Among several spices, a leafy spice named as *Murraya Koenigi* (curry leaves) is found to be one of the most beneficial plant in this pandemic times of covid-19 due to its medicinal and other important characteristics. Curry leaf is a perennial leafy vegetable. It is called '*Murraya*' After Gottingen Botany Professor Johann Andreas Murray (1740-1791) and his student Johann Gerhard Konig (1728-1785), a German botanist. Traditional medical literature defines it as home remedy as it is used for treatment of various diseases, such as Rheumatoid arthritis, cancer, and traumatic injuries. Organic compounds, such as essential oil, coumarins, and flavonoids, are the primary focus of research on curry leaves in the scientific literature. Plant polyphenols, according to Levy et al, it can be used as therapy of SARS-CoV-2 as an assistance infection which Inhibits the growth of harmful bacteria in the gut and helps to keep blood sugar levels in check. In curry leaves Polyphenols, terpenes, saponins, chlorophyll, and carotene are abundant in quantity, And further Spices like turmeric and cumin have long been utilised in Indian and other Asian countries, For the treatment of Covid-19 illness, both chlorhexidine and curry-leaf mouthwash are equally beneficial. Thus, in this review paper, the benefits of curry leaves are studied using different literature surveys and further analyzed their importance in reducing the impacts of covid-19 disease.

**Keywords:** Covid 19 treatment, Pandemic, *Murraya koenigii*.

## INTRODUCTION

The World Health Organization (WHO) announced in a press statement on February 11th, 2020, that "COVID19" has been identified as a new virus. In accordance with previously established guidelines with the OIE and UN Food and Agriculture Organization (FAO), the new illness has been named (FAO) (Atta-Ur-Rahman & Firdous, 1988; WHO, 2020). Although the international community has already seen the emergence of novel coronavirus–associated respiratory diseases on an emergency basis. This pandemic has shown disastrous effects on wider population all over the world. Several vaccines had been developed in order to reduce its harmful impacts, in this direction, we are blessed with several important herbs and spices, rich in nutrients and anti-oxidants that can be used to cure or reduce these diseases. One of those plants is Murraya koenigii Spreng, commonly known as curry leaves, these leaves are used commonly in households for preparing different food items. But beyond increasing taste to food items, these curry leaves can be used in this pandemic times to cure disease due to their medicinal characteristics (Ayala-Zavala et al., 2008).

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A member of the Rutaceae family known as "Surabhinimba" in Sanskrit, Murraya koenigii Spreng is native to the Himalayas. Karivempu, "Barsunga," and "Kurrypatte" are just a few of the names given to curry leaves by various ethnic groups. In India, there are just two of the fourteen Murraya species: Murraya koenigii Spreng and Murraya paniculata (Linn). The Rutaceae family, which includes Murraya koenigii Spreng, has about 150 subspecies and 1600 species. Among the chemical components that give fragrance to this plant are Gurjunene, P- caryophyllene, P-elemene and O- phellan drene (Bailey & Day, 1989).

Preventing food from spoiling can be accomplished through the use of one or more of the following compounds: pinene, caryophyllene, phenylenediamine, and phellandrene. In the opinion of the reviewer, the taste of the three morphotypes of Murraya koenigii varies in intensity. In terms of growth speed and leaf colour, Murraya koenigii regular is the fastest-growing and most appealing variety. Because of its smaller stature and lighter green foliage, dwarf varieties often have a bushier appearance than their larger counterparts. They also have their own distinct aroma. In terms of scent, the brown type is by far the strongest, with the smallest and thickest leaves, and a dark brown colour. It's around 2.5 metres tall and has dark green to brownish stems. *Murraya koenigii* is a little spreading shrub. Peeling the bark longitudinally reveals the white wood underneath. The primary stem has a 16-centimeter diameter. The reticulate venation on the leaves, which are around 30 cm long, gives them their name. Each leaflet has a total of 24 individual leaflets. The white funnel-shaped blossom has a heavenly smell. In addition to being easy to grow, the curry leaf plant is also fully safe to consume. Because it's easy to make at home, it's a great mouthwash alternative. As a result, plant compounds can help inhibit the spread of coronavirus.

## Analysis on *Murraya koenigii*

*Murraya koenigii,* a tiny tree or shrub with a fragrant pubescence, is native to Japan and China, It is also known as curry leaf. A ubiquitous understory shrub in the jungles of India and the Andaman Islands. From the Tarai region of Uttar Pradesh, it has expanded to the Himalayas in Uttarakhand, Bengal, the Western Ghats in Karnataka, and the Kerala highlands in Tamilnadu, Maharastra, and Karnataka. According to Joshi et al., 1964, it is currently extensively available in these regions. As far as I know, it's grown in every home in southern India that has a yard—and that includes Burma, China, Ceylon, and Australia Anonymous (1962), Banureka & Mahendran, 2011; Dadali et al., 2008; Dahanukar et al., 2000; Gahlawat et al., 2014; Kumar et al., 2013. Seeds can easily germinate in fertile soil with enough shade. The aromatic leaves of *Murraya koenigii* are a popular ingredient in Indian cuisine (Grover et al., 2002). The plant is indicated as a dietary supplement (Grover et al., 2003; Gruenwald, 2004; Halliwell & Gutteridge, 1990; Hamada et al., 2003). Traditional medical literature describes it as a source of numerous vitamins and a home cure for a variety of human ailments, including diabetes, cancer, influenza, rheumatism, and severe damage (Levy et al., 2020). The organic elements of curry leaves, such as essential oil, coumarins, terpenoids, and carbazole alkaloids, are the focus of the majority of published study (Meiller et al., 2005). Phytochemical studies have identified carbazole alkaloids from this plant's leaves, stem bark, and roots (Joshi et al., 1964; Anupam et al., 2010). Using mouthwashes has been shown in a study by *Vergara-Buenaventura and Castro-Ruiz* to help reduceoral-cavity bacteria, for the reduction of the SARS-CoV-2 virus, they recommended oral as well as throat gargling for 30 seconds each, Cross-infection dangers in a pandemic. Listerine®, an antiseptic mouthwash with phenolic compounds, has been shown to reduce oral viral infection for up to 30 minutes after use (Perl & Price, 2020; Saini & Reddy, 2015). Polyphenols, terpenes, saponins, chlorophyll, and beta-carotene are abundant in curry leaves (Murraya koenigii L. Spreng) (ChV & Meera, 2013; Halliwell & Gutteridge, 1990). They have long been used in food preparation in India and other neighboring countries because of their aromatic qualities. Curry-leaf mouthwash is just as effective as chlorhexidine at treating Covid-19 illness (Vergara-Buenaventura & Castro-Ruiz, 2020). The curry leaf plant is simple to grow and is completely healthy. It is cost-effective.

## Properties

### Nutritional Properties (Table 1)

**Phytochemistry properties:** All of these nutrients are found in the leaves of *Murrya koenigii;* they also include oxalic and citric acids, as well as proteins and carbohydrates. Crystalline glycosides, carbazole - alkaloids, iso-mahanimbin, koenine, koenidine, and koenimbine are all found in this plant. The leaves also contain triterpenoid alkaloids cyclomahanimbine and tetrahydromahanimbine. Chemicals including murrayastine, murrayaline, pyrayafolinecarbazole alkaloids, and many more have been found in the leaves.

There are numerous carbazole alkaloids in the plant's bark, including murrayacine, murrayazolidine, murrayazoline, mahanimbine, girinimbine.

**Table 1**. Nutritional profile of curry leaves [2].

| **Energy** | **423 kcal** |
|---|---|
| Protein | 14g |
| Carbohydrate | 54g |
| Fat | 15g |
| Cholesterol | nil |
| Vitamin A | 30mg |
| Vitamin C | 8mg |
| Calcium | 626mg |
| Iron | 32mg |

Most fruits include 64.9 percent water, 9.76 percent total sugar, 9.58 percent reducing sugar, and a small bit of tannin & acids, as well as 13.35 percent Vitamin C in their pulps.

Trace minerals are also present, including 1.97 percent of the mineral phosphorus, 0.08 percent of potassium, 0.81 percent of calcium, 0.166 percent of magnesium, and only 0.007 percent of the mineral iron.

### Pharmacological Properties

**Antioxidant:** *Murrya koenigii* (2691 micromol of ascorbic acid/gm sample) had the highest overall antioxidant activity among the green leafy vegetables compared to Amaranthus sp., Centellaasiatica, and Trigonellafoenumgraecum extracts. The aqueous extracts, according to research done by Mitra et al. in 2012, as cadmium is present in the environment or in the workplace, the antioxidant properties of *Murrya Koenigii* may be useful.

**Antimicrobial and antifungal activity:** *Murraya koenigii* showed significant antibacterial activity against *Staphylococcus aureus and Staphylococcus spp.* Root of the plant showed strong antimicrobial activity. Antifungal activity is shown by leaves of the plant. Due to antimicrobial property it is used to treat skin infection.

**Anti-Inflammatory activity**: *Murraya koenigii* leaves also show antitrichomonal activity against Trichomonasgallinae. A possible mechanism for Enhanced Emergency Medical Kits (EEMK)' anti-inflammatory action has been proposed as mast cell stabilization as well as antihistaminic effects (Priyanka Gupta et al., 2011).

### Benefits of Plant & its Derivatives (Figure 1)

1. Stops diarrhea
2. Fights against cancer
3. Good for hair growth
4. Beneficial for eye sight
5. Helps for liver protection
6. Lowers cholesterol levels
7. Cures gastrointestinal issues
8. Rich in antioxidant properties

**Figure 1.** Benefits of curry leaves [9].

## CONCLUSION

This review paper studies about the benefits of curry leaves during the covid-19 pandemic times. This paper gives brief idea about different important properties of curry leaves other than using them to add taste in food items. They can be used for different medical purposes due to their chemical and physical properties. Research works of various researchers are studied regarding its benefits and it is found that these leaves are economical as well as plays a vital role in improving health of people and protecting them from hazardous impact of covid19 pandemic.

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