

A Systematic Review of Arka Kalpana in Netraroga: A PRISMA-Based Analysis

Rajashree Manikrao Bangar¹, Virkar C.A.¹

¹Department of Shalakya tantra, PDEA'S Ayurved College And Research Centre, Nigdi, Pune

Corresponding Author:

Rajashree Manikrao Bangar

E-mail:rajashree3010@gmail.com

Submission: 08.11.2022

Acceptance: 16.11.2022

Publication: 28.02.2023

https://www.doi.org/10.63778/PDEASIJRAAS-ARJCPL/2023_22823



Abstract

Arka Kalpana is a significant pharmaceutical formulation in Ayurveda, particularly valued for its potency, extended shelf life, and enhanced absorption. It plays an essential role in ocular therapeutics, offering a natural and preservative-free alternative for eye care. This systematic review, adhering to PRISMA guidelines, aims to explore the historical significance, methods of preparation, and therapeutic applications of Arka Kalpana in Netraroga (eye disorders). The review highlights its pharmacological properties, advantages over other formulations, and the potential for future research in Ayurvedic ophthalmology.

Keywords: Arka Kalpana, Ayurveda, Netraroga, Distillation, Ocular Therapeutics

Introduction

Arka Kalpana is a widely used Ayurvedic pharmaceutical preparation obtained through distillation.^(1,2) It has been extensively documented in classical texts like *Arka Prakasha*, *Gadanigraha*, and *Sahasrayoga*. In modern ophthalmology, preservative-free eye drops are in high demand, especially for conditions like dry eye syndrome. Arka Kalpana provides a natural alternative, making it a crucial area of study in Ayurvedic ophthalmology. This review aims to systematically analyze its significance, preparation methods, and applications in Netraroga management.^(3,4)

Methods

Eligibility Criteria

- Classical Ayurvedic texts mentioning Arka Kalpana
- Research articles on its pharmaceutical preparation and therapeutic benefits
- Comparative studies between Arka Kalpana and other Ayurvedic eye treatments
- Clinical trials evaluating its efficacy in ocular disorders

Information Sources

- Ayurvedic classics (*Arka Prakasha*, *Bhaishajya Kalpana Vijnanam*, *Sharangadhara Samhita*)
- Research papers from indexed journals
- Government publications on Ayurvedic pharmacology

Search Strategy

A comprehensive literature search was conducted using PubMed, Google Scholar, and Ayurvedic research databases with keywords like “Arka Kalpana,” “Ayurvedic ophthalmology,” and “herbal distillation in Ayurveda.”

Study Selection and Data Extraction

- **Identification:** Literature was screened for relevance to Arka Kalpana and Netraroga.
- **Screening:** Duplicates and non-relevant studies were excluded.
- **Eligibility:** Full-text articles and classical references were assessed for their contribution to the topic.
- **Inclusion:** Studies meeting the criteria were included in the final analysis.

Results

Historical and Pharmaceutical Significance

Arka Kalpana, though absent in Vedic and early Samhita periods, gained prominence in medieval Ayurvedic texts. It was first mentioned in the *Arka Prakasha* by Acharya Ravana, followed by references in *Gadanigraha* and *Sahasrayoga*. The formulation is prepared using the Arka Yantra, employing steam distillation to extract potent herbal essences.

Methods of Preparation

1. **Selection of Ingredients:** High-quality medicinal herbs are chosen.
2. **Extraction Process:** Distillation occurs in two phases—evaporation and condensation.
3. **Storage and Preservation:** The final extract is stored in sterile containers, ensuring a shelf life of up to one year.
4. **Standardization:** Parameters like pH, color, aroma, and viscosity are monitored for quality control.

Therapeutic Applications in Netraroga

Arka Kalpana offers numerous advantages in ophthalmic care:

- **Preservative-Free Eye Drops:** Suitable for patients with dry eye syndrome.
- **Rapid Absorption:** Due to its light, non-oily nature.
- **Extended Shelf Life:** Unlike fresh herbal juices, it remains stable for a year.
- **Customizable Dosage:** Can be used in different concentrations for various eye conditions.

Commonly used Arka formulations in eye disorders include:

Herb	Ayurvedic Property	Indication in Netraroga
Jivanti	Snigdha, Sheet	Ocular surface disorders
Daruharidra	Lekhana, Ropan	Conjunctivitis
Lodhra	Sheet, Raktapittashamak	Red eye, irritation
Shigru	Ushna, Ruksha	Eyelid inflammation
Punarnava	Shothahara	Swelling and edema

Contemporary Research on Arka Kalpana

Recent studies confirm its effectiveness in ocular health:

- A 2021 study in *International Ayurvedic Medical Journal* demonstrated that Arka-based eye drops effectively reduced symptoms in patients with allergic conjunctivitis.
- A 2022 clinical trial in *World Journal of Pharmaceutical Research* found Arka Kalpana useful in treating bacterial eye infections due to its antimicrobial properties.

Discussion

The alignment between Ayurveda and modern ophthalmology highlights the relevance of Arka Kalpana. Its method of preparation ensures better bioavailability, reduced contamination risks, and increased potency compared to conventional herbal eye treatments. While classical texts advocate its efficacy, contemporary research validates these claims, emphasizing the need for further clinical trials to standardize its application in Ayurvedic ophthalmology.⁽⁵⁻⁷⁾

Challenges include the lack of large-scale clinical trials, limited awareness among practitioners, and standardization issues. Addressing these gaps through rigorous scientific validation can enhance its acceptance in mainstream ophthalmic care.⁽⁸⁻¹⁰⁾

Conclusion

Arka Kalpana holds immense potential in Ayurvedic ocular therapeutics. Its advantages, such as preservative-free formulation, extended shelf life, and rapid absorption, make it a promising alternative to synthetic eye drops. Future research should focus on pharmacological standardization and clinical validation to integrate it into contemporary ophthalmology.

Source of Support: Nil

Conflict of Interest: Nil

Copyright © 2023 PDEA'S International Journal Research in Ayurved and Allied Sciences. This is an open access article, it is free for all to read, download, copy, distribute, adapt and permitted to reuse under Creative Commons Attribution Non Commercial-ShareAlike: CC BY-NC-SABY 4.0 license.

References

1. Reddy RC. *Bhaishajya Kalpana Vijnanam*. 1st ed. Varanasi: Chaukhamba Sanskrit Bhavan; 1998. p. 356.
2. Sharangadhara A. *Sharangadhara Samhita*. 5th ed. Varanasi: Chaukhamba Orientalia; 2002. p. 137.
3. Ravana I, Tripathy I. *Arka Prakasha*. 2nd ed. Varanasi: Chaukhamba Sanskrit Series; 2006.
4. *Ayurveda Sara Samgraha*. Vaidhyanth Ayurveda Bhavan, 1st ed. Calcutta; 2002. Vol 1 p. 557-556.
5. Sharma S. *Rasatarangini*. Delhi: Motilal Banarasi Das; 2000. R.T (2/159).
6. Jani JH et al. Arka Kalpana—A Review with Special Reference to Distillation. *International Journal of Advanced Research (IJAR)*, 2018; 5(7):867-872.
7. U Rahul et al. Pharmaceutical Review of Arka Kalpana. *International Ayurvedic Medical Journal*, 2014; 2(6):1113-1120.
8. Sahu A et al. Applicability and Preparation of Arka Kalpana in Ayurvedic Pharmaceutical Industry—A Current Trend. *World Journal of Pharmaceutical Research*, 2017; 6(6):1328-1334.
9. *The Ayurvedic Formulary of India*. Part I-III. Govt. of India, Ministry of Health and Family Welfare; 2000-2011.
10. Directorate of AYUSH. *Good Manufacturing Practices (GMP) for Ayurvedic Medicines*. 2016.