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OriginalArticle

Nutritional Evaluation of Hibiscus and Butterfly Pea Flowers: A Comparative Study of Macro and Micro Nutrients

Kirti Yashwant Ghumre[1], Dr. Sonal Kame[2]
[1]PhD Scholar Dept. of Home Science (Food Science & Nutrition)
Smt. Radhadevi Goenka College for Women Akola
[2]HOD Department of Home Science, Smt. Radhadevi Goenka College for Women Akola, India
Email: kirtighumre01@gmail.com

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Abstract

Edible flowers are gaining importance in the field of nutrition and health due to their rich nutrient composition and medicinal properties. Among edible flowers, Hibiscus (Hibiscus rosa-sinensis) and Butterfly pea (Clitoria ternatea) flowers are widely used in herbal preparations, beverages, and functional foods because of their antioxidant and therapeutic benefits. The present study focuses on the comparative evaluation of macro and micro nutrient composition of Hibiscus and Butterfly pea flowers per 100 g edible portion. The study is theoretical in nature and based on secondary data collected from research journals, scientific articles, and food composition databases. Nutritional parameters such as carbohydrates, pproteins, fats, dietary fiber, calcium, iron, and moisture were analyzed and compared.

The findings revealed that Hibiscus flowers contain higher amounts of carbohydrates, dietary fiber and moderate protein which help improve digestion, immunity, and overall health. Butterfly pea flowers were found to be rich in minerals such as calcium and iron along with anthocyanin pigments called ternatins that possess strong antioxidant activity and medicinal value.

Both flowers exhibit significant nutritional and health-promoting properties and can be effectively used in herbal teas, nutraceuticals, functional foods, and natural food colorants. The study concludes that edible flowers can contribute to improved nutrition and health benefits through natural dietary sources. Further research and product development studies are recommended to increase the utilization of these flowers in the food and health sectors.

Keywords: *Hibiscus flower, Butterfly pea flower, Nutritional value, Edible flowers.*

Introduction

Edible flowers are becoming an important part of modern nutrition due to their health benefits, natural pigments, and medicinal properties. They are not only used for decoration but also functional food ingredients. Among edible flowers, Hibiscus (*Hibiscus rosa-sinensis*) and Butterfly pea (*Clitoria ternatea*) are widely studied for their nutritional and therapeutic value. Hibiscus flowers are bright red due to anthocyanins and are commonly used in herbal tea, jams, syrups, and traditional medicine. They are known for antioxidant, anti-inflammatory, and heart-protective properties. Butterfly pea flowers are deep blue in color due to ternatin pigments and are used in herbal drinks, rice dishes, desserts, and natural food coloring. Both flowers contain essential nutrients such as carbohydrates, proteins, fiber, vitamins, and minerals. They also contain antioxidants that help protect the body from diseases caused by oxidative stress. Due to increasing demand for natural food sources, these flowers are being studied for their nutritional importance.

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Address for correspondence:
Kirti Yashwant Ghumre, PhD Scholar Dept. of Home Science (Food Science & Nutrition) Smt. Radhadevi Goenka College for Women Akola

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This study focuses on evaluating and comparing the macro and micro nutrient composition of Hibiscus and Butterfly pea flowers per 100 g edible portion.

Objectives

- To analyze macro nutrients of Hibiscus flower.
- To analyze macro nutrients of Butterfly pea flower.
- To study micro nutrient composition of both flowers.
- To compare nutritional values of both flowers.
- To understand health benefits of edible flowers

Data and Methodology

This study is theoretical and based on secondary data. Nutritional information was collected from research papers, journals, food composition tables, and scientific databases.

Parameters studied

Macro nutrients: carbohydrate, protein, fat, fiber
Micro nutrients: calcium, iron
Other: moisture
All values are calculated per 100 g edible portion. Data is analysed and compared to understand nutritional differences between both flowers.

Nutritional Composition and Discussion

Table 1: Hibiscus Flower (per 100 g)

Nutrient	Value
Moisture	89.34 g
Carbohydrates	86.30g
Protein	4.12 g
Fat	2.76 g
Fiber	10.75 g
Calcium	39 mg
Iron	1.7 mg

Discussion (Hibiscus Flower)

Hibiscus flowers are rich in carbohydrates and dietary fiber, which support energy and digestion. Fiber helps in improving gut health and preventing constipation. Protein content is moderate and supports body repair and growth. The flower contains strong antioxidant compounds such as anthocyanins and flavonoids. These help reduce oxidative stress and protect cells from damage. Minerals like calcium support bone strength, while iron helps in blood formation and prevents anemia. The low-fat content makes Hibiscus suitable for healthy dietary intake and weight management. Overall, Hibiscus flower is a nutrient-rich edible flower with strong antioxidant and health-promoting properties.

Table 2: Butterfly Pea Flower (per 100 g)

Nutrient	Value
Moisture	92.4 g
Carbohydrates	2.2 g
Protein	0.32 g
Fat	2.5 g
Fiber	2.1 g
Calcium	309 mg
Iron	14 mg

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Discussion (Butterfly Pea Flower)

Butterfly pea flower is highly valued for its medicinal and nutritional properties. It is rich in minerals, especially calcium which are essential for bone health and muscle function. Iron content is high, which helps in preventing anemia. The flower contains anthocyanins called ternatins, which give it a blue color and strong antioxidant activity. These compounds help protect the body from oxidative stress and support brain health. Although protein and carbohydrate content is low, Butterfly pea flower is important for its medicinal value. It is widely used in herbal tea for relaxation, stress reduction, and cognitive benefits.

Comparative Nutritional Analysis

Nutrient	Hibiscus	Butterfly Pea
Protein	Higher	Very low
Fiber	Higher	Low
Calcium	Moderate	Very high
Iron	Moderate	High

Overall Discussion

Both flowers show different nutritional strengths. Hibiscus is rich in fiber, carbohydrates, and moderate protein, making it useful for digestion and energy. Butterfly pea flower is rich in minerals and antioxidants, making it useful for bone health and brain function.

Together, they complement each other in nutritional value and can be used in functional foods and herbal products.

Health Benefits

Hibiscus Flower: Improves digestion, helps control blood pressure**,** strengthens immunity**,** provides antioxidant protection**,** Supports weight management.

Butterfly Pea Flower: Improves memory**,** reduces stress and anxiety**,** strengthens bones, prevents anemia, Supports skin and hair health.

Conclusions

The study concludes that Hibiscus and Butterfly pea flowers are nutritionally rich edible flowers with important health benefits. Hibiscus flower is rich in carbohydrates, fiber, and antioxidants, while Butterfly pea flower is rich in minerals like calcium, magnesium, and iron. Both flowers contain bioactive compounds that provide medicinal and therapeutic benefits.

These flowers can be used in herbal teas, functional foods, nutraceuticals, and natural food coloring. Their inclusion in daily diet can improve nutrition and support health naturally.

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