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## *Edible flowers: its potential to be used in food development.*

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### **Introduction:**

Edible flowers have been used in culinary practices for centuries in different regions worldwide. These vibrant and fragrant blooms not only add a visual appeal to dishes but also provide a wide array of nutrients that can complement a balanced diet. In this section, the historical use and cultural significance of edible flowers will be explored, emphasizing their contribution to the diversity of traditional cuisines. The edible flowers to human diets can be traced back to ancient times when early civilizations discovered the various uses and benefits of incorporating flowers into their foods. Edible flowers have been valued for their aesthetic appeal, unique flavours, medicinal properties, and nutritional content.:



Fig-1 Flower Salad (<https://www.vegetafull.org/blog/sisterland-salad-with-edible-flowers> )

- **Early Uses:** The consumption of flowers likely began when early humans foraged for edible plants and experimented with different food sources. Evidence suggests that our prehistoric ancestors consumed certain flowers as part of their diet, possibly attracted by their bright colors and alluring scents.
- **Culinary Uses in Ancient Civilizations:** Ancient civilizations, including the Egyptians, Greeks, Romans, and Chinese, were among the first to actively incorporate edible flowers into their cuisines. For instance, the Greeks used violets and roses in their dishes, while the Romans were known to use roses, mallow, and lavender in their meals.
- **Medicinal and Culinary Overlap:** In many ancient cultures, the lines between culinary and medicinal uses of plants, including flowers, were blurred. Flowers were often included in dishes not only for their flavor but also for their perceived health benefits. Early herbalists and healers utilized flowers in medicinal preparations and tonics.
- **Modern Rediscovery:** In recent times, there has been a revival of interest in edible flowers in culinary arts and mixology. Innovative chefs and bartenders incorporate edible flowers in their creations to add visual appeal and unique Flavor profiles to dishes and cocktails.
- **Nutritional and Health Benefits:** Edible flowers contain various nutrients and antioxidants, making them a valuable addition to a balanced diet. Nutrient-rich flowers like nasturtiums, calendula, and dandelions offer vitamins, minerals, and bioactive compounds.
- **Global Popularity:** Edible flowers are now enjoyed worldwide, and their popularity continues to grow. Different cultures have their own traditional uses of edible flowers, and they are readily available in many specialty markets and online shops.

### **History of Edible Flowers:**

The history of edible flowers is fascinating and spans across various cultures and time periods. Humans have been consuming flowers for thousands of years, not only for their aesthetic appeal but also for their flavors, medicinal properties, and nutritional value (Scariot *et.al.*, 2022)



- **Ancient Civilizations:** The use of edible flowers can be traced back to ancient civilizations. In China, for instance, the consumption of edible flowers dates back to the Tang Dynasty (618-907 AD). They were used not only for culinary purposes but also in traditional medicine. Ancient Greeks and Romans also utilized flowers in their cuisine, with notable mentions in the works of Pliny the Elder and Dioscorides.
- **Middle Ages:** During the Middle Ages, flowers were a common ingredient in dishes served at banquets and feasts, especially among the nobility. Flowers such as violets, roses, and lavender were used to add flavors and fragrance to food and beverages. In this period, culinary and medicinal uses of flowers often overlapped.
- **Renaissance Period:** In the Renaissance era, culinary creativity flourished, and the use of edible flowers continued to be prominent. Cookbooks from this time, like "The Opera of Bartolomeo Scappi" (1570), included recipes that featured flowers as ingredients in salads, soups, and desserts.
- **Victorian Era:** The Victorian era saw a surge in the popularity of edible flowers, especially in England. Edible flowers were often used to garnish and decorate cakes, pastries, and salads. During this period, people also began to crystallize flowers in sugar for use as decorative confections.
- **Asian Traditions:** In various Asian cultures, the use of edible flowers has been a longstanding tradition. In Indian cuisine, for example, flowers like hibiscus, marigold, and rose have been used in both Savory and sweet dishes. In Japan, chrysanthemum flowers are known to be used in tea and tempura.
- **Native American and Indigenous Traditions:** Many Native American tribes have a history of incorporating edible flowers into their diets and traditional medicine. Flowers like nasturtium, sunflowers, and elderflowers were commonly used.
- **Modern Revival:** In recent decades, there has been a resurgence in interest in edible flowers among chefs, home cooks, and mixologists. Edible flowers are now commonly used as attractive garnishes in high-end restaurants and are becoming more readily available in specialty markets

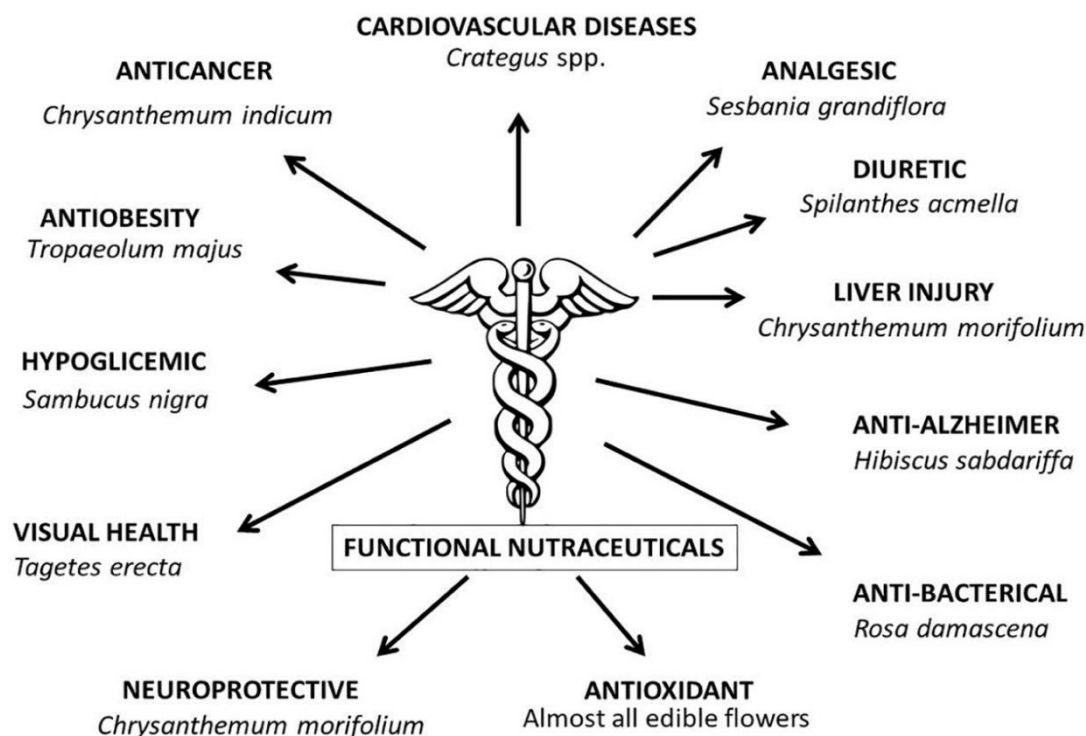


Fig-2 Functional nutraceuticals scientifically proven on human health. (Source: <https://www.frontiersin.org/articles/10.3389/fpls.2020.569499/full> )

#### List of edible Flowers (Jakubczyk *et.al.*, 2022):

- Nasturtium (*Tropaeolum majus*): Flavor: Peppery and slightly spicy Culinary Uses: Nasturtium flowers add a peppery kick to salads, sandwiches, and stir-fries. They can also be stuffed with cream cheese or used as a garnish for various dishes.
- Calendula (*Calendula officinalis*): Flavor: Slightly tangy and herbal Culinary Uses: Calendula petals are often used to add color to soups, salads, and rice dishes. They can also be infused into oils and used in baking.
- Viola (*Viola spp.*): Flavor: Sweet and perfumed Culinary Uses: Viola flowers are great for decorating cakes, pastries, and desserts. They can also be used in salads and candied for a delightful treat.
- Lavender (*Lavandula spp.*): Flavor: Floral and slightly sweet Culinary Uses: Lavender flowers can be used in baking, infused into syrups, or used to flavor honey. They add a unique touch to both sweet and savory dishes.
- Rose (*Rosa spp.*): Flavor: Floral and subtly sweet Culinary Uses: Rose petals are often used to garnish desserts, infused into teas and syrups, and candied for confections.

- Chive Blossoms (*Allium schoenoprasum*): Flavor: Onion-like and mildly garlicky  
Culinary Uses: Chive blossoms can be sprinkled over salads, used to Flavor vinegars or oils, and added to cream cheese or butter for a savory spread.
- Pansy (*Viola x wittrockiana*): Flavor: Mild and slightly grassy  
Culinary Uses: Pansy flowers are often used to decorate cakes, pastries, and salads. They can also be candied or used in frozen desserts.
- Marigold/Calendula (*Tagetes* spp.): Flavor: Slightly bitter and tangy  
Culinary Uses: Marigold petals can be used to add color to soups, rice dishes, and salads. They are also used as a natural food colouring.
- Borage (*Borago officinalis*): Flavor: Cucumber-like and mildly sweet  
Culinary Uses: Borage flowers are often used in salads, cocktails, and frozen desserts. The blue flowers are particularly eye-catching.
- Dandelion (*Taraxacum officinale*): Flavor: Slightly bitter and earthy  
Culinary Uses: Dandelion flowers can be used in salads or brewed into dandelion wine or tea. The young flowers are less bitter and more suitable for consumption.
- Bee Balm (*Monarda didyma*): Flavor: Citrusy and minty  
Culinary Uses: Bee balm flowers can be used in salads, fruit salads, and as a garnish for beverages.
- Chrysanthemum (*Chrysanthemum* spp.): Flavor: Slightly bitter and grassy  
Culinary Uses: Chrysanthemum petals are used in teas, stir-fries, and salads in some Asian cuisines.

### Edible flowers in the food industry

The use of edible flowers in the food industry has gained significant importance and has become a prominent trend for various reasons (Pires *et.al.*, 2021)

- **Aesthetic Appeal:** Edible flowers add a visually stunning and attractive element to dishes. Their vibrant colors, unique shapes, and delicate textures enhance the presentation of foods, making them more appealing to diners. Chefs and food establishments often use edible flowers to elevate the overall dining experience and create Instagram-worthy plates.
- **Novelty and Innovation:** Incorporating edible flowers in dishes and beverages allows chefs to experiment with new flavors and textures, promoting culinary creativity and

innovation. The use of flowers adds an element of surprise and novelty to traditional recipes, enticing customers to try new and exciting dishes.

- **Flavors Enhancement:** Edible flowers contribute distinct flavors to dishes, ranging from subtle and floral to peppery and tangy. They offer a way to enhance the taste profiles of various dishes without the need for artificial additives or flavourings. The natural essence of flowers can elevate the taste of salads, soups, desserts, and even cocktails.

### Edible Flower in pharmaceutical industry

In the pharmaceutical industry, edible flowers are not primarily used as medicinal ingredients but are sometimes utilized for their potential health benefits and nutritional properties. While they are not a replacement for traditional medicines, some edible flowers have been explored for their bioactive compounds and therapeutic potential (Zhang *et.al.*,2023).

- **Traditional Medicine:** In some cultures, certain edible flowers have a history of traditional medicinal use. For example, calendula (*Calendula officinalis*) has been used in traditional medicine for its anti-inflammatory properties and potential wound healing benefits. Chamomile (*Matricaria chamomilla*) flowers have long been used as a herbal remedy for digestive issues and sleep disorders.
- **Phytochemicals and Antioxidants:** Edible flowers, like many other plants, contain various phytochemicals, such as flavonoids, polyphenols, and carotenoids, which possess antioxidant properties. These compounds may help neutralize harmful free radicals in the body, potentially reducing oxidative stress and supporting overall health.
- **Nutritional Value:** Some edible flowers are a good source of essential nutrients like vitamins, minerals, and dietary fiber. For instance, violets (*Viola* spp.) are rich in vitamin C, while elderflowers (*Sambucus* spp.) contain vitamin A and other bioactive compounds.

### Future Perspectives:

As awareness of the nutritional and health benefits of edible flowers grows, this section will discuss potential future directions for research and cultivation. This may include the identification of novel flower species with unique bioactive compounds, sustainable methods

of flower production, and innovations in culinary applications to maximize their nutritional value.

### Conclusion:

The review article will conclude by summarizing the importance of edible flowers in modern cuisine and their potential contribution to human health and well-being. It will emphasize the need for further research and public awareness to promote the sustainable use of edible flowers and integrate them into the everyday diet for a more diverse and nutritious culinary experience.

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