



Exploring Edible Flowers: A Journey from Garden to Plate

Dr. Suman Gupta

*Assistant Professor, Department of Botany, Kashi Naresh Govt. P.G. College,
Gyanpur, Bhadohi, Uttar Pradesh, India*

INTRODUCTION:

Since ancient times, the consumption of edible flowers has been well-documented across various cultures, from ancient Greece and Rome to Europe, Victorian England, the Middle East and Asian nations such as China and Japan, where their use has been recorded for millennia (Gupta *et al.*). Today, globalization and increased consumer awareness have contributed to a revival of traditional lifestyles, wherein edible flowers play a significant role. These plant parts represent a rich natural resource, with many containing phytochemicals that are believed to offer health benefits, garnering growing interest. Historically, edible flowers have been utilized in folk medicine for treating ailments, and recent studies have validated these traditional health claims. Additionally, research has focused on assessing the safety of commonly consumed edible flowers to ensure their safe usage and appropriate dosages across various industries (Koike *et al.*, 2015).

There are many edible flower species in the world, but very few have been fully investigated. Therefore, in order to increase their acceptability as food ingredients and reduce any potential hazards, more thorough research on this natural resource is necessary. Flowers must be non-toxic and have nutritional value in order to be considered edible, however not all flowers meet these requirements. Certain species possess anti-nutritional or toxic substances such as alkaloids, cyanogenic glycosides, oxalic acid, hemagglutinins, and trypsin inhibitors.

These flowers must therefore be regarded as inedible and kept out of the human diet. Edible flowers, as their name implies, are blossoms that can be safely ingested, and they have been cherished throughout history. The enticing

colors, exotic fragrances, and delectable flavors of edible flowers make them readily accessible for various purposes. Edible flowers have captivated attention across the globe, and their usage dates back to ancient civilizations like Greece and Rome, persisting and evolving even in modern times. These versatile botanical wonders can serve a wide range of culinary purposes. Edible flowers can be consumed directly, integrated into dishes, or simply used as eye-catching garnishes thanks to their diverse and appealing colors. Today, the utilization of edible flowers in cuisine and beverages has surged in popularity, especially as the global population seeks healthier dietary options to bolster their immunity during a global pandemic. In addition to their applications in food, edible flowers have found a place in non culinary domains. They serve as essential raw materials for producing fragrances, natural dyes, and cosmetic products, demonstrating their significance beyond the kitchen. The growing interest in edible flowers is motivated not only by decorative and nutraceutical objectives, but also by the desire for new flavors and new opportunities for gastronomic innovation. The considerable nutraceutical activity in terms of antioxidant power of flowers (Falla *et al.*,) derives from their richness in generic phenolic compounds. flavonoids, consisting of flavonols, flavones, and anthocyanins show a strong biological activity. These chemicals play a crucial role in mitigating the oxidative stress induced by various pathologies. flowers are particularly rich in these phytochemicals. Almost all ornamental flowers have evolved chromatically showy corollas as a strategy to attract pollinators [mainly bees, solitary bees, bumblebees, hoverfly (Diptera;Syrphidae), bee fly (Diptera;Bombyliidae), and butterfly], since they are responsible for the gene flow within each species.

Table 1: Some Edible Flowers with Their Uses

Common Name	Botanical Name	Uses
Pot marigold	<i>Calendula officinalis</i>	The petals are for edible decorative purposes; an alternative for saffron.
Tea Plant	<i>Camellia sinensis</i>	As vegetables in the meal.
Butterfly Pea	<i>Clitoria ternatea</i>	The petal used as a colorants.
Rose	<i>Rosa chinensis</i>	In fruit preserves and infusions.
Garden nasturtium	<i>Tropaeolum majus</i>	Ingredient in salad, drinks, and meals.
Jasmine	<i>Jasminum sambac</i>	In infusions and porridge
Roselle	<i>Hibiscus sabdariffa</i>	Ingredient in jams, fermented drinks, herbal drinks, cakes, chocolates, etc.
Bauhinia	<i>Bauhinia variegata</i>	Flowers and buds as vegetables and pickles.
Red silk cotton	<i>Bombax ceiba</i>	Buds and flowers are cooked and pickled.
Palash	<i>Butea monosperma</i>	Flowers are used along with milk with sugar to make coolant drink.
Butter tree	<i>Madhuca longifolia</i>	Eaten raw, and used in local drinks. Sun-dried flowers are used as a sweetener.

NUTRITIONAL COMPOSITION OF EDIBLE FLOWERS:

The considerable nutraceutical activity in terms of antioxidant power of flowers derives from their richness in generic phenolic compounds. With their abundance of vital nutrients, bioactive substances, and phytochemicals that support a balanced diet and offer a variety of practical advantages, edible flowers are becoming more widely acknowledged for their nutritional and health-promoting qualities. Although there are many species-specific differences in the proximate composition of edible flowers, there are a few common patterns. The protein content of edible flowers can vary from 2% to 23%, depending on the species and growth-promoting environmental variables. They are also a rich source of dietary fiber. While soluble sugars, which are made up of total or reducing sugars, are found in proportions greater than 15%, the lipid content is often less than 10%. These sugars add to the flavor and sweetness. profile of

specific flowers. Total dietary fiber (TDF) levels range from 17.2% to 75.9%, whilst crude fiber (CF) content varies from 0.4% to 20.5%. Because they contain low-calorie, non-digestible compounds like polysaccharides and oligosaccharides (such as cellulose, lignin, pectin, mucilage, and gums), TDF values are typically more than 50% higher than CF values (Fernandes *et al.*, 2020). Carbohydrates are one of the most abundant compounds in edible flowers, with reported values exceeding 90 g/100 g of dry weight (d.w) in species such as *Rosa* spp. or 80 g/100 g in *Hibiscus acetosella*. The total carbohydrate content can vary from 3.3 to 90.0% depending on the flower species.

HEALTH BENEFITS OF EDIBLE FLOWERS:

Edible flowers' antioxidant, anti-proliferative, anti-diabetic, anti-obesity, and cardio-protective qualities are the primary health advantages of including them in diets. Edible flowers' antioxidant, anti-proliferative, anti-diabetic, anti-obesity, and cardio-protective qualities are the primary health advantages of including them in diets. These substances can strengthen anti-inflammatory effects, boost immunological function, and lower the risk of chronic diseases by shielding the body from oxidative stress. The anti-bacterial, anti-diabetic, and anti-carcinogenic qualities of flowers are also frequently beneficial. Compounds such polysaccharides, lignans, phenolic glycosides, and saponins may have antioxidant, anti-cancer, neuroprotective, hepatoprotective, and anti-diabetic properties. Edible flowers like rose and lavender have anti-inflammatory and antioxidant properties, promoting healthy skin and reducing inflammation. Hibiscus flowers have been shown to help lower blood pressure and cholesterol levels, reducing cardiovascular risk. Flowers like marigold and nasturtium contain lutein and zeaxanthin, which promote eye health and reduce the risk of age-related macular degeneration.

Calendula (*Calendula officinalis*): *Calendula officinalis*, commonly known as pot marigold, is a versatile and beloved herbaceous plant celebrated for its vibrant golden or orange blossoms. Native to Southern Europe, this annual or perennial herb belongs to the Asteraceae family (de Lima Franzen *et al.*, 2017). The petals of this vibrant blossom add both color and flavor to a range of dishes.

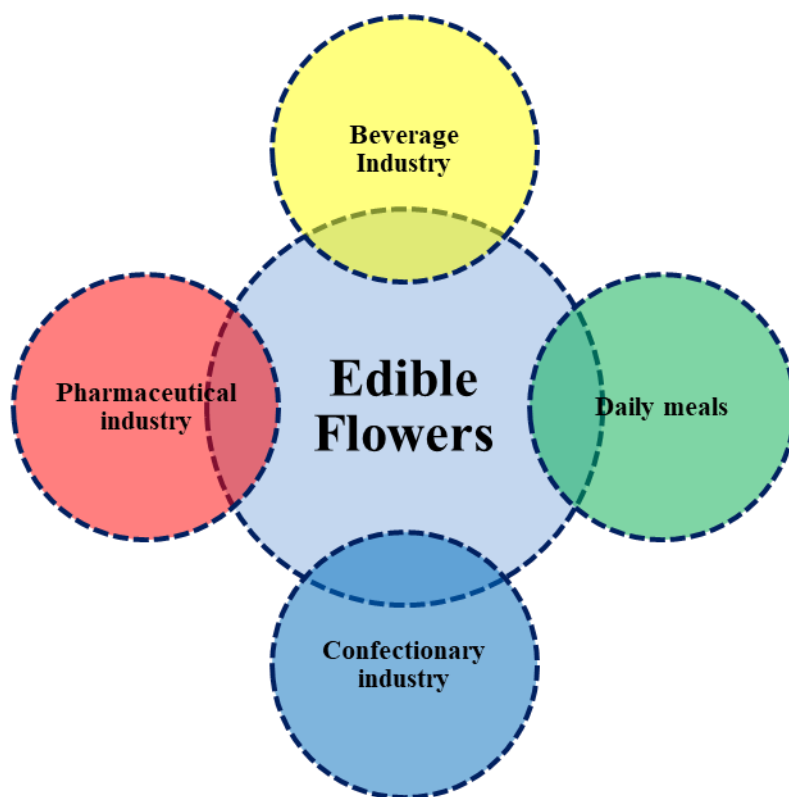
Sprinkle fresh Calendula petals on salads to add a burst of color and a mildly peppery taste. They pair well with mixed greens, tomatoes and cucumber.

Rose (*Rosa* spp.): Roses (*Rosa* spp.) stand as timeless symbols of beauty, love, and grace in gardens around the world. This diverse genus encompasses a multitude of species, each boasting its unique charm and characteristics. Typically, deciduous shrubs, roses are known for their thorny stems, pinnate leaves and of course, their exquisite and fragrant flowers. The blooms, with their wide range of colors and captivating fragrances have transcended mere ornamentation to become integral players in various cultural, romantic, and culinary contexts. Beyond their visual and symbolic appeal, certain species of roses, particularly heirloom varieties, offer edible petals that open a realm of culinary possibilities. Whether infused in syrups, used in jams, or simply adorning salads and desserts, the petals of *Rosa* spp. showcase the multifaceted nature of this beloved plant, making it a perennial favorite not only in the garden, but also at the dining table (Nowak *et al.*, 2014). Extract rosewater by steeping fresh rose petals in water. This aromatic liquid can be used to flavor beverages like lemonades, teas, or cocktails. Preserve the beauty of rose petals by candying them. Dip the petals in egg whites and sugar, allowing them to dry for an elegant and edible decoration for cakes and pastries. Important minerals can also be found in edible flowers. Calcium (Ca), sodium (Na), and potassium (K) are the primary macroelements found in flowers; iron (Fe), manganese (Mn), and zinc (Zn) are the microelements. Other minerals that are frequently measured are copper (Cu), magnesium (Mg), and phosphorus (P). Although concentrations vary by species, flowers typically contain significant levels of calcium. For example, *Cucurbita pepo* has values of 74 mg/100 g, while *Fuchsia regia* has values of 9050 mg/100 g (Marchioni *et al.*).

Hibiscus (*Hibiscus rosa-sinensis*): *Hibiscus rosa-sinensis*, commonly known as the Chinese hibiscus or shoeblack plant, is a tropical and evergreen shrub that has captured hearts with its dazzling, trumpet-shaped flowers (Shruthi *et al.*, 2016). Native to East Asia, this plant is renowned for its ornamental beauty and cultural significance in various regions. Making a cool herbal tea with hibiscus blossoms is one of the most common applications.

In certain cultures, it is also referred to as "hibiscus tea" or "sorrel." It can be consumed hot or cold and can be sweetened with honey or other natural sweeteners. Toss fresh hibiscus flowers into coleslaw, fruit salads, or mixed greens to add a pop of color and a tart touch.

Marigold (*Tagetes* spp.): The Marigold plant, belonging to the *Tagetes* genus, is a dazzling and versatile annual that has established itself as a garden favorite worldwide. With a distinctive and somewhat citrusy scent, Marigold flowers are known to be edible, bringing a unique flavor to salads, teas and various culinary creations. Beyond their ornamental and culinary applications, Marigolds are celebrated for their ability to repel certain pests in gardens, making them a popular companion plant. Add fresh marigold petals to salads to add a splash of color and a tart, somewhat lemony taste. They go nicely with other salad items including mixed greens. Add finely cut petals to softened butter. You may use this butter with flowers to give bread, spaghetti, or steamed veggies a special taste. Candy marigold petals to preserve them. To add a sweet and artistic touch to delicacies, dip the petals in sugar syrup and allow them to dry.



CONCLUSION:

Depending on the kind eaten, edible flowers can offer a range of nutrients. Numerous edible flowers are high in vitamins, including vitamin A, which is necessary for healthy skin and eyes, and vitamin C, which boosts immunity and functions as an antioxidant. *Viola arvensis* Murray, *Hibiscus rosa-sinensis*, *Matricaria chamomilla*, *Tagetes* spp., *Rosa* spp., *Viola odorata*, and *Borago officinalis* are notable examples of edible flowers, each of which offers distinct tastes, scents, and nutritional advantages. The abundance of vitamins, minerals, antioxidants, and other bioactive compounds in these blooms contributes to their capacity to improve health. Evaluating precise values for each flower species' edibility will be crucial in the future.

REFERENCES:

1. EFSA Panel on Dietetic Products, Nutrition and Allergies. (2012). **Scientific opinion on the safety of botanicals and botanical preparations intended for use as ingredients in food supplements.** *EFSA Journal*, 10(5), 2663.
2. Fernandes, L., Casal, S., Pereira, J. A., & Saraiva, J. A. (2017). **Edible flowers: A review of the nutritional, antioxidant, antimicrobial properties and effects on human health.** *Journal of Food Composition and Analysis*, 60, 38–50. <https://doi.org/10.1016/j.jfca.2017.03.017>
3. Koike, A., Barreira, J. C., Barros, L., Santos-Buelga, C., Villavicencio, A. L., & Ferreira, I. C. (2015). Irradiation as a novel approach to improve quality of *Tropaeolum majus* L. flowers: Benefits in phenolic profiles and antioxidant activity. *Innovative Food Science & Emerging Technologies*, 30, 138-144.
4. Loizzo, M. R., Pugliese, A., Bonesi, M., Tenuta, M. C., Menichini, F., Xiao, J., & Tundis, R. (2016). **Edible flowers: A rich source of phytochemicals with antioxidant and hypoglycemic properties.** *Journal of Agricultural and Food Chemistry*, 64(12), 2467–2474. <https://doi.org/10.1021/acs.jafc.5b03092>
5. McGee, H. (2004). **On Food and Cooking: The Science and Lore of the Kitchen.** Scribner, New York. *(Includes discussion on traditional culinary uses of flowers and plant-based ingredients)*
6. Nowak, R., Olech, M., Pecio, Ł., Oleszek, W., Los, R., Malm, A., & Rzymowska, J. (2014). Cytotoxic, antioxidant, antimicrobial properties and

chemical composition of rose petals. *Journal of the Science of Food and Agriculture*, 94(3), 560-567.

7. Shruthi, V. H., Ramachandra, C. T., Udaykumar Nidoni, U. N., Sharanagouda Hiregoudar, S. H., Nagaraj Naik, N. N., & Kurubar, A. R. (2016). Roselle (*Hibiscus sabdariffa* L.) as a source of natural colour: a review.

