



Petals with a Purpose: Exploring the World of Edible Flowers

*Poojitha S. R.¹, Suneel Subray Hegde² and T Harisha³

¹Division of Flower and Medicinal Crops, ICAR-Indian Institute of Horticultural Research, Bengaluru, Karnataka, India

²Ph.D. Scholar, Division of Post Harvest Technology and Agricultural Engineering, ICAR-Indian Institute of Horticultural Research, Bengaluru, Karnataka, India

³ICAR-Indian Institute of Rice Research (IIRR), Hyderabad, Telangana, India

*Corresponding Author's email: poojithasr1018@gmail.com

Edible flowers are gaining renewed attention within the food industry and academic research for their unique organoleptic properties and rich profile of bioactive compounds. Historically, they have been used in traditional medicinal systems and regional cuisines across Asia, the Mediterranean, and Central America. With growing consumer interest in natural food additives and functional ingredients, edible flowers represent a promising but underexplored domain for both nutrition and gastronomy. However, scientific validation of their nutritional properties, functional potential, and safety remains essential (Fernandes *et al.*, 2020).

Botanical Diversity of Edible Flowers

A wide range of botanical species produce edible flowers, with notable examples from the families Asteraceae (e.g., *Calendula officinalis*), Brassicaceae (e.g., *Tropaeolum majus*), Lamiaceae (e.g., *Lavandula angustifolia*), and Boraginaceae (e.g., *Borago officinalis*). Accurate taxonomic identification is critical, as some visually similar species—such as *Datura spp.* or *Digitalis spp.*—are toxic and unsuitable for human consumption (Fernandes *et al.*, 2020).

Table 1. Common Edible Flowers: Botanical Details and Edible Parts

Botanical Name	Common Name	Family	Edible Part
<i>Tropaeolum majus</i>	Nasturtium	Tropaeolaceae	Flowers, leaves
<i>Borago officinalis</i>	Borage	Boraginaceae	Flowers
<i>Lavandula angustifolia</i>	Lavender	Lamiaceae	Flowers
<i>Calendula officinalis</i>	Calendula	Asteraceae	Petals
<i>Rosa spp.</i>	Rose	Rosaceae	Petals
<i>Hibiscus rosa-sinensis</i>	Hibiscus	Malvaceae	Petals

Phytochemical Composition and Nutritional Value

Edible flowers contain a diverse array of bioactive compounds—including flavonoids, carotenoids, polyphenols, essential oils, and anthocyanins—that contribute to their vibrant coloration, aromatic properties, and antioxidant potential, while also offering a nutrient-dense, low-calorie profile enriched with vitamins and minerals (Carboni *et al.*, 2025).

- **Phenolic Compounds:** Flowers such as *Hibiscus sabdariffa* are rich in anthocyanins and flavanols with strong free radical scavenging capacity.
- **Carotenoids:** Present in flowers like calendula and marigold, carotenoids such as lutein and zeaxanthin support ocular health.
- **Essential Oils:** *Lavandula angustifolia* produces compounds such as linalool and linalyl acetate, known for their sedative and antimicrobial effects.

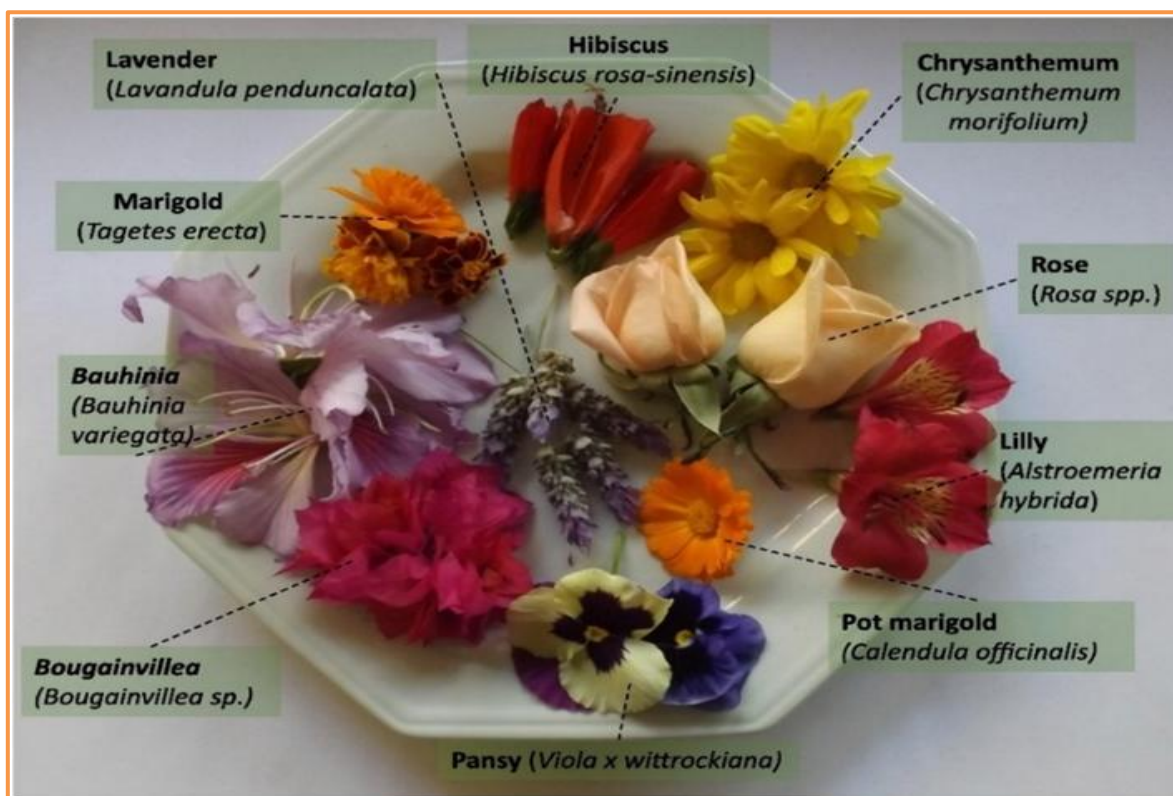


Fig. 1. Some edible flowers and their respective common and scientific names (Takahashi et al., 2020)

Table 2: Selected Edible Flowers and Their Health Effects

Scientific Name	Potential Health Benefits
<i>Hibiscus sabdariffa</i>	Anti-obesity, antioxidant
<i>Allium schoenoprasum</i>	Anti-proliferative
<i>Bougainvillea glabra</i>	Anti-obesity, cardioprotective, anti-carcinogenic
<i>Calendula officinalis</i>	Neuroprotective, anti-bacterial (e.g., against <i>Klebsiella pneumoniae</i>)
<i>Chrysanthemum</i> spp.	Anti-carcinogenic
<i>Clitoria ternatea</i>	Antidiabetic, anti-hemolysis

Culinary and Functional Applications

Edible flowers serve both aesthetic and functional roles in food systems. They are used as flavoring agents, color enhancers, and natural preservatives. Flowers are incorporated into salads, teas, confections, syrups, and fermented beverages. For instance, rose petals are prominent in Persian cuisine, while lavender is used in traditional French pastries and infusions.

Owing to their antioxidant and antimicrobial activity, flower extracts are being explored in the formulation of nutraceuticals and functional foods, including baked goods, beverages, and dietary supplements (Prabawati et al., 2021).

Safety Considerations and Toxicity Risks

Despite their potential, the use of edible flowers requires rigorous attention to safety:

- **Toxicity:** Flowers such as *Nerium oleander*, *Aconitum* spp., and *Atropa belladonna* are highly toxic and must never be consumed.
- **Chemical Contamination:** Flowers cultivated for ornamental purposes and treated with pesticides pose significant health risks if ingested.
- **Allergenicity:** Some individuals may experience allergic reactions due to pollen or specific plant proteins.

Regulatory guidance remains limited. Agencies such as the European Food Safety Authority (EFSA) and the U.S. Food and Drug Administration (FDA) have not published

comprehensive safety lists for edible flowers, underscoring the importance of consumer education and sourcing from reputable suppliers (Matyjaszczyk and Śmiechowska, 2019).

Conclusion

Edible flowers provide a unique intersection of aesthetics, flavor, and bioactivity, making them valuable in modern diets. Their phytochemical diversity contributes to antioxidant, antimicrobial, and potential therapeutic properties. However, proper identification, safe cultivation, and regulatory oversight are essential to ensure their responsible use in food systems. Continued scientific research is needed to validate their health benefits and expand their applications in functional foods and nutraceuticals.

References

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