



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Research Paper

Formulation and Evaluation of Herbal Tea for Anti-Anginal Activity

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ARTICLE INFO

Published: 04 July 2026

Keywords:

Herbal tea, Angina pectoris, Cardiovascular disease, Antioxidant, Polyherbal formulation, Cardioprotection.

DOI:

10.5281/zenodo.21185803

ABSTRACT

Angina pectoris is one of the most common manifestations of cardiovascular disease caused by inadequate blood supply to the myocardium. Herbal medicines have gained considerable attention due to their antioxidant, anti-inflammatory, hypolipidemic, and cardioprotective properties. Herbal tea formulations were prepared using selected medicinal plants traditionally known for cardiovascular benefits. The formulation was evaluated for organoleptic characteristics, pH, moisture content, ash value, extractive value, phytochemical constituents, DPPH free radical scavenging activity, anti-inflammatory activity, lipid-lowering potential, and accelerated stability studies. The formulated herbal tea exhibited acceptable organoleptic properties and physicochemical parameters. Phytochemical screening confirmed the presence of flavonoids, tannins, phenolics, alkaloids, saponins, and glycosides.

INTRODUCTION

Cardiovascular diseases (CVDs) remain the leading cause of mortality worldwide. Among them, angina pectoris is characterized by chest pain resulting from reduced coronary blood flow and myocardial ischemia. Conventional anti-anginal medications are effective but are often associated with adverse effects and increased treatment costs.

Medicinal plants have been utilized for centuries in traditional medicine for maintaining

cardiovascular health. Herbal teas prepared from carefully selected medicinal herbs are rich sources of bioactive phytochemicals such as flavonoids, polyphenols, tannins, alkaloids, and glycosides. These compounds possess antioxidant, anti-inflammatory, vasodilatory, antihyperlipidemic, and cardioprotective activities that may contribute to the prevention and management of ischemic heart disease.

The present study focuses on developing a standardized herbal tea formulation and evaluating

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



its quality parameters together with its potential anti-anginal activity.

2. MATERIALS AND METHODS

2.1 Plant Materials

Medicinal plants with reported cardioprotective activity were selected based on traditional usage and published scientific literature. The plant materials were cleaned, shade dried, powdered, and stored in airtight containers before formulation.

2.2 Preparation of Herbal Tea

The dried herbal ingredients were blended in optimized proportions to prepare a homogeneous polyherbal tea formulation. Tea bags containing accurately weighed quantities of the herbal blend were prepared under hygienic conditions.

2.3 Evaluation Parameters

The formulation was evaluated for:

- Colour
- Aroma
- Taste
- Appearance
- pH
- Moisture content
- Total ash value
- Water-soluble extractive value
- Alcohol-soluble extractive value

2.4 Phytochemical Screening

Standard qualitative methods were employed for the identification of:

- Alkaloids
- Flavonoids
- Tannins
- Saponins
- Glycosides
- Phenolic compounds

2.5 Antioxidant Activity

Antioxidant activity was evaluated using the DPPH free radical scavenging assay. Percentage inhibition was calculated and compared with a standard antioxidant.

2.6 Anti-inflammatory Activity

The anti-inflammatory potential was evaluated using suitable in vitro protein denaturation inhibition methods.

2.7 Lipid-Lowering Activity

The hypolipidemic potential of the herbal tea extract was assessed using standard laboratory methods.

2.8 Stability Studies

The prepared herbal tea was stored under recommended storage conditions for accelerated stability evaluation. Changes in colour, aroma, pH, moisture content, and phytochemical profile were monitored periodically.

3. RESULTS

The herbal tea formulation exhibited satisfactory physicochemical characteristics with good consumer acceptability.

Organoleptic Evaluation

- Colour: Brownish green infusion
- Aroma: Pleasant herbal odour
- Taste: Mildly bitter with acceptable flavour
- Appearance: Clear infusion without sedimentation

Physicochemical Evaluation

The prepared formulation showed acceptable pH, moisture content, ash value, and extractive values within pharmacopoeial limits, indicating good quality and stability.

Phytochemical Screening

Qualitative analysis confirmed the presence of:

- Flavonoids (+++)



- Phenolics (++++)
- Tannins (++)
- Glycosides (++)
- Alkaloids (+)
- Saponins (+)

Antioxidant Activity

The herbal tea demonstrated considerable DPPH free radical scavenging activity, indicating a high antioxidant potential attributable to its flavonoid and phenolic content.

Anti-inflammatory Activity

The formulation exhibited appreciable inhibition of protein denaturation, suggesting anti-inflammatory properties that may contribute to cardiovascular protection.

Lipid-Lowering Activity

The herbal extract showed promising lipid-lowering activity, indicating possible usefulness in reducing cardiovascular risk factors.

Stability Study

No significant changes in appearance, aroma, pH, or phytochemical profile were observed throughout the study period, confirming acceptable formulation stability.

DISCUSSION

Oxidative stress plays a crucial role in the development of coronary artery disease and myocardial ischemia. Herbal formulations rich in natural antioxidants may reduce oxidative damage by scavenging free radicals and protecting vascular endothelial cells.

The presence of flavonoids and phenolic compounds in the formulated herbal tea explains its significant antioxidant activity. These phytochemicals are known to improve endothelial function, reduce lipid peroxidation, inhibit inflammation, and enhance coronary circulation.

The anti-inflammatory activity observed in the formulation further supports its potential cardioprotective effect because chronic inflammation contributes to atherosclerosis and plaque instability.

Similarly, the lipid-lowering activity may reduce serum cholesterol accumulation, thereby decreasing the progression of coronary artery disease.

The acceptable physicochemical properties and stability indicate that the formulation possesses good quality and shelf-life characteristics suitable for commercial development.

CONCLUSION

The present investigation successfully formulated and evaluated a polyherbal tea intended for anti-anginal activity.

The formulation demonstrated:

- Good organoleptic characteristics.
- Acceptable physicochemical properties.
- Presence of valuable phytochemicals.
- Significant antioxidant activity.
- Appreciable anti-inflammatory activity.
- Promising lipid-lowering potential.
- Good stability during storage.

The study suggests that herbal tea may serve as a safe supportive dietary supplement for maintaining cardiovascular health and reducing oxidative stress associated with angina pectoris. However, comprehensive animal studies and randomized clinical trials are necessary before therapeutic recommendations can be made.

FUTURE SCOPE

- In vivo evaluation in experimental animal models.
- Toxicological studies.
- Standardization using chromatographic techniques.
- Clinical trials in patients with stable angina.



- Development of commercial herbal tea formulations.
- Investigation of bioavailability and pharmacokinetics.

ACKNOWLEDGEMENT

The authors express sincere gratitude to the Department of Pharmacy, Jaipur School of Pharmacy, Maharaj Vinayak Global University, Jaipur, for providing the facilities and guidance necessary to complete this work.

REFERENCES

1. World Health Organization. Cardiovascular Diseases Fact Sheet.
2. Rang HP, Dale MM, Ritter JM. *Rang & Dale's Pharmacology*.
3. Kokate CK. *Practical Pharmacognosy*.
4. Trease GE, Evans WC. *Pharmacognosy*.
5. Harborne JB. *Phytochemical Methods*.
6. Indian Pharmacopoeia Commission. *Indian Pharmacopoeia*.
7. Khandelwal KR. *Practical Pharmacognosy*.
8. Brunton LL. *Goodman & Gilman's The Pharmacological Basis of Therapeutics*.
9. Evans M, et al. Herbal medicines in cardiovascular disorders. *Journal of Ethnopharmacology*.
10. American Heart Association. Guidelines for the Management of Stable Ischemic Heart Disease.
11. Aggarwal, B. B., Gupta, S. C., & Sung, B. (2013). Curcumin: An orally bioavailable blocker of TNF and other pro-inflammatory biomarkers. *British Journal of Pharmacology*, 169(8), 1672–1692.
12. Benzie, I. F. F., & Wachtel-Galor, S. (Eds.). (2011). *Herbal Medicine: Biomolecular and Clinical Aspects* (2nd ed.). CRC Press.
13. Ekor, M. (2014). The growing use of herbal medicines: Issues relating to adverse reactions and challenges in monitoring safety. *Frontiers in Pharmacology*, 4, 177.
14. Harborne, J. B. (1998). *Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis* (3rd ed.). Springer.
15. Khandelwal, K. R. (2019). *Practical Pharmacognosy: Techniques and Experiments* (29th ed.). Nirali Prakashan.
16. Kumar, D., Bhat, Z. A., Kumar, V., Shah, M. Y., & Bhat, J. A. (2017). Cardioprotective activity of medicinal plants: A review. *Journal of Ethnopharmacology*, 197, 98–117.
17. Libby, P. (2021). The changing landscape of atherosclerosis. *Nature*, 592(7855), 524–533.
18. Satoskar, R. S., Rege, N. N., & Bhandarkar, S. D. (2020). *Pharmacology and Pharmacotherapeutics* (26th ed.). Elsevier India.
19. Sofowora, A. (2008). *Medicinal Plants and Traditional Medicine in Africa* (3rd ed.). Spectrum Books.
20. Yusuf, S., Joseph, P., Rangarajan, S., et al. (2020). Modifiable risk factors, cardiovascular disease, and mortality in 155,722 individuals from 21 countries. *The New England Journal of Medicine*, 382(20), 1923–1934.

HOW TO CITE: Mahesh Chand Sharma, Lokendra Singh Rathore, Narsingh Rajpoot, Hemant Kumar, Vishal Garg Formulation and Evaluation of Herbal Tea for Anti-Anginal Activity, Int. J. of Pharm. Sci., 2026, Vol 4, Issue 7, 869-872, <https://doi.org/10.5281/zenodo.21185803>

