Pharmacogn. Res., 2025; 17(2):1-4.
https://www.phcogres.com

Original Article

Assessment of Quality Control Parameters of Erandamoola Kwatha, Dhanvantari Taila and Yogaraja Guggulu in the Management of Non-specific Backache

Ramesh Killedar[1], Pradeep Shindhe[1], Veena Kupati[2,*], Vijay Kage[3]

[1]Department of Shalya Tantra, KAHER'S Shri B.M.K Ayurveda Mahavidhyalaya, Shahapur, Belagavi, Karnataka, INDIA.
[2]Department of Rasashastra and Bhaishajya Kalpana, KAHER'S Shri B.M.K Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka, INDIA.
[3]Department of Orthopedic Physiotherapy, KLE College of Physiotherapy Belagavi, Karnataka, INDIA.

ABSTRACT

Background: Ayurveda is an ancient system of medicine that promotes health and healing by using natural components. Quality and standardisation are essential to ensure the therapeutic efficacy and safety of Ayurvedic medicines. **Materials and Materials:** This study evaluates the quality of three widely used Ayurvedic formulations: Erandamoola Kwatha, Dhanvantari Taila and Yogaraja Guggulu through organoleptic, physicochemical and phytochemical analysis. These formulations, procured from a GMP-certified Ayurveda pharmacy, were subjected to different analytical tests to assess their properties and active constituents. Erandamoola Kwatha was analysed for its form, colour, pH, specific gravity and total solids. **Results:** The results are as per the in-house standards. Dhanvantari Taila underwent physicochemical analysis, including saponification, iodine value and rancidity testing, confirming its stability and quality. Yogaraja Guggulu was evaluated for disintegration time, moisture content, ash value and phytochemicals, revealing a rich profile of bioactive compounds, including steroids, flavonoids and tannins. Phytochemical screening highlighted key compounds such as cardiac glycosides and flavonoids in Erandamoola Kwatha and Yogaraja Guggulu, reinforcing their anti-inflammatory and antioxidant properties. **Discussion:** The results from all three formulations were consistent with traditional Ayurvedic principles and modern quality standards, supporting their safety and efficacy for therapeutic use. **Conclusion:** This study emphasizes the importance of stringent quality control for Ayurvedic products, ensuring their reliability and therapeutic value. Future research should focus on bioavailability and clinical efficacy to further substantiate the therapeutic potential of these formulations.

Keywords: Dhanvantari Taila, Erandamoola kwatha, Physicochemical analysis, Phytochemical analysis, Quality, Yogaraja Guggulu.

Correspondence:
Dr. Veena Kupati
Reader, Department of Rasashastra and Bhaishajya Kalpana, KAHER'S Shri B.M.K Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka, INDIA.
Email: veenakupati@gmail.com

Received: 08-11-2024;
Revised: 13-01-2025;
Accepted: 24-02-2025.

INTRODUCTION

Ayurveda, a traditional system of medicine, emphasizes the holistic use of natural substances to promote health and healing. The efficacy of Ayurvedic formulations relies on the quality and standardization of the ingredients used.[1] In this study, three widely used Ayurvedic formulations such as Erandamoola Kwatha,[2] Dhanvantari Taila,[3] and Yogaraja Guggulu[4] were evaluated to determine their quality through organoleptic, physicochemical and phytochemical tests. These formulations are integral components of Ayurvedic therapeutics and ensuring their consistent quality is essential for their therapeutic efficacy and safety.

The Erandamoola Kwatha is primarily used for its Shotahara (anti-inflammatory), Vatahara (Musculoskeletal disorders) and Virechana (detoxifying) properties.[2] At the same time, Dhanvantari Taila is a medicated oil with various therapeutic applications such as Vata roga (musculoskeletal disorders), Pakshavadha (Hemiplegia) and Dhatu kshaya (wasting of muscles).[3] Yogaraja Guggulu is renowned for its anti-rheumatic and anti-inflammatory effects, as indicated in Amavata (rheumatoid arthritis), Adhyavata (Gout) and Sandhivata (osteoarthritis).[4] This study aims to provide a detailed analysis of these formulations, ensuring their compliance with Ayurvedic principles and contemporary quality standards.

DOI: 10.5530/pres.20252052

Publishing Partner : Manuscript Technomedia. [www.mstechnomedia.com]

MATERIALS AND METHODS

Materials

Erandamoola Kwatha churna, Dhanvantari Taila and Yogaraja Guggulu were procured from the GMP Certified KLE Ayurveda pharmacy, Belagavi.

The Erandamoola Kwatha was prepared according to the general method of Kwatha preparation described in Sharangadhara Samhita Madhyama Khanda 2/2.

The analysis of Erandamoola Kashaya, Dhanvantari Taila and Yogaraja Guggulu was conducted at the Central Research Facility, AYUSH-Approved Drug Testing Laboratory for ASU drugs, KAHER's Shri BMK Ayurveda Mahavidyalaya, Belagavi.

Methods

Organoleptic Evaluation

The formulations were evaluated for their form, colour, odour and taste.

Physicochemical Analysis

The pH,[5] specific gravity,[6] total solids,[7] and phytochemicals[8] of the Erandamoola Kwatha were assessed. The Dhanvantari Taila was evaluated for rancidity,[9] weight per millilitre,[10] refractive index,[10] iodine value,[11] acid value,[12] and saponification value.[13] The Yogaraja Guggulu was analysed for TLC,[14] preliminary phytochemical screening,[8] ash value, acid-insoluble ash, water and alcohol-soluble extracts,[15] disintegration time,[16] average weight, hardness and friability.[17]

RESULTS

The observations of Organoleptic and physicochemical parameters of Erandamoola Kwatha (Table 1), Dhanvantari Taila (Table 2) and Yogaraja Guggulu (Table 3) are summarised. The results of the Phytochemicals of Erandamoola Kwatha and Yogaraja Guggulu are represented in (Table 4).

Table 1: Results of analysis of Erandamoola Kwatha.

Tests	Results
Form	Kwatha
Colour	Dark brown
Odour	Pleasant
Taste	Acrid
Specific gravity	1.006
pH	4.59
Total solids	1.403%

DISCUSSION

The results obtained from the evaluation of Erandamoola Kwatha, Dhanvantari Taila and Yogaraj Guggulu support both traditional siddha lakshana mentioned in classical texts and modern standards for quality assessment of Ayurvedic formulations. The organoleptic properties (form, colour, odour and taste) of the formulations confirm the reliability of these preparations with Ayurvedic norms.

Erandamoola Kwatha

The specific gravity of 1.006 and pH of 4.59 indicate that the Kwatha is appropriately formulated, with active principles. The total solids of 1.403% suggest a concentration of active ingredients supporting the intended therapeutic actions. The results of the physicochemical and phytochemical analyses, including the absence of reducing sugars and the presence of carbohydrates, tannins and flavonoids, suggest the presence of bioactive

Table 2: Results of analysis of Dhanvantari Taila.

Tests	Limits	Results
Form	Taila	Taila
Colour	Reddish brown	Reddish brown
Odour	Pleasant	Pleasant
Saponification value	180-195	184.02
Iodine value	100-120	103.51
Refractive index at 40°C	1.465	1.465
Acid value	Not more than 4	3.69
Weight per mL	0.930 to 0.945 g	0.940 g
Rancidity	NA	Negative

Table 3: Results of analysis of Yogaraja Guggulu.

Tests	Limits	Results
Form	Vati	Vati
Colour	Dark brown	Dark brown
Taste	Astringent	Astringent
Odour	Spicy pleasant	Spicy pleasant
Loss on drying	Not more than 10%	5.760%
Ash value	Not more than 6%	4.561%
Acid insoluble ash	Not more than 1%	0.694%
Water soluble extractive	Not less than 19%	33.675%
Alcohol soluble extractive	Not less than 16%	18.019%
Disintegration time	NA	29 min
Average weight	NA	472 mg
Hardness test	NA	2.5 kg/cm
Friability test	NA	0.471%

Table 4: Results of phytochemical screening of Erandamoola Kwatha and Yogaraja Guggulu.

Tests	Erandamoola Kwatha	Yogaraja Guggulu	
		Water extract	Alcohol extract
Carbohydrates	Positive	Positive	Positive
Reducing sugar	Negative	Positive	Positive
Monosaccharides	Positive	Positive	Negative
Pentose sugar	Negative	Negative	Negative
Non Reducing sugar	Negative	Negative	Negative
Hexose sugar	Negative	Negative	Negative
Proteins	Negative	Negative	Positive
Amino acids	Negative	Negative	Negative
Steroids	Negative	Negative	Positive
Flavonoids	Positive	Positive	Positive
Alkaloids	Negative	Negative	Negative
Tannins	Positive	Positive	Positive
Tests for Glycosides			
Cardiac Glycosides	Positive	Negative	Positive
Anthraquinone glycosides	Negative	Negative	Negative
Saponin glycosides	Positive	Negative	Negative

compounds with potential antioxidant and anti-inflammatory effects.[18]

Dhanvantari Taila

The physicochemical properties, such as the saponification value of 184.02 and iodine value of 103.51, fall within the acceptable ranges for medicated oils, ensuring that the oil possesses appropriate characteristics for absorption and stability. The negative rancidity test and the specific weight per millilitre further confirm the oil's freshness and quality. The refractive index and acid value also suggest good formulation integrity, essential for therapeutic efficacy.

Yogaraja Guggulu

This formulation has shown excellent physicochemical properties, including low moisture content (loss on drying of 5.76%), an ash value of 4.561% and a significant water-soluble extractive content of 33.675%. The disintegration time of 29 min is consistent with the desired pharmacokinetic behaviour for this tablet formulation. Additionally, the phytochemical screening revealed the presence of active compounds such as steroids, flavonoids and tannins, which support its known anti-inflammatory and antioxidant properties.[19]

The phytochemical screening provided a comprehensive understanding of the bioactive components within the formulations. For instance, the presence of cardiac glycosides in Erandamoola Kwatha and Yogaraj Guggulu indicates the potential for heart-related benefits, whereas the presence of flavonoids and tannins in both Kwatha Erandamoola and Yogaraj Guggulu strengthens their antioxidant and anti-inflammatory profile. These findings are consistent with the traditional uses of these formulations in treating inflammation and promoting overall vitality.

Microbial contamination testing, although not included in the table, remains an essential factor in assessing the safety of Ayurvedic medicines. The absence of contamination would confirm that these formulations meet safety standards for human consumption.

CONCLUSION

The physicochemical, organoleptic and phytochemical properties of these Ayurvedic formulations were within the standards, confirming their potential efficacy and safety. These results support the growing need for quality control in Ayurvedic medicine, ensuring that practitioners and consumers can rely on consistent and standardized products. Further research into the bioavailability and clinical efficacy of these formulations would be beneficial to validate their therapeutic outcomes.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

GMP: Good Manufacturing Practice; **NA:** Not applicable.

ACKNOWLEDGEMENT

Dr. Suhas Kumar Shetty, Principal, KAHER'S Shri BM Kankanawadi Ayurveda Mahavidhyalaya Shahapur, Belagavi, Karnataka.

SUMMARY

The study evaluates the quality of the commonly used formulations such as Dhanvantari taila, Erandamoola Kashaya and Yogaraja guggulu. The formulations were assessed for the Organoleptic characters, Physicochemical and Phytochemical parameters. The obtained results were as per the standards mentioned for the Dhanvantari taila and Yogaraja Guggulu where the results of Erandamoola kwatha matched with inhouse standards. The phytochemicals showing flavonoids in the Erandamoola kwatha and Yogaraja guggulu support the anti-inflammatory activity. The study emphasizes the importance of quality control in Ayurvedic medicine, suggesting the need for further research to explore their clinical efficacy and bioavailability.

REFERENCES

1. Nhawkar S, *et al.* Quality standardization and toxicity study of Ayurvedic formulation. Int J Bioassays. 2014;3(09):3244-53.
2. Mishra SS. Bhaishajya Ratnavali with Siddhiprada Hindi commentary. Varanasi: Chaukhamabha Surabharati Prakashana; 2011. p. 523.
3. Government of India. The ayurvedic formulary of India. 2nd ed. part 1. New Delhi: Ministry of Health and Family Welfare; 2007. p. 137.
4. Mishra SS. Bhaishajya Ratnavali with Siddhiprada Hindi commentary. Varanasi: Chaukhamabha Surabharati Prakashana; 2011. p. 608.
5. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: the controller of publications. 1st ed. Vol. II; 2008. p. 225.
6. Government of India. The ayurvedic pharmacopoeia of India Part I. In: New Delhi: the controller of publications. 1st ed. Vol. II; 1999. p. 208.
7. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: the controller of publications. 1st ed. Vol. II; 2008. p. 221.
8. Khandelwala KR. Practical pharmacognosy. 18th ed. Pune: Nirali Prakashana; 2007. p. 149-53.
9. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: dept. Ayurveda, yoga and naturopathy, Unani, Siddha and homoeopathy. 1st ed. Vol. II; 2008. p. 225.
10. Government of India. The ayurvedic pharmacopoeia of India Part I. In: New Delhi: the controller of publications. 1st ed. Vol. II; 1999. p. 207.
11. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: dept. Ayurveda, yoga and naturopathy, Unani, Siddha and homoeopathy. 1st ed. Vol. II; 2008. p. 222.
12. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: dept. Ayurveda, yoga and naturopathy, Unani, Siddha and homoeopathy. 1st ed. Vol. II; 2008. p. 223.
13. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: dept. Ayurveda, yoga and naturopathy, Unani, Siddha and homoeopathy. 1st ed. Vol. II; 2008. p. 221.
14. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: dept. Ayurveda, yoga and naturopathy, Unani, Siddha and homoeopathy. 1st ed. Vol. II; 2008. p. 164.
15. Government of India. The ayurvedic pharmacopoeia of India Part II. In: New Delhi: dept. Ayurveda, yoga and naturopathy, Unani, Siddha and homoeopathy. 1st ed. Vol. II; 2008. p. 160.
16. USP. General chapter <1087>-Ayurvedic Medicine. Available from: https://www.usp.org/sites/default/files/usp/document/harmonization/gen-chapter/april-2019-m99460.pdf.
17. Boshhiha AM, Elhssony FM, Diryaq MO. Evaluation of promethazine tablets available at Libyan markets. Int J Res Pharm PharmSci. 2018;3(1):21-2.
18. Abomughaid MM, Teibo JO, Akinfe OA, Adewolu AM, Teibo TK, Afifi M, *et al.* A phytochemical and pharmacological review of Ricinus communis L. Discov. Discov Appl Sci. 2024;6(6):315. doi: 10.1007/s42452-024-05964-5.
19. Gepdiremen A, Mshvildadze V, Süleyman H, Elias R. Acute anti-inflammatory activity of four saponins isolated from Ivy: alpha-hederin, hederasaponin-C, hederacolchiside-E and hederacolchiside-F in carrageenan-induced rat paw oedema. Phytomedicine. 2005;12(6-7):440-44. doi: 10.1016/j.phymed.2004.04.005, PMID 16008120.

Cite this article: Killedar R, Shindhe P, Kupati V. Assessment of Quality Control Parameters of Erandamoola Kwatha, Dhanvantari Taila and Yogaraja Guggulu in the Management of Non-specific Backache. Pharmacog Res. 2025;17(2):x-x.