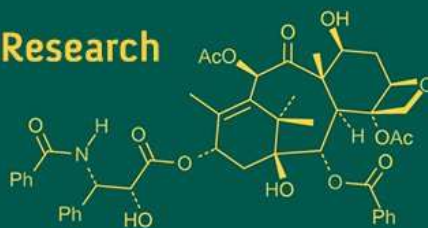
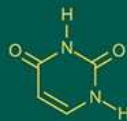
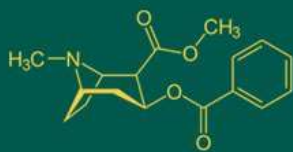


International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
ISSN Online: 2617-4707
NAAS Rating (2026): 5.29
IJABR 2026; SP-10(6): 1101-1107
www.biochemjournal.com
Received: 21-04-2026
Accepted: 25-05-2026

Shivangi Tripathi
Department of processing and
food engineering, VIEAT,
SHUATS, Prayagraj, Uttar
Pradesh, India

Ajay Kumar Singh
Department of processing and
food engineering, VIEAT,
SHUATS, Prayagraj, Uttar
Pradesh, India

Anshika Mishra
Department of processing and
food engineering, VIEAT,
SHUATS, Prayagraj, Uttar
Pradesh, India

Bhumendra Tripathi
Department of Dairy
Technology, College of Dairy
Science and Food Technology
Raipur, Chhattisgarh, India

Prashant Yadav
Department of Processing and
Food Engineering, Shuats
Prayagraj, Uttar Pradesh,
India

Corresponding Author:
Shivangi Tripathi
Department of processing and
food engineering, VIEAT,
SHUATS, Prayagraj, Uttar
Pradesh, India

Development of functional herbal tea from butterfly pea flower and lemongrass: Influence of drying methods on quality characteristics

Shivangi Tripathi, Ajay Kumar Singh, Anshika Mishra, Bhumendra Tripathi and Prashant Yadav

DOI: <https://www.doi.org/10.33545/26174693.2026.v10.i6Sm.8774>

Abstract

The growing demand for natural and health-promoting beverages has increased interest in herbal teas prepared from medicinal plants. The present study was conducted to develop a herbal tea from Butterfly Pea flower (*Clitoria ternatea*) and Lemongrass (*Cymbopogon citratus*) and to evaluate the effect of different drying methods on its quality. Two drying techniques, namely sun drying and tray drying, were used for processing the raw materials before preparing the herbal tea blend. The developed tea samples were analyzed for physicochemical properties, including moisture content, ash content, pH, and total soluble solids. In addition, total phenolic content, antioxidant activity, and microbiological quality were assessed to determine the functional and safety characteristics of the product. The tray-dried sample showed lower moisture content (8.349%) and slightly higher ash content (8.55%) compared to the sun-dried sample. However, the sun-dried herbal tea exhibited higher total phenolic content (471.80 mg GAE/g) and antioxidant activity (68.95%), indicating better retention of bioactive compounds during drying. Microbiological analysis revealed that both samples were safe for consumption, with microbial counts within acceptable limits and no detectable yeast, mold, or coliform contamination. The results suggest that both drying methods can be successfully used for herbal tea production, but sun drying was more effective in preserving phenolic compounds and antioxidant properties. Overall, the developed Butterfly Pea flower and Lemongrass herbal tea showed good quality, safety, and functional potential, making it a promising natural and caffeine-free beverage for health-conscious consumers.

Keywords: Butterfly Pea flower, Lemongrass, Herbal tea, Sun drying, Tray drying, Antioxidant activity, Total phenolic content

1. Introduction

Herbal tea is a traditional, plant-based drink made by steeping leaves, stems, flowers, roots, or fruits in hot water. Unlike standard black or green tea, it does not come from the traditional *Camellia sinensis* tea plant. Instead, people create these comforting beverages using single herbs or blends. You can enjoy them completely caffeine-free or mix them with standard tea leaves. To make a cup, you simply brew the ingredients in boiling water or simmer them gently on the stove. For generations, people around the world have turned to these natural infusions as a simple, daily ritual to boost health and ward off illness. Herbal tea is a comforting escape from the constant screen time, chronic stress, and sitting habits of modern life. While coffee and energy drinks often leave you feeling anxious or headed for a crash, herbal teas offer a gentle, natural way to care for your body. They are packed with plant compounds that target real needs, like soothing your stomach, strengthening your immune system, or helping you wind down for sleep. As more people look for clean, chemical-free ways to stay healthy, these blends act as a bridge between ancient plant wisdom and modern science. They give us a simple, sustainable ritual to find balance and peace in a fast-paced world.

Butterfly Pea Flower (*Clitoria ternatea*)

The Butterfly Pea flower is a beautiful, climbing vine native to the tropical parts of Asia. In traditional Indian medicine, it is fondly known by names like *Aparajita* and *Shankhpushpi*, and it serves as a wonderful bridge between ancient plant wisdom and modern science.

When you look at the plant, it has thin, climbing vines, deep roots, and striking, solitary flowers known for their brilliant deep-blue and white petals. While many people love using it today as a natural food coloring that magically changes color with pH shifts, the flower has actually been used for generations to treat everyday health issues like insomnia, memory loss, and stomach aches.

The real magic of the butterfly pea flower comes from its rich supply of natural antioxidants and plant compounds. These nutrients give the flower powerful health benefits, helping the body fight off inflammation and cell damage. Most importantly, it helps keep blood sugar levels steady after meals by slowing down how the body breaks down carbohydrates. Even though it has all these incredible health benefits, this bright blue flower is still not widely used in modern products, making it the perfect candidate for a new kind of healthy herbal tea that fights stress and supports metabolic health.

Lemon grass (*Cymbopogon citratus*)

Lemongrass is a tall, aromatic perennial grass that belongs to the Poaceae family, a large plant group with about 140 different species found throughout the tropical regions of Asia, Africa, and the Americas. When you see it growing, it forms thick, heavy clumps with strong stems that can reach up to six feet high, topped with long, drooping flower clusters. Its long, slender green leaves stretch out up to three feet and give off a refreshing, sharp lemon scent whenever they are crushed, thanks to natural essential oils like citral, limonene, and geraniol. To get the best quality oil, farmers cultivate specially developed varieties like 'OD 19', 'Krishna', and 'Kaveri'. For generations, people have brewed these leaves into a warm tea to soothe upset stomachs, bring down fevers, and clear up stubborn coughs, while the fragrance industry heavily relies on the aromatic oil to scent everyday soaps and perfumes. Today, modern science has validated these traditional uses, proving that the plant is packed with natural antioxidants, flavonoids, and phenols that fight off harmful bacteria and reduce painful inflammation. Most incredibly, research shows that lemongrass can actually talk to our genes specifically activating insulin-regulating pathways to improve blood sugar control while naturally lowering cholesterol and triglycerides, making it a true powerhouse for daily metabolic health.

Sun drying is a classic, natural way to save plants by spreading fresh leaves and flowers in thin layers on trays or clean ground. To keep out dust and bugs, the raw materials are covered with a light cotton cloth. The main goal here is to let the natural heat of the sun slowly dry out the water content, which stops the plant from fermenting and spoiling. Local farmers love this method because it costs absolutely nothing, needs no fancy equipment, and runs entirely on clean solar power. The process works with the outdoor weather, usually at temperatures between 30 °C and 45 °C during the day. Because you are at the mercy of nature, it is a slow process that takes about 2 to 5 days to get the plants completely dry and ready for storage.

Tray drying is a modern, machine-based method used to dry out chunks, small pieces, or thick pastes. The raw ingredients are spread evenly across metal trays inside an enclosed machine, usually at a thickness of 10 to 100 mm. The purpose of using this method is to pull out moisture perfectly using a controlled combination of heat and vacuum

settings. It is incredibly useful for delicate plants that shouldn't be stirred or shaken while heating, ensuring you get a clean, dry product without destroying the plant's natural healthy traits. By keeping the machine at a steady temperature between 40 °C and 50 °C, the whole process is sped up massively, giving you high-quality herbal tea in just 4 to 8 hours.

This combined herbal tea acts as a powerful, natural buffer against the physical and mental exhaustion of modern life. Physically, drinking it after a meal regulates blood sugar by slowing carbohydrate breakdown while improving insulin sensitivity. Its abundant plant antioxidants work internally to repair cell damage, lower bad cholesterol, and shield the liver and stomach from inflammation. Mentally, the blend serves as a calming brain tonic that reduces work stress, counteracts screen fatigue, and supports deep sleep without the jittery crashes of caffeinated energy drinks. Finally, its natural ability to shift from a brilliant blue to a vivid purple with a splash of citrus makes it a highly attractive, clean-label product for the healthy beverage market, proving that wellness rituals can be both scientifically effective and visually striking.

The purpose of this research is to figure out the best, most reliable way to make a healthy herbal tea bag by mixing bright blue butterfly pea flowers with refreshing lemongrass. We want to test and compare two different ways of drying these plants: the old-school method of drying them out in the sun, and the modern way of using a heated tray machine. By keeping a close eye on the drying times and temperatures, our study aims to find the perfect balance that stops the leaves from getting moldy while saving the natural plant nutrients. To prove which method works best, we will evaluate the final tea blend by testing its moisture content, tracking its pH levels, and measuring its total phenolic content (TPC) and antioxidant strength. Ultimately, we want to make sure the tea keeps its powerful health benefits—like lowering blood sugar and calming stress—and stays perfectly safe to drink, while still showing off that beautiful, natural color change when you brew it.

The main benefit of this study is to give a much-needed boost to the underused butterfly pea flower and lemongrass plants, turning them from simple garden herbs into a high-quality, valuable product that can actually succeed in the market. By figuring out a reliable way to process these plants, this research helps create a healthy herbal tea that people will love and choose as a natural alternative to sugary or caffeinated drinks. On top of that, this work serves as an important, practical guide for both researchers and everyday people who want to learn how to properly dry and process medicinal herbs.

2. Material and Method

The research was carried out for 5 months, from January to May 2026 which was carried out at the Department of processing and food engineering, VIEAT, SHUATS, Prayagraj.

2.1 Tools and Materials

The specific inventory of equipment and glassware used to carry out this study consists of 1 tray dryer, 6 drying trays, 6 drying mats, 2 cotton cloths, 1 analytical weighing balance, 1 laboratory grinder, and 1 sieve shaker. For analytical and quality testing, the setup requires 1 moisture analyzer, 1 hot air oven, 2 desiccators, 1 muffle furnace, 1 digital pH meter,

1 handheld refractometer, and 1 UV-Vis spectrophotometer, 1 steam autoclave, 1 laminar flow hood, 1 digital colony counter, and 2 laboratory incubators. The required laboratory glassware and disposable essentials include 6 volumetric flasks, 12 beakers, 12 Erlenmeyer flasks, 4 graduated cylinders, 6 glass pipettes, 2 micropipettes, 24 test tubes, 4 glass funnels, 50 petri dishes, 4 glass stirring rods, 6 reagent bottles, 12 porcelain crucibles, 15 pieces of filter paper, 1 water bath shaker, and 1 laboratory centrifuge.

The materials used in this study were 2 kg of butterfly pea flower and 4 kg of lemon grass, 4mg of 2,2-diphenyl-1-picrylhydrazyl (DPPH) powder, 50 mL of Folin-Ciocalteu reagent, and 500 mL of analytical-grade methanol. Additionally, the experimental setup requires 250 mL of 70% ethanol, 100 g of anhydrous sodium carbonate and 100 mL of distilled water for chemical extractions and solutions, 500 g of Nutrient Agar (NA) to determine total plate counts alongside 500 g of Potato Dextrose Agar (PDA) specifically prepared for yeast and mold cultivation.

2.2 Treatment and Experimental Design

The treatment and experimental design carried out in the process of making Butterfly pea flower and Lemongrass herbal tea are as follows:

1. The process of procurement and preparation of raw materials. Then the raw materials are dried using two processing techniques: the traditional Sun Drying method and the mechanical Tray Dryer method.
2. Analysis of physicochemical properties (moisture content, ash content, pH, total phenolic content, and antioxidant activity) and microbial safety parameters (total plate count, yeast, and mold count).
3. The observation of the sensory attributes (color, flavor, taste, texture, appearance, and overall acceptability) of the brewed tea bags during a defined storage period.

This study is conducted to determine the best drying technique and formulation blend to produce a high-quality herbal tea drink according to established quality guidelines. The processing involves a comparison between open-air sun drying and controlled tray drying, testing 10 distinct treatment variations designated as ST0, ST0', ST1, ST2, ST3, TT0, TT0', TT1, TT2, and TT3. The final processed powder is enclosed in tea bags and stored at a constant room temperature of 25 °C for shelf-life evaluation.

2.3 Observations

Throughout this project, we are closely tracking how different drying choices and ingredients change the tea's health properties, shelf life, and taste scores over time. Our focus is to find the perfect processing balance to create a reliable, high-quality retail product that checks out perfectly against professional food safety standards.

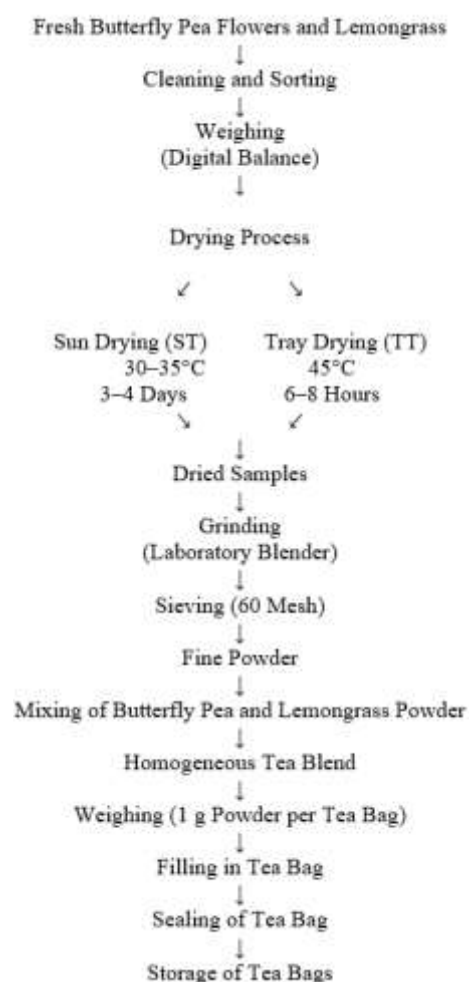
2.4 Research Procedure

2.4.1 Making Dried Herbal Tea

1. **Sourcing and Weighing:** Fresh, blue butterfly pea flowers are collected from the local market and fresh lemongrass is harvested directly from the orchard. Both ingredients are precisely measured using a digital laboratory balance.
2. **The Drying Step:** The fresh plants are split into two groups: one batch is laid out in thin layers and covered with a light cotton cloth for traditional Sun Drying

(ST), while the second batch goes into a mechanical Tray Dryer (TT) to dry under controlled heat.

3. **Grinding and Filtering:** Once fully dried, the ingredients are milled into a fine powder using a laboratory blender. This powder is then shaken through a 60-mesh sieve to filter out any large chunks and create a smooth, uniform texture.
4. **Mixing the Recipe:** The sieved butterfly pea and lemongrass powders are blended together according to our specific recipe to perfectly balance the vibrant blue colour with a refreshing citrus taste.
5. **Packing the Tea Bags:** Exactly 1 gram of the final herbal powder mix is weighed out and sealed inside food-grade filter paper envelopes to make individual, ready-to-brew tea bags.



2.5 Research Analysis

The analysis of the results is carried out in several stages, namely as follows:

2.5.1 Analysis of Moisture Content

Exactly 2 g of the processed herbal tea sample was weighed into a previously dried and weighed porcelain dish. The dish containing the sample was placed in a hot air oven at 105°C for approximately 3 hours to remove moisture. After drying, the dish was transferred to a desiccator and allowed to cool for about 15 minutes to prevent moisture absorption from the atmosphere. The final weight was then recorded. The moisture content was calculated using the following equation:

$$\text{Moisture Content (\%)} = \frac{B - (C - A)}{B} \times 100$$

Where:

- A= Weight of empty dish (g)
- B= Initial weight of sample (g)
- C= Weight of dish + dried sample after heating (g)

2.5.2 Analysis of Ash Content

To determine the mineral (ash) content of the herbal tea sample, an empty porcelain crucible was first heated in a muffle furnace at 550°C to remove any impurities. The crucible was cooled in a desiccator and weighed. Exactly 2 g of the herbal tea sample was then placed into the crucible. The sample was incinerated in a muffle furnace at 550°C for approximately 4 hours until a greyish-white ash was obtained, indicating complete removal of organic matter. After cooling in a desiccator, the crucible containing ash was weighed again.

The ash content was calculated using the following equation:

$$\text{Ash Content (\%)} = \frac{(W_1 - W_2)}{W} \times 100$$

Where:

- W= Weight of sample taken (g)
- W₁= Weight of crucible + ash after incineration (g)
- W₂= Weight of empty crucible (g)

2.5.3 Analysis of pH

The pH of the herbal tea infusion was determined to evaluate its acidity or alkalinity. A tea extract was prepared by brewing 1 g of the herbal tea blend in hot distilled water and allowing it to cool to room temperature. The electrode of a calibrated digital pH meter was rinsed with distilled water and gently dried before immersion into the tea sample. The pH value displayed on the instrument was recorded once the reading became stable.

2.5.4 Analysis of TSS

Total soluble solids (TSS) of the tea extract were measured using a handheld refractometer. Prior to analysis, the prism surface of the refractometer was cleaned with distilled water and wiped dry using soft tissue paper. A few drops of the cooled tea extract were placed onto the prism surface, and the cover plate was closed carefully. The reading was observed through the eyepiece toward a light source, and the TSS value was recorded in degrees Brix (°Brix).

2.5.5 Analysis of Total Phenolic Content

The total phenolic content (TPC) of the herbal tea extract was determined using the Folin-Ciocalteu colorimetric method. A measured quantity of the tea extract was mixed with Folin-Ciocalteu reagent followed by sodium carbonate (Na₂CO₃) solution to initiate the color development reaction.

The reaction mixture was incubated in the dark for a specific period to allow complete formation of the blue-colored complex. After incubation, the absorbance of the solution was measured using a UV-Visible spectrophotometer at 750nm.

The total phenolic content was quantified using a gallic acid standard calibration curve and expressed as milligrams of gallic acid equivalent per gram of sample (mg\ GAE/g).

The total phenolic content was calculated using the following formula:

$$\text{TPC (mg GAE/g)} = \frac{C \times V}{m}$$

Where:

- C= Concentration of phenolic compounds obtained from the gallic acid standard curve (mg/mL)
- V= Volume of extract used for analysis (mL)
- m= Weight of sample used for extraction (g)

2.5.6 Analysis of Antioxidant Activity

The antioxidant activity of the herbal tea extract was evaluated using the DPPH free radical scavenging assay. A DPPH solution was prepared by dissolving 4 mg of DPPH powder in methanol, producing a deep purple-colored solution. The tea extract was mixed with the DPPH solution and kept in the dark for 30 minutes at room temperature. Antioxidants present in the sample reduced the DPPH radicals, causing the color to change from purple to pale yellow. The absorbance was then measured using a UV-Visible spectrophotometer at 517 nm.

The percentage antioxidant activity was calculated using the following equation:

$$\text{Antioxidant Activity (\%)} = \frac{A_{\text{control}} - A_{\text{sample}}}{A_{\text{control}}} \times 100$$

Where:

- A_{control}= Absorbance of the DPPH solution without sample (control)
- A_{sample}= Absorbance of the DPPH solution mixed with the tea extract

3. Results And Discussion

The present study was conducted to evaluate the effect of sun drying and tray drying on the physicochemical characteristics, bioactive compounds, antioxidant activity, and microbiological quality of butterfly pea flower and lemongrass herbal tea. The obtained results are presented and discussed under the following sections.

3.1 Physicochemical Characteristics of Herbal Tea Samples

The physicochemical properties of the herbal tea samples prepared using different drying methods are presented in Table 1.

Table 1: Physicochemical characteristics of herbal tea samples

Parameter	Sun-Dried Sample	Tray-Dried Sample
Moisture Content (%)	8.955	8.349
Ash Content (%)	8.25	8.55
pH	5.92	5.62
Total Soluble Solids (°Brix)	0.38	0.52

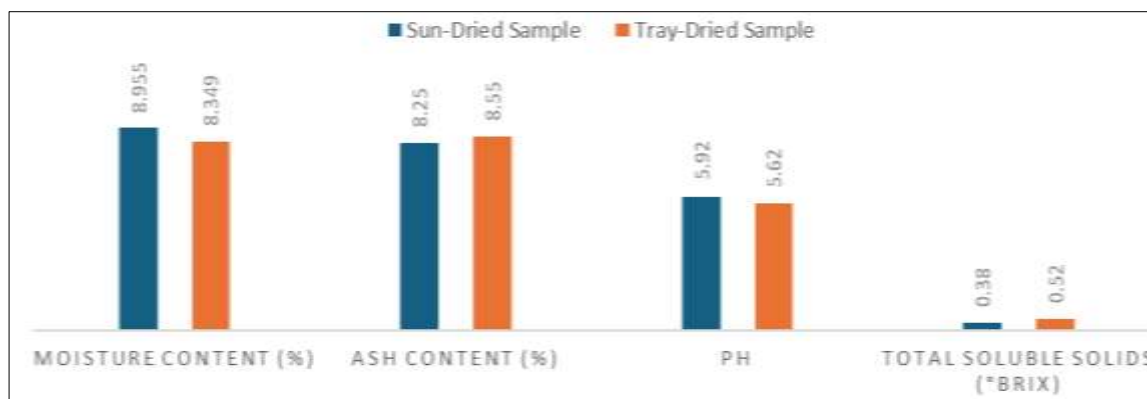


Fig 1: Comparison of physicochemical characteristics of sun-dried and tray-dried herbal tea samples.

Discussion

The moisture content of the sun-dried and tray-dried herbal tea samples was found to be 8.955% and 8.349%, respectively. The slightly lower moisture content observed in the tray-dried sample may be attributed to the controlled drying conditions, which promoted more efficient moisture removal. Low moisture content is desirable for improving shelf life and reducing microbial growth.

The ash content ranged from 8.25% to 8.55%, with the tray-dried sample exhibiting a slightly higher value. Ash content represents the total mineral content of the product, indicating that tray drying retained mineral constituents effectively.

The pH values of the herbal tea samples were mildly acidic, ranging from 5.62 to 5.92. The sun-dried sample showed a

marginally higher pH than the tray-dried sample. Such pH values are suitable for herbal tea products and contribute to product stability.

The total soluble solids (TSS) were recorded as 0.38 °Brix for the sun-dried sample and 0.52 °Brix for the tray-dried sample. The higher TSS value in the tray-dried sample may indicate a greater concentration of soluble solids following drying.

3.2 Bioactive Compounds and Antioxidant Activity

The total phenolic content and antioxidant activity of herbal tea samples prepared by different drying methods are presented in Table 2.

Table 2: Bioactive compounds and antioxidant activity of herbal tea samples

Parameter	Sun-Dried Sample	Tray-Dried Sample
Total Phenolic Content (mg GAE/g)	471.80	377.37
Antioxidant Activity (%)	68.95	61.50

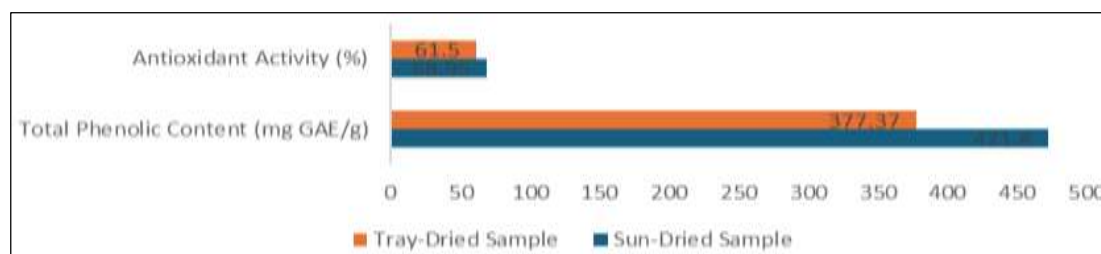


Fig 2: Total phenolic content and Antioxidant activity of sun-dried and tray-dried herbal tea samples.

Discussion

The total phenolic content (TPC) of the sun-dried herbal tea sample was 471.80 µg GAE/g, which was considerably higher than that of the tray-dried sample (377.37 µg GAE/g). Phenolic compounds are important bioactive constituents responsible for antioxidant properties and various health-promoting effects. The higher TPC observed in the sun-dried sample indicates better retention of phenolic compounds during drying.

A similar trend was observed for antioxidant activity. The sun-dried sample exhibited an antioxidant activity of 68.95%, whereas the tray-dried sample showed 61.50%. The higher antioxidant activity of the sun-dried sample may be directly related to its elevated phenolic content, as phenolic compounds are known to act as effective free radical scavengers.

The results suggest that sun drying was more effective in preserving bioactive compounds and antioxidant potential compared to tray drying. Therefore, sun drying may be considered a suitable method for producing herbal tea with enhanced functional properties.

3.3 Microbiological Quality of Herbal Tea Samples

The microbiological quality of the herbal tea samples is presented in Table 3.

Table 3: Microbiological quality of herbal tea samples

Parameter	Sun-Dried Sample	Tray-Dried Sample
Standard Plate Count (CFU/g)	1.2×10^2	1.8×10^2
Yeast and Mold Count	Absent	Absent
Coliform Count	Absent	Absent

Discussion

The standard plate count (SPC) of the sun-dried and tray-dried samples was found to be 1.2×10^2 CFU/g and 1.8×10^2 CFU/g, respectively. The lower microbial load observed in the sun-dried sample indicates slightly better microbiological quality. However, both values were well within acceptable limits for herbal tea products.

No yeast and mold growth was detected in either sample. Similarly, coliform organisms were absent in both treatments, indicating good hygienic practices during processing and handling. The absence of these microorganisms confirms the microbiological safety and quality of the herbal tea samples.

4. Conclusion

The present study successfully developed and evaluated herbal tea prepared from Butterfly Pea flower (*Clitoria ternatea*) and Lemongrass (*Cymbopogon citratus*) using two different drying methods, namely sun drying and tray drying. The drying method significantly influenced the physicochemical properties, bioactive compound retention, antioxidant activity, and microbiological quality of the final herbal tea product.

The tray-dried sample exhibited lower moisture content (8.349%) and slightly higher ash content (8.55%) and total soluble solids (0.52 °Brix), indicating improved drying efficiency and mineral retention. However, the sun-dried sample demonstrated superior functional properties, with higher total phenolic content (471.80 mg GAE/g) and antioxidant activity (68.95%) compared to the tray-dried sample. These results suggest that sun drying was more effective in preserving phenolic compounds and antioxidant constituents responsible for the health-promoting benefits of herbal tea.

Microbiological analysis revealed that both drying methods produced safe products with microbial counts well within acceptable limits. No yeast, mold, or coliform contamination was detected, confirming the hygienic quality and safety of the developed herbal tea.

Overall, the findings indicate that Butterfly Pea flower and Lemongrass can be effectively utilized for the production of a nutritious and functional herbal tea. Although tray drying provided better moisture reduction, sun drying resulted in greater retention of bioactive compounds and antioxidant potential. Therefore, sun drying may be considered the more suitable method for producing herbal tea with enhanced functional and health-promoting properties. The developed herbal tea has good potential as a natural, caffeine-free beverage with desirable quality characteristics and consumer appeal.

References

1. Darroca RMF, Ang Lopez MJ, Thuy NM, Giau TN, Hao HV, Tai NV. Development and characterization of butterfly pea (*Clitoria ternatea* L.) flower juice from spray dried powder. *International Journal of Chemical and Biochemical Sciences*. 2024;25(19):357-365.
2. Dewi YK, Suryani N. Physico-chemical characteristics of figs herbal tea (*Ficus racemosa* L.) as a functional antidiabetic drink. *Journal of Natural Sciences and Mathematics Research*. 2024;10(1):24-31.
3. Erminawati E, Handayani S. Bioactive components of lemongrass (*Cymbopogon citratus*) extract obtained from multi-step extraction. *Food Research*. 2021;5(2):112-119.
4. Juanda, Hartuti S. Sensory analysis of butterfly pea (*Clitoria ternatea* L.) flower tea drink using central composite design. *International Journal of Design & Nature and Ecodynamics*. 2024;19(1):41-47.
5. Kong KW, Mat-Junit S. Herbal teas: A review of their plant parts and health benefits. *Journal of Herbal Medicines*. 2024;43:100812.
6. Lonkar PB, Bhoite SV. Effect of storage on chemical constituents and sensory quality of lemongrass powder. *Journal of Post-Harvest Technology*. 2013;1(2):74-79.
7. Lonkar PB, Chavan UD, Pawar VD, Bansode VV. Storage study of lemongrass leaf powder for quality retention. *International Journal of Processing and Post Harvest Technology*. 2013;4(1):45-49.
8. Morris JB. Morphological and reproductive characterization of butterfly pea (*Clitoria ternatea* L.). *Genetic Resources and Crop Evolution*. 2009;56(3):421-427.
9. Mosii LTJ, Pheko-Ofithile T, Kobue-Lekalake R, Mazimba O. *Terminalia prunioides* pods herbal tea: Antioxidant activity, proximate, and metal content analysis. *Food Chemistry Advances*. 2023;2:100280.
10. Muhammad Ezzudin R, Rabeta MS. A review of *Clitoria ternatea* (butterfly pea flower) as a natural food colorant. *Journal of Food Science and Technology*. 2018;55(3):851-860.
11. Mukherjee PK, Kumar V, Kumar NS, Heinrich M. The Ayurvedic medicine *Clitoria ternatea*—from traditional use to scientific assessment. *Journal of Ethnopharmacology*. 2008;120(3):291-301.
12. Mukherjee S. Lemongrass: A medicinal plant with pharmacological significance. *International Journal of Herbal Medicine*. 2024;12(1):15-22.
13. Murugan Tharaniya S. Formulation and nutritional evaluation of lemongrass herbal tea bags. *International Journal of Food Science and Nutrition*. 2023;8(1):55-62.
14. Nair V, Reghunath R. Butterfly pea (*Clitoria ternatea*) flowers as a natural food colourant and its applications. *Journal of Food Science*. 2008;24(1):12-18.
15. Ngho Newilah G. Study related to physicochemical characterization of herbal tea infusions. *Journal of Applied Bioscience*. 2018;122:12150-12159.
16. Oguis GK. *Clitoria ternatea* and its bioactive compounds: A review of pharmacological activities. *Food Chemistry*. 2019;275:113-124.
17. Pals RS, Rao BRR, Ramesh S. Improved cultivars of lemongrass in India and their agronomic performance. *Indian Journal of Agronomy*. 1992;37(2):312-316.
18. Parimala Devi B, Boominathan R, Mandal SC. Anti-inflammatory, analgesic and antipyretic properties of *Clitoria ternatea* root. *Fitoterapia*. 2003;74(4):345-349.
19. Prashasti. Production and characterization of herbal blue tea from *Clitoria ternatea* L. *Journal of Herbal Food Products*. 2023;6(2):34-40.
20. Ramesh S, Rajkumar M, Silambuselvi K, Velraja S. Exploring *Clitoria ternatea* (blue pea) herbal tea: A potent beverage with antioxidant and α -amylase inhibitory activity. *Indian Journal of Natural Products and Resources*. 2025;16(2):271-278.

21. Ramli NS. Bioactive compounds and medicinal properties of butterfly pea flower (*Clitoria ternatea*). *Molecules*. 2021;26(12):3653.
22. Ranade SS, Thiagarajan P. Lemon grass. *International Journal of Pharmaceutical Sciences Review and Research*. 2015;35(2):162-167.
23. Shah G, Shri R, Panchal V, Sharma N, Singh B, Mann AS. Scientific basis for the therapeutic use of *Cymbopogon citratus* (lemongrass). *Journal of Advanced Pharmaceutical Technology & Research*. 2011;2(1):3-8.
24. Sofiah A. Optimization of drying time and ginger powder concentration in butterfly pea herbal tea production. *Food Research*. 2021;5(Suppl 2):45-52.