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A CRITICAL REVIEW ON BLOOMS FOR HEALTH: EXPLORING THE VALUE ADDITION OF EDIBLE FLOWERS

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ABSTRACT

The popularity of incorporating edible flowers into culinary creations has surged in recent years, driven by their aesthetic appeal and potential health benefits. These delicate blossoms are rich in essential nutrients, including vitamins, minerals, and antioxidants, contributing to overall well-being. Edible flowers and versatile culinary applications, adding flavour, colour, and texture to a wide range of dishes from salads and desserts to beverages and garnishes. This paper explores the value addition of edible flowers, highlighting their role in enhancing both the aesthetic appeal and nutritional value of dishes. Through an analysis of market trends and consumer demands, it underscores their availability through farm shops and specialty stores. Overall, this abstract showcases the emerging trend of utilising edible flowers for both health and culinary purposes.

Keywords: Edible Flowers, Nutrients, Health Benefits, Culinary Uses, Market Trend.

I. INTRODUCTION

The Rising Trend of Edible Flowers and Their Nutritional Value

Flowers are the integral part of our culture since ancient times and are mentioned as wonder of nature and symbol of beauty in the literature. They are not only grown for decorative purpose, but also have some nutritive value and biological properties (Chen and Wei, 2017, Grzeszczuk et al., 2018, Lu et al., 2016, Stefaniak and Grzeszczuk, 2019) and used in culinary art for centuries.

Edible flowers have a wide range of culinary applications, from being consumed fresh in salads (e.g., Marigold flowers) to enhancing savoury dishes with meat and fish, enriching soups and drinks like wine and beer, and adding flavour to desserts, sweets, and jellies. They are also utilized as spices and natural dyes. Furthermore, they can be used in various forms such as dried (e.g., infusions, dried rose petals in desserts), powdered (Chen & Wei, 2017), crystallized, or incorporated into foams using techniques from molecular gastronomy (Fernandes et al., 2019).

Edible flowers have been used for culinary and medicinal purposes for centuries (Mulik et al., 2020). The use of flowers in food has been gaining popularity in recent years due to their unique flavours, vibrant colours, and health benefits. Flowers are rich in antioxidants, vitamins, and minerals, making them an attractive ingredient for the food industry (Chamorro et al., 2022).

A Historical Perspective: Culinary Use of Edible Flowers across Different Cultures

Across various cultures, flowers are incorporated into culinary traditions, reflecting unique rituals and festivals. Cultivated globally, flowers contribute to a wide array of food products including jams, candies, cakes, and infusions, valued for their aroma, flavours, colours, chemical composition, and nutritional benefits (Gostin & Waisundara, 2019).

Historically, edible flower petals have served as enduring culinary elements, offering distinct alternatives to traditional seasonings like salt and sugar. Beyond enhancing the flavour of fruits and vegetables, their decorative appeal adds visual allure (Creasy, 2012).

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Throughout Asian history, flowers such as Hemerocallis fulva, commonly known as daylilies, and Dendranthema grandiflora, known as chrysanthemums, have been cherished, with the Nelumbo nucifera flowers symbolizing balanced dietary choices and longevity. Nelumbo nucifera petals were consumed raw or fried, while dried stamens were brewed into tea, as recorded in ancient recipes (Kirker & Newman, 2016). In India, Calendula officinalis, known as pot marigold, petals are sun-dried for both edible and decorative use, while flowers of Tamarindus indica, is utilizing as a culinary ingredient, offering alternatives to saffron (Panda et al., 2019).

In Central Europe, traditional practices include consuming breaded Sambucus nigra, known as European elderberry, flowers and boiling Taraxacum officinale, known as dandelion, flowers with sugar as a honey substitute (Rop et al., 2012).

Table 1: Nutritional Composition of Edible Flowers

Sr No.	Parameter	Scientific Name	Common Name	Family	Amount	References
1.	**Protein (g/100 g)**	Bauhinia variegata	Kanchnar	Fabaceae	10.26±0.01	Suksathan et al., 2021
		Shorea roxburghii	Sal	Dipterocarpaceae	10.20±0.12	Suksathan et al., 2021
		Dianthus chinensis	Dianthus	Caryophyllacea	19.5	Ninama et al., 2024
		Antirrhinum majus	Snapdragon	Plantaginaceae	2.692±0.88	Stefaniak et al., 2019
		Monarda didyma	Beebalm	Lamiaceae	7.817±0.68	Stefaniak et al., 2019
2.	**Carbohydrate (g/100 g)**	Tropaeolum Majus	Nasturium	Tropaeolaceae	74.46±0.12	Hedge & Kumari, 2023
		Matricaria chamomilla	Chamomile	Asteraceae	78.98±0.26	Hedge & Kumari, 2023
		Gmelina arborea	Gamhar, Kashmir Tree	Lamiaceae	68.43±0.54	Suksathan et al., 2021
		Glycyrrhiza glabra	Licorice, Sweetwood	Fabaceae	69.12±0.89	Suksathan et al., 2021
3.	**Vitamin C (mg/ 100 gm)**	Cassia fistula	Indian laburnum	Fabaceae	10.485	Rajgure, 2017
		Telosma pallida	Surkilla	Apocynaceae	1.566	Rajgure, 2017
		Shorea roxburghii	Sal	Dipterocarpaceae	2.92±0.07	Suksathan et al., 2021
		Tropaeolum majus	Nasturium	Tropaeolaceae	100.06±2.33	Hedge & Kumari, 2023
		Targetes erecta	Marigold	Asteraceae	75.05±1.68	Hedge & Kumari, 2023

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		Dianthus chinensis	Dianthus	Caryophyllacea	100	Ninama et al., 2024
		Sesbania grandiflora	Hummingbird	Fabaceae	60	Bhokre et al., 2022
4.	**Antioxidant (DPPH Assay)**	Cucurbita pepo	Pumpkin	Cucurbitaceae	51.65%	Ghosh & Rana, 2021
		Borago officinalis L.	Starflower	Boraginaceae	13.93%	Grzeszczuk et al., 2019
		Calendula officinalis	Pot marigold	Asteraceae	46.4%	Ninama et al., 2024
		Targetes tenuifolia	Signet marigold	Asteraceae	84.95%	Grzeszczuk et al., 2019

Potential Health Benefits: Investigating the Medicinal Properties of Edible Flowers

Edible flowers, along with their extracts and preparations, offer a rich array of phytochemicals, making them promising candidates for potential health benefits. They may possess anti-proliferative and cytotoxic effects against cancer cells, along with neuro-protective and neurotrophic properties (Skrajda-Brdark et al., 2020).

- The Flower of Bauhinia variegata L. exhibits antidiabetic properties attributed to the presence of polyphenols and flavonoids, as well as antioxidant activities due to phenolics (Kumari et al., 2021).
- The Flower of Sambucus nigra L., known as black elder, contains polyphenolic compounds and terpenoids, offering antioxidant, antibacterial, bone protective, pain-relieving and anti-inflammatory properties (Lu et al., 2016).
- The carotenoids and polyphenols in Cucurbita pepo L., or pumpkin, flowers aid in healing, relieving fatigue and thirst, curing colds, easing pain, and addressing health issues like irritable bladder and prostate complaints (Ratnam et al., 2017).
- Cassia siamea Lam, Fabaceae family, flower extract is rich in polyphenols and demonstrates potent antioxidant properties, displaying significant reductions and oxygen scavenging abilities in various contexts such as oxygen, nitrogen oxide, hydrogen peroxide, and proteins (Rana et al., 2021).
- Flowers sourced from the Foeniculum vulgare, commonly known as fennel, offer relief from menstrual discomfort, enhance mental health, suppoer breastfeeding mothers, and exhibit anticancer properties (Anka et al., 2020; Rafieian et al., 2023).
- The flowers of Madhuca indica are renowned for their abundant content of reducing sugar and are commonly utilized as a natural sweetener in various local cuisines (Patel & Naik, 2008).
- Calendula officinalis flower extracts have exhibited antimicrobial properties against both gram-negative and gram-positive bacteria (Efstratiou et al., 2012).

II. THE FUTURE OF EDIBLE FLOWERS

Identifying Promising Research Areas and Opportunities

Since ancient times, plants have served as vital sources of medication. Nowadays, there is an increasing need for plant-derived medicines, health goods, pharmaceauticals, dietary supplements, and cosmetics (Bhokre, 2022) and it includes the development of innovative functional and nutritious foods, as well as reimagining traditional recipes to include floral ingredients (Pires Je et al., 2021).

There's a global demand for tastier cuisine, where edible flowers play a role in enhancing both the appeal and aesthetics of dishes. Fresh, premium flowers for consumption are increasingly popular and available in farm shops or specialty stores (Mlcek & Rop, 2011).

Phenolic compounds in edible flowers are attracting interest as natural alternatives to artificial preservatives and colorants. Caffeoylquinic acids and cyanidin-3-o-glucoside are notable examples, showcasing the potential of edible flowers in both culinary and functional food applications (Baros et al., 2019).

Vitamins and minerals are considered microconstituents within edible flowers. While minerals have garnered significant attention, vitamins remain an area ripe for exploration of vitamins in edible flowers is currently limited, there is growing interest in uncovering their presence, particularly within the petals of certain flowers, hinting at a potential avenue for future investigation (Miguel et al., 2016).

III. CONCLUSION

Harnessing the Health Potential of Edible Flowers for a Sustainable future

Utilizing the health advantages of edible flowers presents a sustainable method for improving the nutritional value and visual appeal of foods. Through understanding the varied benefits and culinary uses of these flowers, we can pave the way for a healthier and more environmentally aware future. Ongoing research and experimentation with edible flowers are essential for fully harnessing their potential in culinary innovations, thus advancing overall wellness and sustainability.

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