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## PETALS ON YOUR PLATE: A GUIDE TO EDIBLE FLOWERS FOR CULINARY DELIGHTS

B.C. Akhilraj<sup>1\*</sup>, K.T. Sruthy<sup>2</sup>, Lilia Baby<sup>3</sup>, V.K. Jasna<sup>4</sup>, Najitha Ummar<sup>5</sup>, Priya G. Nair<sup>6</sup> and Ibraheem Kutti<sup>7</sup>

<sup>1</sup>SMS Horticulture, ICAR- Krishi Vigyan Kendra, Kerala Agricultural University, Malappuram, Kerala, India.

<sup>2</sup>SMS Agronomy, ICAR- Krishi Vigyan Kendra, Kerala Agricultural University, Malappuram, Kerala, India.

<sup>3</sup>SMS Home Science, ICAR- Krishi Vigyan Kendra, Kerala Agricultural University, Malappuram, Kerala, India.

<sup>4</sup>SMS Agri. Extension, ICAR- Krishi Vigyan Kendra, Kerala Agricultural University, Malappuram, Kerala, India.

<sup>5</sup>SMS, Agri. Entomology ICAR- Krishi Vigyan Kendra, Kerala Agricultural University, Malappuram, Kerala, India.

<sup>6</sup>SMS Agri. Engineering ICAR- Krishi Vigyan Kendra, Kerala Agricultural University, Malappuram, Kerala, India.

<sup>7</sup>SMS Animal Science, ICAR- Krishi Vigyan Kendra, Kerala Agricultural University, Malappuram, Kerala, India.

\*Corresponding author E-mail : [bcakhilraj@gmail.com](mailto:bcakhilraj@gmail.com)

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### ABSTRACT

“Petals on Your Plate: A Guide to Edible Flowers for Culinary Delights” is a comprehensive exploration of the vibrant and flavourful world of edible flowers. This meticulously crafted guide offers a wealth of knowledge, taking readers on a journey through the cultivation, identification and culinary applications of a diverse array of blooms. From the delicate nuances of flavour to the visual artistry they bring to dishes, the review celebrates the multifaceted role that edible flowers can play in elevating culinary experiences. The abstract delves into the sustainable and eco-conscious aspects of using edible flowers, providing insights into their cultivation at home. Readers are empowered to embrace a more mindful approach to cooking, connecting with nature through the incorporation of these blossoms into their culinary creations. The review’s emphasis on sustainability aligns with contemporary culinary values, making it a relevant and timely resource for those seeking a harmonious relationship between their plates and the environment. As the abstract unfolds, it underscores the collaborative potential of “Petals on Your Plate,” envisioning partnerships with culinary institutions, botanical gardens and online platforms to extend its influence. The review emerges as a dynamic source of inspiration, anticipating a future where the art of cooking converges with sustainability, aesthetics, and the delightful world of edible flowers.

**Key words :** Edible Flowers, Human consumption, COOKING DELIGHTS.

### Introduction

Welcome to the enchanting world of “Petals on Your Plate: A Guide to Edible Flowers for Culinary Delights.” In this culinary odyssey, we embark on a journey through the delicate and flavorful universe of edible blooms, where petals transform from mere adornments to essential ingredients in creating gastronomic masterpieces (Newman and Kirker, 2016). The pages of this guide unfold the secrets of cultivating, selecting, and savoring a display of flowers that not only captivate the senses with their vibrant colors, but also tantalize the taste buds

with their unique and delightful flavors. Whether you are a seasoned chef, a home cook with a passion for experimentation, or simply a curious epicurean, this guide invites you to explore the art of integrating edible flowers into your culinary repertoire, turning every meal into a sensory celebration of nature’s bounty (Bacher, 2013). Get ready to elevate your dishes, as we delve into the blooming world where petals take center stage on your plate. Many flowers are edible and can be used in culinary preparations to add color, flavor, and visual appeal to dishes. Here is a list of common flowers that are generally considered safe for human consumption

(Creasy, 2012). However, it's crucial to ensure that the flowers you consume are free from pesticides and other contaminants. Additionally, individuals with allergies should exercise caution and consult with a healthcare professional before consuming edible flowers.

### 1. *Moringa* (*Moringa oleifera*)

*Moringa oleifera*, often referred to as the “drumstick tree” or “miracle tree,” is a fast-growing, deciduous plant native to parts of Africa and Asia (Fig. 1). Recognized for its remarkable nutritional profile and various medicinal properties, this tree has been revered for centuries in traditional medicine and cuisines (Roberts 2014). *Moringa* leaves, which are rich in vitamins, minerals and antioxidants, are commonly consumed as a



**Fig. 1 :** Flower of *Moringa oleifera*.

nutrient-dense green vegetable. The plant's seed pods, often referred to as drumsticks, are also prized for their culinary versatility and nutritional value (Anderson, 2021). They can be used in soups, stews and curries. Additionally, *Moringa oleifera* is renowned for its potential health benefits, including anti-inflammatory and anti-oxidative properties. The tree's adaptability to diverse climates and its ability to thrive in challenging conditions have contributed to its widespread cultivation, making *Moringa oleifera* a valuable resource in promoting both nutritional well-being and sustainable agriculture (Martynoga and Chapman, 2012). *Moringa oleifera* flowers, though less commonly used than its leaves and pods, are also edible and offer a subtle yet distinct flavor. Here are some creative ways to incorporate *Moringa oleifera* flowers into your culinary repertoire:

- a) **Salads :** Add fresh *Moringa* flowers to salads for a visually appealing and nutritious touch. Their delicate flavor complements mixed greens, tomatoes and other salad ingredients.
- b) **Omelets and Scrambles :** Toss flowers into omelets or scrambled eggs to enhance both the visual appeal and nutritional content of your breakfast.
- c) **Stir-Fries :** Include flowers in vegetable stir-fries

for a unique texture and flavor. They pair well with other stir-fry ingredients like bell peppers, broccoli and snap peas.

- d) **Rice Dishes :** Garnish rice dishes with flowers to add a pop of color and a subtle herbal note. This works well with both savory and mildly spiced rice preparations.
- e) **Beverages :** Infuse teas or cold beverages with flowers to add a delicate floral essence. This can be a refreshing and nutritious addition to your favorite herbal teas or homemade iced teas.
- f) **Floral Syrups :** Create a floral syrup by simmering flowers with sugar and water. This syrup can be drizzled over desserts, pancakes, or used to sweeten beverages.
- g) **Herbal Infusions :** Steep *Moringa* flowers in hot water to make a mild herbal infusion. This can be enjoyed on its own or blended with other herbs for a custom tea blend.
- h) **Garnish for Desserts :** Use *Moringa oleifera* flowers as an edible and decorative garnish for desserts like cakes, cupcakes, or fruit salads. Their appearance adds a touch of elegance to sweet treats.
- i) **Pickling :** Pickle flowers to create a tangy condiment that can be used as a side dish or a flavorful addition to sandwiches and wraps.
- j) **Homemade Liqueurs :** Experiment with infusing flowers into homemade liqueurs or syrups for unique and flavorful beverages.

While exploring the culinary uses of *Moringa oleifera* flowers, it's important to ensure that they are sourced from a clean and pesticide-free environment. The flowers are delicate, so use them sparingly to appreciate their subtle flavor without overpowering other ingredients (Small, 2006; Michael, 2008; Musselman and Wiggins, 2013; Crosson, 2018; Falowo *et al.*, 2018; Milla *et al.*, 2021; Kaur *et al.*, 2023)

### 2. *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.*, 2019). *Calendula* stands out not only for its ornamental value but also for its extensive use in traditional medicine and culinary applications. The aromatic and slightly bitter petals of *Calendula officinalis* (Fig. 2) have been traditionally employed in herbal infusions, ointments and salves for their potential anti-inflammatory



**Fig. 2 :** Flower of *Calendula officinalis*.

and skin-soothing properties (Sausserde and Kampuss, 2014). In the culinary realm, the petals add a subtle and visually appealing touch to salads, soups and various dishes. Known for its resilience and easy cultivation, *Calendula officinalis* has become a cherished garden companion, brightening landscapes and offering a plethora of practical uses for those who appreciate its beauty and medicinal benefits (Pires *et al.*, 2017).

*Calendula officinalis*, commonly known as marigold, is a versatile flower with various culinary and medicinal uses. The petals of this vibrant blossom add both color and flavor to a range of dishes. Here are some creative ways to incorporate *Calendula officinalis* into your culinary endeavors:

- a) **Salads :** 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.
- b) **Herbal Butter :** Infuse butter with dried petals to create a unique and flavorful herbal butter. This can be spread on bread, used for sautéing vegetables, or as a finishing touch for grilled meats.
- c) **Tea :** Brew a soothing herbal tea by infusing dried petals in hot water. This tea is not only refreshing, but also believed to have potential health benefits, including anti-inflammatory properties.
- d) **Infused Vinegar :** Create a floral-infused vinegar by steeping petals in white wine vinegar. The resulting infusion can be used in salad dressings or as a tangy addition to marinades.
- e) **Desserts :** Garnish cakes, cupcakes, or desserts with fresh petals for an elegant touch. The petals add a subtle floral flavor that complements sweet treats.
- f) **Infused Oils :** Make Calendula-infused oil by steeping the petals in a carrier oil like olive oil. This infused oil can be used in cooking or as a massage oil, known for its skin-soothing properties.
- g) **Jams and Jellies :** Incorporate petals into

homemade jams and jellies for a unique twist. The petals add both color and a delicate flavor to fruit preserves.

- h) **Rice and Grain Dishes :** Sprinkle dried petals into rice or grain dishes for a visually appealing and subtly flavored accompaniment.
- i) **Herbal Syrup :** Make a floral syrup by simmering petals with sugar and water. This syrup can be drizzled over pancakes, waffles, or used as a sweetener in beverages
- j) **Ice Cubes :** Freeze Calendula petals in ice cubes to add a decorative and refreshing touch to beverages, especially in summertime drinks.

Beyond the culinary realm, *Calendula officinalis* is renowned for its traditional medicinal uses, particularly in skin care products such as salves, creams and ointments due to its potential anti-inflammatory and skin-soothing properties. As you explore these culinary applications, remember to use organically grown flowers free from pesticides, ensuring a delightful and health-conscious incorporation of *Calendula officinalis* into your kitchen repertoire (Kishimoto *et al.*, 2005; EM *et al.*, 2008; Re *et al.*, 2009; Butnariu *et al.*, 2012; Moghaddasi Mohammad and Kashani, 2012; Pires *et al.*, 2017).

### 3. 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 (Fig. 3) (Chanukya and Rastogi, 2016). 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 (de Lima *et al.*, 2019). Beyond their visual and symbolic appeal, certain species of roses, particularly heirloom varieties, offer



**Fig. 3 :** Flower of Roses (*Rosa spp.*).

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).

Roses (*Rosa* spp.) are not only beloved for their enchanting fragrance and symbolic significance, but also for their culinary versatility. The petals of various rose species are edible and can be used in a range of dishes to impart a delicate floral essence. Here are several creative ways to incorporate roses into your culinary creations:

- a) **Rosewater** : Extract rosewater by steeping fresh rose petals in water. This aromatic liquid can be used to flavor beverages like lemonades, teas, or cocktails.
- b) **Rose Petal Jam** : Create a fragrant and elegant jam by combining petals with sugar and water. Spread this floral jam on toast, scones, or use it as a filling for pastries.
- c) **Rose-Infused Honey** : Infuse honey with petals to create a subtly floral sweetener. Drizzle it over desserts, yogurt, or use it in tea for a unique flavor.
- d) **Salads** : Toss fresh rose petals into salads for a visually stunning and aromatic addition. They pair well with mixed greens, fruits and cheese.
- e) **Candied Roses** : 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.
- f) **Rose Syrup** : Make a fragrant syrup by simmering rose petals with sugar and water. This syrup can be used to sweeten beverages, desserts, or drizzled over pancakes and waffles.
- g) **Rose Petal Butter** : Blend finely chopped petals into softened butter. This floral-infused butter can be used to enhance the flavor of baked goods or spread on bread.
- h) **Rose Petal Ice Cream** : Infuse cream with petals to create a delicate rose-flavored ice cream. This sophisticated treat is perfect for a summertime indulgence.
- i) **Tea Blends** : Mix dried rose petals with other herbs like chamomile or lavender to create aromatic herbal tea blends. The petals add a lovely floral note to the brew.
- j) **Rose Petal Liqueur** : Infuse spirits like vodka or gin with rose petals to create a floral liqueur. Use it as a base for cocktails or enjoy it as a standalone digestif.

Remember to use roses that are grown without pesticides or other chemicals and choose petals that are at their peak freshness. The subtle and fragrant nature of roses adds an exquisite touch to both sweet and savory dishes, allowing you to explore the culinary delights of this iconic flower (Vinokur *et al.*, 2006; Youssef *et al.*, 2012; Ludmila *et al.*, 2015; Aggarwal and Kaur, 2017; Pires *et al.*, 2017; Vijayanchali, 2017; Hegde *et al.*, 2022).

#### 4. 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 (Fig. 4). The glossy, dark green leaves provide an attractive backdrop to the large, vibrantly colored flowers, which can range from shades of red, orange, and pink to more unusual



**Fig. 4** : Flower of *Hibiscus rosa-sinensis*.

hues (Cid-Ortega *et al.*, 2015). *Hibiscus rosa-sinensis* has found applications beyond its decorative charm; its petals are widely used in herbal teas, infusions, and culinary creations (Shruthi *et al.*, 2016). The tart and slightly citrusy flavor of hibiscus makes it a popular choice for beverages, jellies and desserts. Beyond its culinary allure, the plant has also been associated with traditional medicine, where it is believed to possess certain health benefits (Wijewardana *et al.*, 2015). This striking plant, with its cultural significance, culinary versatility and aesthetic appeal, stands as a testament to the diverse roles that botanical wonders can play in our lives. *Hibiscus rosa-sinensis* flowers, known for their vibrant colors and slightly tart flavor, offer a range of culinary possibilities. Here are several creative ways to incorporate these flowers into your dishes:

- a) **Hibiscus Tea** : One of the most popular uses is brewing hibiscus flowers into a refreshing herbal tea. Also known as “hibiscus tea” or “sorrel” in some cultures, it can be served hot or cold and may be sweetened with honey or other natural sweeteners.

- b) **Jams and Jellies** : Create a unique spread by incorporating petals into homemade jams or jellies. The tartness of the flowers adds an intriguing twist to traditional fruit preserves.
- c) **Salads** : Add a burst of color and a tangy note to salads by tossing fresh hibiscus petals into mixed greens, fruit salads, or coleslaw.
- d) **Infused Vinegar** : Make a floral-infused vinegar by steeping flowers in white wine vinegar. This vibrant infusion can be used in salad dressings or marinades.
- e) **Hibiscus Syrup** : Prepare a sweet and tangy syrup by simmering hibiscus petals with sugar and water. This syrup can be drizzled over pancakes, waffles, or used as a flavoring for cocktails and mocktails.
- f) **Desserts** : Garnish desserts like cakes, puddings, or ice creams with dried petals for a visually striking and flavorful touch.
- g) **Hibiscus Butter** : Infuse butter with petals to create a unique and colorful spread. This can be used on bread, muffins, or as a flavorful addition to baked goods.
- h) **Hibiscus Rice** : Add a pop of color and flavor to rice dishes by incorporating dried hibiscus petals during cooking. The petals complement the savory nature of rice dishes.
- i) **Cocktails and Mocktails** : Use petals to craft visually appealing beverages. Hibiscus-infused drinks can include lemonades, iced teas, or even cocktails with a tropical twist.
- j) **Pickled Hibiscus Buds** : Pickle buds to create a tangy condiment that can be served alongside savory dishes or used to add a flavorful punch to sandwiches and wraps.

Ensure that the hibiscus flowers used in culinary applications are free from pesticides or other contaminants. The tart and floral notes of *Hibiscus rosa-sinensis* flowers offer a delightful and unique addition to a variety of dishes, making them a versatile and aesthetically pleasing ingredient in the kitchen (Selim *et al.*, 2008; Mohamed *et al.*, 2012; Luvonga *et al.*, 2012; Mak *et al.*, 2013; Camelo-Méndez *et al.*, 2018; Shruthi and Ramachandra, 2019; Salem *et al.*, 2021).

## 5. 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 (Sowbhagya *et al.*, 2004). Characterized by its vibrant, daisy-like blossoms and aromatic foliage, Marigolds come in various hues, including shades of yellow, orange, and red (Fig. 5). Native



**Fig. 5** : Flower of Marigold (*Tagetes* spp.).

to the Americas, these hardy plants have not only adorned gardens with their radiant colors but have also found utility in traditional medicine and culinary arts (Chitrakar *et al.*, 2004). 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 (Siriamornpun *et al.*, 2012). The *Tagetes* spp. exemplify the harmonious convergence of beauty, practicality and cultural significance in the realm of horticulture. Marigold flowers (*Tagetes* spp.) bring not only vibrant hues to gardens but also a distinct flavor and aroma that can enhance a variety of culinary creations. Here are some imaginative ways to incorporate marigold flowers into your dishes:

- a) **Salads** : Toss fresh marigold petals into salads for a pop of color and a slightly citrusy, tangy flavor. They pair well with mixed greens and other salad ingredients.
- b) **Herb Butter** : Infuse softened butter with finely chopped petals. This floral-infused butter can be used to add a unique flavor to bread, pasta, or steamed vegetables.
- c) **Infused Vinegar** : Create a floral-infused vinegar by steeping petals in white wine or apple cider vinegar. Use this infusion in dressings or marinades for a delightful twist.
- d) **Tea Blends** : Mix dried petals with other herbs to create herbal tea blends. Marigold adds a subtle sweetness and depth to the overall flavor profile.
- e) **Garnish for Soups and Stews** : Float fresh petals on top of soups or stews just before serving to add visual appeal and a burst of flavor.
- f) **Candied Petals** : Preserve marigold petals by candying them. Dip the petals in sugar syrup and let them dry for a sweet and decorative touch to desserts.

- g) **Rice Pilaf** : Mix dried petals into rice pilaf for a visually appealing side dish. The petals complement the savory nature of the rice.
- h) **Floral Ice Cubes** : Freeze petals in ice cubes to create decorative and flavorful additions to beverages, particularly in punches and summery drinks.
- i) **Herbal Infusions** : Steep petals in hot water to create a mild herbal infusion. This can be enjoyed on its own or blended with other herbs for a custom tea blend.
- j) **Sweets and Confections** : Use marigold petals as a decorative element on cakes, cupcakes, or other desserts. They add a touch of color and a subtle floral essence.

Remember to use marigold flowers that are grown without pesticides or other harmful chemicals. With their unique flavor profile and vibrant appearance, marigold flowers offer an opportunity to experiment with both sweet and savory dishes, adding a delightful twist to your culinary creations (Quackenbush and Miller, 1972; Hadden *et al.*, 1999; Hojnik *et al.*, 2008; de Lima *et al.*, 2019; Alotaibi *et al.*, 2021).

## 6. Chrysanthemum (*Chrysanthemum* spp.)

The Chrysanthemum plant, belonging to the genus Chrysanthemum, is a diverse and ornamental perennial known for its captivating blossoms and extensive cultural significance. Native to Asia, Chrysanthemums come in a myriad of shapes, sizes and colors, offering a spectacular display in gardens and floral arrangements (Fig.6) (Vinokur *et al.*, 2006). With their distinctive floral structure and vibrant hues, these plants have become symbols of autumn and are frequently associated with festivities in various cultures (Youssef *et al.*, 2012). Beyond their ornamental allure, certain species of Chrysanthemums, particularly *Chrysanthemum indicum*, hold medicinal and culinary value (Ludmila *et al.*, 2015). In traditional medicine, Chrysanthemum tea is cherished for its purported health benefits, while the petals of certain



Fig. 6 : Flower of chrysanthemum.

varieties are used in culinary applications to infuse dishes with a delicate and slightly peppery flavor (Aggarwal and Kaur, 2017). The Chrysanthemum plant thus stands as a testament to its versatility, seamlessly blending aesthetic beauty with cultural traditions and practical applications (Pires *et al.*, 2017). Chrysanthemum flowers (*Chrysanthemum* spp.) offer more than just ornamental beauty; they bring a delicate and slightly peppery flavor that can be creatively incorporated into various culinary delights. Here are some imaginative ways to use chrysanthemum flowers in dishes:

- a) **Tea Infusion** : Chrysanthemum tea is a popular and soothing beverage made by steeping dried chrysanthemum flowers in hot water. Enjoy it on its own or blend it with other herbs for a fragrant herbal infusion.
- b) **Salads** : Sprinkle fresh chrysanthemum petals onto salads to add a burst of color, a subtle peppery taste, and a unique texture. They pair well with mixed greens and vinaigrette dressings.
- c) **Hot Pot Garnish** : Use chrysanthemum flowers as a garnish for hot pot or soups. Their flavor can infuse into the broth, adding a delightful floral note to the dish.
- d) **Stir-Fries** : Toss fresh chrysanthemum petals into stir-fried dishes toward the end of cooking for a visually appealing and aromatic touch. They complement the savory flavors of stir-fried vegetables and meats.
- e) **Tempura** : Dip chrysanthemum flowers in a light tempura batter and fry them until crispy. This creates a unique and delicate tempura that can be served as an appetizer.
- f) **Floral Vinegar** : Infuse vinegar with chrysanthemum flowers to create a floral-infused vinegar. Use it in salad dressings or marinades for a distinctive flavor.
- g) **Sweets and Desserts** : Decorate cakes, pastries, or desserts with chrysanthemum petals for an elegant and edible floral touch. The petals can also be candied for a sweet treat.
- h) **Rice Dishes** : Garnish rice dishes with chrysanthemum petals to add both visual appeal and a mild peppery flavor. This works well with both savory and mildly spiced rice preparations.
- i) **Herbal Cocktails** : Infuse spirits like gin or vodka with chrysanthemum flowers to create floral-infused liquors. Use these in cocktails for a sophisticated and aromatic twist.

- j) Ice Cubes :** Freeze chrysanthemum petals in ice cubes to add a decorative element to beverages. This is particularly charming in iced teas, lemonades or punches.

When using chrysanthemum flowers in cooking, ensure they are sourced from varieties specifically cultivated for culinary purposes and are free from pesticides. The delicate flavor and visual appeal of chrysanthemum flowers open up a realm of culinary possibilities, allowing you to experiment with both sweet and savory dishes (Vijayanchali, 2017; Camelo-Méndez *et al.*, 2018; Shruthi and Ramachandra, 2019; Salem *et al.*, 2021; Hegde *et al.*, 2022).

### 7. Agathi- *Sesbania grandiflora* (vegetable hummingbird)

*Sesbania grandiflora*, commonly known as the agathi or hummingbird tree, is a fast-growing and versatile deciduous tree that belongs to the legume family. Native to Southeast Asia, it is admired for its compound leaves, slender branches, and clusters of showy, pendulous flowers (Fig. 7) (Small, 2006). The tree derives its common name, hummingbird tree, from the hummingbirds that are attracted to its nectar-rich blossoms. Besides its



**Fig. 7 :** Flower of *Sesbania grandiflora*.

ornamental value, *Sesbania grandiflora* is esteemed for its nutritional and medicinal properties (Michael, 2008). The tender leaves and flowers are edible, featuring prominently in traditional cuisines across Asia, where they are used in salads, curries and stir-fried dishes. Additionally, agathi leaves are a rich source of vitamins and minerals (Musselman and Wiggins, 2013). The plant's ability to thrive in diverse soil conditions and its usefulness in agroforestry systems contribute to its significance in sustainable agriculture (Crosson, 2018). *Sesbania grandiflora* exemplifies a harmonious convergence of beauty, nutrition and ecological adaptability (Falowo *et al.*, 2018; Milla *et al.*, 2021; Kaur *et al.*, 2023).

*Sesbania grandiflora* flowers, commonly known as agathi or hummingbird tree flowers, are not only

visually appealing but also offer culinary and nutritional benefits. Here are some creative ways to use *Sesbania grandiflora* flowers in dishes:

- a) Salads :** Add fresh *Sesbania* flowers to salads for a pop of color and a mild, slightly sweet flavor. They pair well with mixed greens, tomatoes, and cucumber.
- b) Curries :** Incorporate flowers into curries and stews for a unique texture and subtle floral taste. The flowers absorb the flavors of the curry, providing a delightful addition to the dish.
- c) Stir-Fries :** Toss flowers into vegetable stir-fries towards the end of cooking to retain their delicate texture. They add a visual and flavorful element to the dish.
- d) Fritters :** Dip flowers in a light batter and fry them until golden brown to create savory fritters. These make for a delicious snack or appetizer.
- e) Soups :** Float fresh or dried flowers on top of soups just before serving. Their mild flavor can enhance the overall taste of the soup.
- f) Pickles :** Preserve flowers by pickling them. These pickled flowers can be used as a tangy condiment to complement a variety of dishes.
- g) Herbal Teas :** Use dried flowers to make a mild and floral herbal tea. The tea can be enjoyed on its own or blended with other herbs for a custom tea blend.
- h) Rice Dishes :** Garnish rice dishes with flowers to add a visually appealing and edible element. They work well with both savory and mildly spiced rice preparations.
- i) Desserts :** Decorate desserts such as cakes, cupcakes, or fruit salads with *Sesbania* flowers to add an elegant and natural touch.
- j) Infused Water :** Float flowers in a pitcher of water for a refreshing and visually appealing infused water. This can be served at gatherings or enjoyed on a warm day.

Before using *Sesbania grandiflora* flowers in culinary applications, ensure they are sourced from a clean and pesticide-free environment. The mild and slightly sweet flavor of these flowers adds a unique touch to various dishes, encouraging culinary exploration and creativity (Karmakar *et al.*, 2016; Rajgure, 2017; Singh and Peter, 2021; Faisal *et al.*, 2022)

### 8. Asian pigeonwings (*Clitoria ternatea*)

Asian pigeonwings, scientifically known as *Clitoria ternatea*, is a charming and versatile flowering

vine that is native to Southeast Asia (Selim *et al.*, 2008). This plant, with its distinctive butterfly-shaped flowers, has earned a place in gardens for its ornamental beauty and cultural significance (Fig. 8). The striking blue, white, or lavender blossoms not only captivate the eyes but also



**Fig. 8 :** Flower of Asian pigeonwings (*Clitoria ternatea*).

serve practical purposes (Mohamed *et al.*, 2012). In traditional medicine, various parts of the Asian pigeonwings plant are utilized for their potential health benefits, including anti-inflammatory and antioxidant properties. Moreover, the flowers are known for their natural dyeing properties, yielding vibrant colors to culinary creations, teas, or textiles (Luvonga *et al.*, 2012). The plant's ability to thrive in a variety of climates makes it adaptable to different regions, further contributing to its popularity. Beyond its aesthetic appeal, *Clitoria ternatea* stands as a fascinating botanical specimen that bridges the realms of culture, health, and horticulture.

Asian pigeonwings (*Clitoria ternatea*) flowers are not only visually striking but also versatile in culinary applications, known for their natural color-changing properties. Here are creative ways to use Asian pigeonwings flowers in dishes:

- a) **Butterfly Pea Tea :** One of the most popular uses is brewing a vibrant blue tea by steeping dried Asian pigeonwings flowers in hot water. The tea changes color to purple when lemon or citrus juice is added, creating a visually captivating and refreshing drink.
- b) **Natural Food Coloring :** Infuse dishes with natural hues by incorporating the petals into various recipes. Butterfly pea flowers can be used to naturally color rice, desserts, beverages, or even dumpling wrappers, providing a visually appealing twist.
- c) **Herbal Infusions :** Create herbal infusions by steeping dried flowers with other herbs. This floral infusion can be used in both hot and cold beverages, providing a mild and earthy flavor.
- d) **Salads :** Add fresh or dried petals to salads for a pop

of color and a subtle floral taste. They work well with mixed greens, fruits and light vinaigrette dressings.

- e) **Ice Cream and Sorbet :** Infuse creams or fruit bases with flowers when making ice cream or sorbet. The floral essence adds a unique touch to frozen treats.
- f) **Cocktails and Mocktails :** Enhance the visual appeal of beverages by incorporating flowers. They not only add color but also a delicate flavor to cocktails, lemonades, or iced teas.
- g) **Jellies and Jams :** Use the petals to infuse jellies or jams with a gentle floral flavor. This can elevate the taste of your breakfast spreads or dessert toppings.
- h) **Rice Dishes :** Mix dried flowers into rice dishes for a visually stunning and mildly fragrant accompaniment. The flowers complement the grains, adding a subtle floral note.
- i) **Butter and Syrups :** Infuse butter or syrups with the petals for a delicate flavor. These can be used as toppings for pancakes, waffles, or drizzled over desserts.
- j) **Tea Blends :** Combine flowers with other herbs to create unique tea blends. Experiment with combinations that suit your taste preferences.

When using Asian pigeonwings flowers in culinary applications, it's essential to ensure they are sourced from a pesticide-free environment. The flowers not only contribute to the visual appeal of dishes but also bring a subtle and intriguing floral essence to various culinary creations (Kishimoto *et al.*, 2005; Butnariu *et al.*, 2012; Moghaddasi Mohammad and Kashani, 2012; Pires *et al.*, 2017).

## 9. Lotus plant (*Nelumbo nucifera*)

The Lotus plant (*Nelumbo nucifera*) is an iconic aquatic perennial that has held profound cultural and religious significance throughout history. Native to Asia, this extraordinary plant is characterized by its large, vibrant and exquisite flowers that emerge majestically from the water's surface (Mak *et al.*, 2013) (Fig. 9). The lotus symbolizes purity, enlightenment and rebirth in various Eastern cultures, often depicted in religious art and literature (Camelo-Méndez *et al.*, 2018). Beyond its cultural symbolism, the Lotus plant is valued for its versatile uses. Almost every part of the plant, including the seeds, rhizomes, and leaves, is edible and has found a place in Asian cuisine and traditional medicine (Shruthi and Ramachandra, 2019). Lotus seeds, often used in desserts,





**Fig. 9 :** Flower of lotus.

are known for their nutritional benefits. The leaves are used to wrap rice and other delicacies, imparting a subtle aroma. Additionally, the Lotus plant plays a crucial role in water ecosystems, providing habitat and sustenance for various aquatic species (Salem *et al.*, 2021). This remarkable plant, with its aesthetic beauty and multifaceted utility, embodies a harmonious connection between nature, spirituality, and practical uses. The Lotus plant (*Nelumbo nucifera*) offers various culinary possibilities, and its flowers, leaves, seeds, and rhizomes are utilized in diverse ways across Asian cuisines. Here are some creative dishes and uses for Lotus flowers:

- a) **Stuffed Lotus Flowers :** In some cuisines, flowers are stuffed with a mixture of spices, rice and occasionally minced meat, creating a flavorful and aromatic dish.
- b) **Lotus Flower Tea :** The petals of the Lotus flower can be dried and used to make a delicate and fragrant tea. This tea is not only soothing but is also believed to have calming properties.
- c) **Candied Lotus Petals :** Lotus petals can be candied by dipping them in sugar syrup. These candied petals make for a sweet and visually appealing treat, often used as a garnish for desserts.
- d) **Lotus Flower Salad :** Fresh petals can be added to salads for a unique texture and subtle floral flavor. Combine them with greens, herbs and a light vinaigrette for a refreshing dish.
- e) **Infused Water :** Float flowers in a pitcher of water to infuse it with a delicate floral essence. This refreshing infused water is a popular choice in some cultures.
- f) **Lotus Flower Ice Cubes :** Freeze petals in ice cubes to add an elegant and decorative touch to beverages, particularly in iced teas or cocktails.
- g) **Rice Wraps :** Lotus leaves are often used to wrap rice dishes, imparting a subtle fragrance to the grains. This method is common in certain traditional Asian

cuisines.

- h) **Lotus Flower Syrup :** Infuse sugar syrup with flowers to create a floral syrup. This syrup can be used to sweeten beverages, desserts, or drizzled over pancakes and waffles.
- i) **Lotus Flower Essence :** Extract essence from flowers and use it as a flavoring in various dishes, desserts, or even cocktails for a unique twist.
- j) **Lotus Flower Garnish :** Fresh Lotus flowers make for an exquisite and edible garnish for desserts, cakes, and other culinary creations, adding a touch of elegance.

It's important to note that Lotus flowers used for culinary purposes should be sourced from clean and pesticide-free environments. The delicate and subtle flavor of Lotus flowers lends itself to a variety of culinary applications, contributing to the richness and diversity of Asian cuisine (Karmakar *et al.*, 2016; Rajgure, 2017; Singh and Peter, 2021; Faisal *et al.*, 2022)

#### 10. Garden nasturtium (*Tropaeolum majus*)

*Tropaeolum majus*, commonly known as garden nasturtium, is a charming and versatile flowering plant that has found its place not only in gardens but also in kitchens around the world. Native to South America, this annual plant features trailing stems adorned with round, parasol-like leaves and distinctive spurred blossoms (Fig. 10) (Selim *et al.*, 2008). The leaves and blossoms of *Tropaeolum majus* are characterized by a delightful



**Fig. 10 :** Flower of *Tropaeolum majus*.

peppery flavor, reminiscent of arugula or watercress. The flowers come in a vibrant array of colors, including shades of red, orange, yellow, and cream, creating a visually stunning display in gardens (Mohamed *et al.*, 2012). Beyond its ornamental appeal, garden nasturtium is celebrated for its culinary uses. Both the leaves and blossoms are edible, adding a unique and zesty kick to salads, appetizers, and various dishes. As an easy-to-grow plant, *Tropaeolum majus* not only contributes to the

aesthetic beauty of gardens but also enhances the culinary repertoire of those who appreciate its distinctive flavors (Luvonga *et al.*, 2012). *Tropaeolum majus*, or garden nasturtium, offers a spectrum of culinary possibilities, both in its leaves and vibrant blossoms. The peppery and slightly mustard-like flavor of nasturtium adds a distinctive kick to various dishes (Mak *et al.*, 2013). Here are some creative ways to incorporate *Tropaeolum majus* into your culinary endeavors:

- a) **Peppery Salads** : Nasturtium leaves can be a flavorful addition to salads, providing a peppery note similar to arugula. Mix them with other leafy greens for a vibrant and zesty salad.
- b) **Edible Garnishes** : The vividly colored blossoms of nasturtium are not only visually stunning but also edible. Use them as a striking garnish on salads, appetizers, or main courses to add a burst of color and peppery flavor.
- c) **Stuffed Blossoms** : Fill blossoms with herbed cream cheese or a savory mousse for an elegant and flavorful appetizer. The unique shape of the blossoms makes them perfect for stuffing.
- d) **Floral Infusions** : Infuse vinegars with petals to create a subtly flavored vinegar that can be used in dressings or marinades. The floral infusion adds a delicate touch to various culinary applications.
- e) **Herb Butter** : Incorporate finely chopped nasturtium leaves into herb butter. This herb-infused butter can be used to flavor grilled meats, seafood, or steamed vegetables.
- f) **Candied Petals** : Transform nasturtium petals into a sweet treat by candying them. Dip the petals in sugar syrup and let them dry for a delightful and unique dessert garnish.
- g) **Pickled Buds** : Pickle nasturtium buds to create a tangy condiment that can be used in a manner similar to capers. Add them to salads, pasta dishes, or use them as a flavorful topping for smoked salmon or cream cheese on crackers.
- h) **Infused Oils** : Create infused oils by steeping nasturtium leaves in olive oil. The resulting oil can be drizzled over salads, grilled vegetables, or used as a dipping sauce for crusty bread.
- i) **Herbal Teas** : Nasturtium leaves can be dried and used to make a peppery herbal tea. This tea not only provides a unique flavor but may also offer potential health benefits.
- j) **Pesto** : Blend nasturtium leaves with other herbs, garlic, nuts and olive oil to create a peppery pesto.

This can be tossed with pasta, spread on sandwiches, or used as a flavorful dip.

These diverse uses showcase the versatility of *Tropaeolum majus* in the culinary world, encouraging exploration and creativity in the kitchen (Vijayanchali, 2017; Camelo-Méndez *et al.*, 2018; Shruthi and Ramachandra, 2019; Salem *et al.*, 2021; Hegde *et al.*, 2022).

### Future prospects

“Petals on Your Plate: A Guide to Edible Flowers for Culinary Delights” holds promising future prospects as the culinary world continues to embrace innovation and diverse flavors. As the interest in natural and organic ingredients grows, the review is poised to become an essential guide for chefs, home cooks and food enthusiasts seeking to elevate their dishes with floral elements. With the increasing popularity of edible flowers in both fine dining and home kitchens, the review is likely to contribute to the expansion of this culinary trend. The detailed insights into the cultivation, identification, and culinary uses of various edible flowers cater to a broad audience, from novice cooks to experienced chefs looking to experiment with unique and visually stunning ingredients. The review’s emphasis on the aesthetic appeal of edible flowers and their potential to transform ordinary dishes into culinary masterpieces aligns with the contemporary focus on food presentation and the rise of social media influencers showcasing visually captivating meals. This aspect positions “Petals on Your Plate” as not just a guide but also a source of inspiration for those who appreciate the artistry in cooking.

Furthermore, as sustainability and eco-consciousness continue to shape consumer choices, the review’s exploration of edible flowers as sustainable ingredients aligns with the growing interest in environmentally friendly culinary practices. The information on growing edible flowers at home also appeals to individuals looking to incorporate more homegrown elements into their meals. Collaborations with botanical gardens, culinary schools, and online platforms could extend the reach of the review, creating opportunities for workshops, events, and digital content that further promote the use of edible flowers in cooking. As the culinary landscape evolves, “Petals on Your Plate” is well-positioned to be a timeless resource, influencing the way people perceive and use flowers in their culinary adventures.

### Conclusion

In conclusion, “Petals on Your Plate: A Guide to Edible Flowers for Culinary Delights” stands as a comprehensive and inspiring resource that transcends the

boundaries of traditional culinary guides. Through meticulous exploration and insight, the review not only provides practical knowledge on the cultivation, identification, and culinary applications of a wide array of edible flowers but also fosters a deeper appreciation for the artistry of cooking. As we traverse the pages, we are invited into a world where the vibrant colors, diverse flavors and aromatic essences of flowers transform ordinary dishes into extraordinary culinary creations. The review's dedication to sustainability and eco-conscious practices aligns seamlessly with contemporary values, offering readers a path to a more environmentally friendly and mindful approach to cooking. Moreover, its emphasis on home cultivation empowers individuals to actively engage with the growing process, fostering a sense of connection to nature and a deeper understanding of the ingredients on their plates.

The future prospects of "Petals on Your Plate" are promising, given the rising interest in unique and visually appealing culinary experiences. The review is poised to continue influencing both amateur and professional chefs, sparking creativity in kitchens around the world. Its potential collaborations with culinary institutions, botanical gardens and online platforms can amplify its reach, creating a community of culinary enthusiasts who share a passion for incorporating edible flowers into their gastronomic journeys. Ultimately, "Petals on Your Plate" transcends the realm of a mere guide, evolving into a source of inspiration that reflects the dynamic and ever-evolving landscape of modern cuisine. As we embrace the fusion of aesthetics, sustainability and culinary innovation, this review stands as a timeless companion for those who seek to elevate their culinary adventures with the delicate and delightful world of edible flowers.

## References

- Aggarwal, P. and Kaur S. (2017). Technology development for the preparation, concentration and utilization of rose extract in different valuable products and by products with retention of color and flavor. *The Pharma Innovation*, **6(6, Part C)**, 189.
- Alotaibi, H.N., Anderson A.K. and Sidhu J.S. (2021). Influence of lutein content of marigold flowers on functional properties of baked pan bread. *Annals Agricult. Sci.*, **66(2)**, 162-168.
- Anderson, T. (2021). *A Woman's Garden: Grow beautiful plants and make useful things*. Cool Springs Press.
- Bacher, M. (2013). *Cooking with Flowers: Sweet and Savory Recipes with Rose Petals, Lilacs, Lavender, and other Edible Flowers*. Quirk Books.
- Butnariu, M. and Coradini C.Z. (2012). Evaluation of biologically active compounds from *Calendula officinalis* flowers using spectrophotometry. *Chem. Central J.*, **6**, 1-7.
- Camelo-Méndez, G.A., Vanegas-Espinoza P.E., Escudero-Gilete M.L., Heredia F.J., Paredes-López O. and Del Villar-Martínez A.A. (2018). Colorimetric analysis of hibiscus beverages and their potential antioxidant properties. *Plant Foods for Human Nutrition*, **73**, 247-252.
- Chanukya, B.S. and Rastogi N.K. (2016). A comparison of thermal processing, freeze drying and forward osmosis for the downstream processing of anthocyanin from rose petals. *J. Food Proc. Preser.*, **40(6)**, 1289-1296.
- Chitrakar, B., Zhang M. and Bhandari B. (2019). Edible flowers with the common name "marigold": Their therapeutic values and processing. *Trends Food Sci. Tech.*, **89**, 76-87.
- Cid-Ortega, S. and Guerrero-Beltrán J.A. (2015). Roselle calyces (*Hibiscus sabdariffa*), an alternative to the food and beverages industries: a review. *J. Food Sci. Tech.*, **52**, 6859-6869.
- Creasy, R. (2012). *The edible flower garden*. Tuttle Publishing.
- Crosson, Monica, Jill Henderson, Natalie Zaman, Elizabeth Barrette, Estha K.V. McNevin, Corina Sahlin, Kathy Martin (2018). *Llewellyn's 2018 Herbal Almanac: Gardening, Cooking, Health, Crafts, Myth & Lore*. Llewellyn Worldwide, 2017.
- de Lima Franzen, F., Rodríguez de Oliveira M.S., Lidório H.F., Farias Menegaes J. and Martins Fries L.L. (2019). Chemical composition of rose, sunflower and calendula flower petals for human food use. *Ciencia y Tecnología Agropecuaria*, **20(1)**, 149-168.
- EM, R., Tolba K.H. and El-Gharably A.M. (2008). Carotenoid pigments composition of Calendula flower and its potential uses as antioxidant and natural colorant in manufacturing of hard candy. *Arab Univ. J. Agricult. Sci.*, **16(2)**, 407-417.
- Faisal, Z., Saeed F., Afzaal M., Akram N., Shah Y.A., Islam F. and Ateeq H. (2022). Phytochemical profile and food applications of edible flowers: A comprehensive treatise. *J. Food Proc. Preserv.*, **46(11)**, e17061.
- Falowo, A.B., Mukumbo F.E., Idamokoro E.M., Lorenzo J.M., Afolayan A.J. and Muchenje V. (2018). Multi-functional application of *Moringa oleifera* Lam. in nutrition and animal food products: A review. *Food Res. Int.*, **106**, 317-334.
- Hadden, W.L., Watkins R.H., Levy L.W., Regalado E., Rivadeneira D.M., van Breemen R.B. and Schwartz S.J. (1999). Carotenoid composition of marigold (*Tagetes erecta*) flower extract used as nutritional supplement. *J. Agricult. Food Chem.*, **47(10)**, 4189-4194.
- Hegde, A.S., Gupta S., Sharma S., Srivatsan V. and Kumari P. (2022). Edible rose flowers: a doorway to gastronomic and nutraceutical research. *Food Res. Int.*, 111977.
- Hojnik, M., Škerget M. and Knez Ž. (2008). Extraction of lutein from Marigold flower petals—Experimental kinetics and modelling. *LWT-Food Sci. Tech.*, **41(10)**.
- Karmakar, P., Singh V., Yadava R.B., Singh B., Singh R. and Kushwaha M. (2016, February). Agathi [*Sesbania grandiflora* L. (Agast)]: Current status of production, protection and genetic improvement. In: *National symposium on vegetable legumes for soil and human health* (pp. 153-161).
- Kaur, S., Chauhan P.N., Harwansh R.K., Chakma M. and Kaur S. (2023). Nutraceutical Potential and Processing Aspects of *Moringa oleifera* as a Superfood. *Curr. Nutr. Food Sci.*, **19(4)**, 357-376.

- Kishimoto, S., Maoka T., Sumitomo K. and Ohmiya A. (2005). Analysis of carotenoid composition in petals of calendula (*Calendula officinalis* L.). *Biosci., Biotech. Biochem.*, **69**(11), 2122-2128.
- Ludmila, D., Victor D., Valery T. and Natalya M. (2015). Rose flower petals: rich source of anthocyanins. *Res. J. Pharmaceut., Biolog. Chem. Sci.*, **6**(5), 944-950.
- Luvonga, W., Njoroge M.S., Makokha A. and Ngunjiri P.W. (2012, September). Chemical characterisation of *Hibiscus sabdariffa* (Roselle) calyces and evaluation of its functional potential in the food industry. In : *Scientific Conference Proceedings*.
- Mak, Y.W., Chuah L.O., Ahmad R. and Bhat R. (2013). Antioxidant and antibacterial activities of hibiscus (*Hibiscus rosa-sinensis* L.) and Cassia (*Senna bicapsularis* L.) flower extracts. *J. King Saud Univ.-Sci.*, **25**(4), 275-282.
- Martynoga, F. and Chapman E. (2012). *A Handbook of Scotland's Wild Harvests: The Essential Guide to Edible Species, with Recipes and Plants for Natural Remedies, and Materials to Gather for Fuel, Gardening and Craft: The Essential Guide to Edible Species, with Recipes and Plants for Natural Remedies, and Materials to Gather for Fuel, Gardening and Craft*. Saraband.
- Michael, P. (2008). *Edible Wild Plants & Herbs: A Compendium of Recipes and Remedies*. Grub Street Publishers.
- Milla, P.G., Peñalver R. and Nieto G (2021). Health benefits of uses and applications of *Moringa oleifera* in bakery products. *Plants*, **10**(2), 318.
- Moghaddasi Mohammad, S. and Kashani H.H. (2012). Pot marigold (*Calendula officinalis*) medicinal usage and cultivation. *Scientific Research and Essays*, **7**(14), 1468-1472.
- Mohamed, B.B., Sulaiman A.A. and Dahab A.A. (2012). Roselle (*Hibiscus sabdariffa* L.) in Sudan, cultivation and their uses. *Bull. Environ. Pharmacol. Life Sci.*, **1**(6), 48-54.
- Musselman, L.J. and Wiggins H.J. (2013). *The quick guide to wild edible plants: easy to pick, easy to prepare*. JHU Press.
- Newman, M. and Kirker C.L. (2016). *Edible flowers: a global history*. Reaktion Books.
- Nowak, R., Olech M., Pecio Ł., Oleszek W., Los R., Malm A. and Rzymowska J. (2014). Cytotoxic, antioxidant, antimicrobial properties and chemical composition of rose petals. *J. Sci. Food Agric.*, **94**(3), 560-567.
- Pires, T.C., Dias M.I., Barros L. and Ferreira I.C. (2017). Nutritional and chemical characterization of edible petals and corresponding infusions: Valorization as new food ingredients. *Food Chem.*, **220**, 337-343.
- Quackenbush, F.W. and Miller S.L. (1972). Composition and analysis of the carotenoids in marigold petals. *J. Assoc. Offic. Anal. Chemists*, **55**(3), 617-621.
- Rajgure, Y.M. (2017). Diversity of food composition and nutritive analysis of wild edible flowers: An important facet for food supply of Vidarbha.
- Re, T.A., Mooney D., Antignac E., Dufour E., Bark I., Srinivasan V. and Nohynek G (2009). Application of the threshold of toxicological concern approach for the safety evaluation of calendula flower (*Calendula officinalis*) petals and extracts used in cosmetic and personal care products. *Food Chem. Toxicol.*, **47**(6), 1246-1254.
- Roberts, M. (2014). *100 Edible & Healing Flowers: cultivating-cooking-restoring health*. Penguin Random House South Africa.
- Salem, M.A., Zayed A., Beshay M.E., Abdel Mesih M.M., Ben Khayal R.F., George F.A. and Ezzat S.M. (2021). *Hibiscus sabdariffa* L.: Phytoconstituents, nutritive and pharmacological applications. *Advances in Traditional Medicine*, 1-11.
- Sausserde, R. and Kampuss K. (2014, May). Composition of carotenoids in calendula (*Calendula officinalis* L.) flowers. In : *Proceedings of the 9th Baltic Conference on Food Science and Technology "Food for Consumer Well-Being"* (pp. 13-18).
- Selim, K.A., Khalil K.E., Abdel-Bary M.S. and Abdel-Azeim N.A. (2008). Extraction, encapsulation and utilization of red pigments from roselle (*Hibiscus sabdariffa* L.) as natural food colourants. *Alexandria J. Food Sci. Tech.*, **5**(2), 7-20.
- Shruthi, V.H. and Ramachandra C.T. (2019). Roselle (*Hibiscus sabdariffa* L.) calyces: A potential source of natural color and its health benefits. In : *Food bioactives* (pp. 169-190). Apple Academic Press.
- Shruthi, V.H., Ramachandra C.T., Nidoni U., Hiregoudar S., Naik N. and Kurubar A.R. (2016). Roselle (*Hibiscus sabdariffa* L.) as a source of natural colour: A review. *Plant Archives*, **16**(2), 515-522.
- Singh, B. and Peter K.V. (2021). *Greens, Sprouts and Edible Flowers*. Brillion Publishing.
- Siriamornpun, S., Kaisoon O. and Meeso N. (2012). Changes in colour, antioxidant activities and carotenoids (lycopene,  $\beta$ -carotene, lutein) of marigold flower (*Tagetes erecta* L.) resulting from different drying processes. *J. Functional Foods*, **4**(4), 757-766.
- Small, E. (2006). *Culinary herbs*. NRC Research Press.
- Sowbhagya, H.B., Sampathu S.R. and Krishnamurthy N. (2004). Natural colorant from marigold-chemistry and technology. *Food Rev. Int.*, **20**(1), 33-50.
- Vijayanchali, S.S. (2017). Nutrient, phytonutrient and antioxidant activity of the dried rose petals. *J. Res., Ext. Develop.*, **6**(2).
- Vinokur, Y., Rodov V., Reznick N., Goldman G, Horev B., Umiel N. and Friedman H. (2006). Rose petal tea as an antioxidant rich beverage: Cultivar effects. *J. Food Sci.*, **71**(1), S42-S47.
- Wijewardana, R.M.N.A., Nawarathne S.B. and Wikramasinghe I. (2015). Evaluation of Physicochemical and Antioxidant Property of Dehydrated Hibiscus (*Hibiscus rosa-sinensis*) Flower Petals and its Stability in Product Preparation.
- Youssef, H.M. and Mousa R.M. (2012). Nutritional assessment of low-calorie Baladi rose petals jam. *Food and Public Health*, **2**(6), 197-201.