

Camellia japonica Leaves: A Promising Ingredient for Health-Promoting Plant-Based Beverages

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Introduction



Camellia japonica is an ornamental species with emerging nutraceutical and functional food potential. This study aimed to evaluate the nutritional composition, total phenolic content (TPC), and antioxidant capacity of *C. japonica* leaves to assess their potential as sustainable and health-oriented ingredients.

Methods

Leaf collection

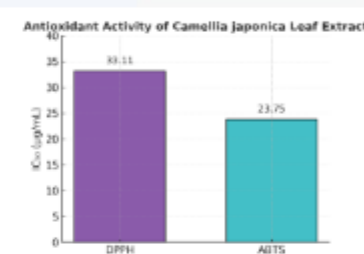
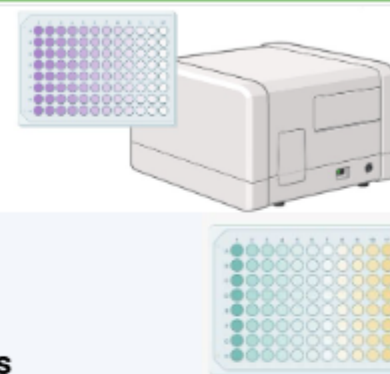


Extraction



Analysis

Assay	Result
DPPH (IC ₅₀)	33.11 ± 7.25 µg/mL
ABTS (IC ₅₀)	23.75 ± 10.97 µg/mL
TPC	36.67 ± 4.05 mg GAE/g DW



Interpretation

- Lower IC₅₀ → stronger antioxidant capacity
- High TPC → rich in phenolics
- Consistent results across assays

- Nutritional analysis: performed following AOAC standard methods.
- Total phenolic content (TPC): determined by the Folin–Ciocalteu assay and expressed as mg gallic acid equivalents per g dry weight (mg GAE/g DW).
- Antioxidant assays: conducted using DPPH and ABTS radical scavenging methods to calculate IC₅₀ values.

Results

- Leaves contained 4.19% protein and 2.90% lipids.
- TPC was 36.67 ± 4.05 mg GAE/g DW, and antioxidant assays showed strong radical scavenging activity (DPPH IC₅₀ = 33.11 µg/mL, ABTS IC₅₀ = 23.75 µg/mL), confirming the high antioxidant potential of *C. japonica* leaves.

Radical scavenging activity

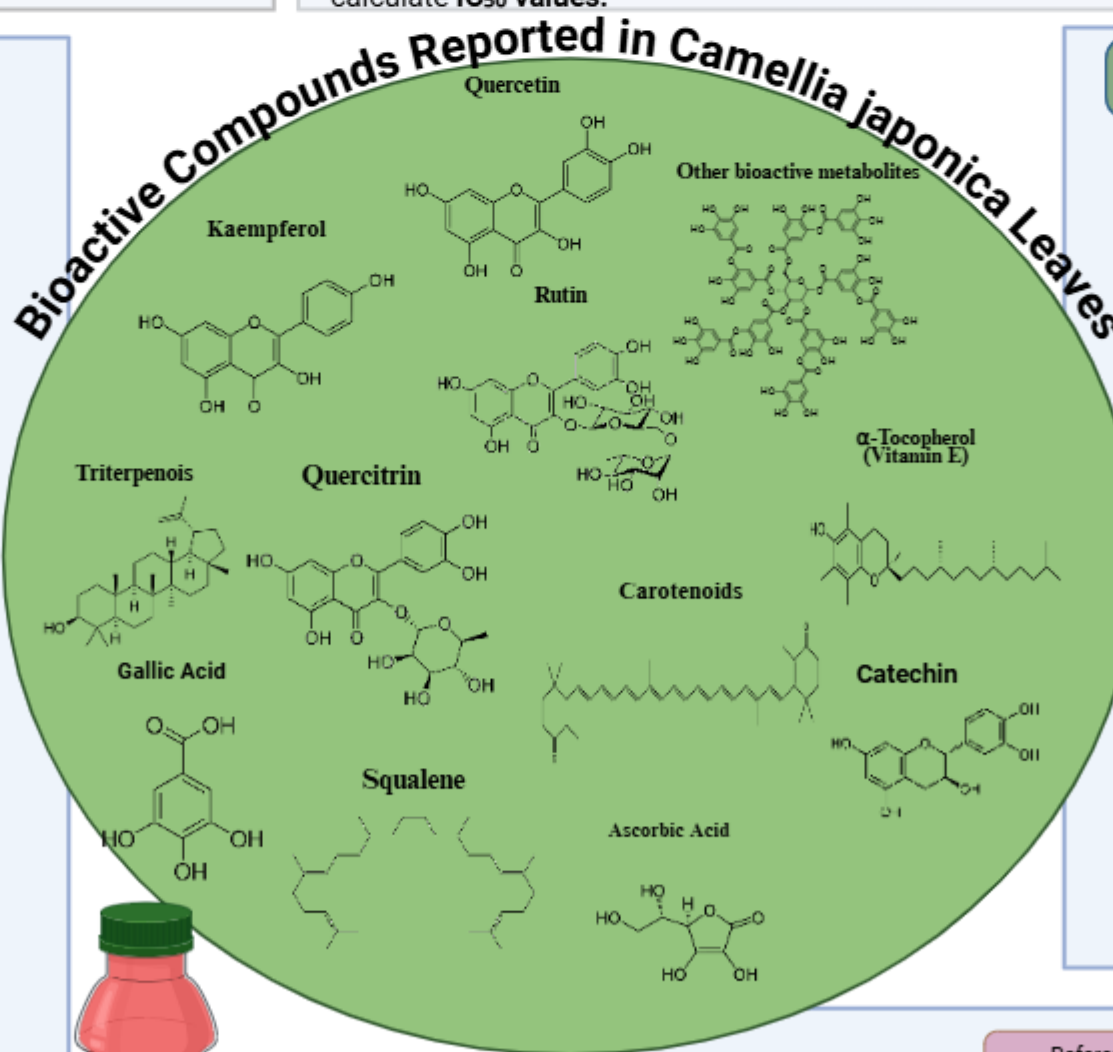


Discussion

- High phenolic content and strong radical scavenging activity confirm antioxidant potential.
- Comparable to other *Camellia* species used in tea production (*C. sinensis*).
- Presence of polyphenols and vitamins indicates multiple antioxidant mechanisms.
- Possible applications in functional beverages and natural extracts contributing to sustainable food systems.

Conclusion

C. japonica leaves show excellent antioxidant and nutritional properties. Their valorization supports circular economy by reusing ornamental pruning residues. Integration into functional or fermented beverages may promote sustainable, plant-based food innovations.



References

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