



### THERAPEUTIC INSIGHT INTO PINDI KRIYAKALPA: BRIDGING SHALAKYA TANTRA AND MODERN OCULAR PHARMACOLOGY

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#### ABSTRACT

Pindi Kriyākalpa is a localised external therapeutic procedure described in Ayurvedic Śālākya Tantra for the management of ocular disorders. It involves the application of a medicated herbal paste over the eyelids, offering anti-inflammatory, antimicrobial, and soothing effects. Classical texts like Śāringadhara Samhita and Aṣṭāṅga Hridaya categorize various types of Pindi based on ingredients and indications, especially for conditions like Netra Shotha (ocular swelling), Daha (burning), and Pakva Vikara (suppurative eye diseases).

This paper reviews the types, preparation methods, and therapeutic uses of Pindi, correlating traditional Ayurvedic principles with modern transdermal drug delivery concepts. The mechanism of action includes localised absorption of active herbal compounds through the skin, aided by mild Swedana (fomentation) that enhances microcirculation and lymphatic drainage.

Medicinal ingredients such as Haridra (*Curcuma longa*), Triphala, and Daruharidra (*Berberis aristata*) exhibit pharmacologically proven anti-inflammatory, antioxidant, and antimicrobial properties, supporting the classical rationale. Applications in conditions like Meibomian gland dysfunction and Chalazion further highlight its clinical relevance.

**Keywords:** Pindi Kriyākalpa, Bāhya Parimārjana Chikitsā, Meibomian gland dysfunction, Chalazion, Netra Śotha.

## INTRODUCTION

In Śālākya Tantra, Kriyākalpa refers to a specialized external therapeutic procedure (Bāhya Parimārjana Chikitsā) wherein medicinal preparations are applied locally for the management of ocular diseases. The term Kriyākalpa is composed of two Sanskrit words: Kriyā – Therapeutic action

Kalpa – Specific formulation or method

Through various medicinal preparations, Kriyākalpa serves both therapeutic and cleansing (Śodhana) purposes in the treatment of numerous ocular conditions. The classical texts mention the following major types of Kriyākalpa:

1. Tarpana
2. Putapāka
3. Seka
4. Āścyotana
5. Anjana
6. Pindi
7. Vidalaka

Among these, the first five have been described by Acharya Suśruta, while Pindi and Vidalaka have been

mentioned by Śāringadhara and Vāgbhaṭa, but not by Suśruta.

The selection of a particular Kriyākalpa depends on the stage of the disease, broadly classified into:

Āma Avasthā (acute/inflammatory stage) – managed using Seka, Āścyotana, Pindi, and Vidalaka  
Nirāma Avasthā (chronic or resolving stage) – treated with Tarpana, Putapāka, and Anjana

Among these procedures, Pindi holds a unique place due to its localised application and efficacy in managing inflammatory and suppurative ocular conditions. The current paper elaborates upon the indications, method of preparation, and probable mode of action of Pindi Kriyākalpa in both classical and modern perspectives.

### **पिंडी कवलिका प्रोक्ता बाध्यते पात्रवस्त्रके:।**

A paste of medicine is prepared and applied to the closed eyes over the eyelids, depending on the method of preparation, the types of drugs used, and the aim of treatment. Pindi can be of various kinds-

## **TYPES OF PINDI -**

S. No.	Type of Pindi	Sanskrit Description	English Description	Indications
1.	<b>Jala Pindi</b>	तृणधारणीय... जलयुक्तम्	A decoction-based Pindi retaining water	<i>Abhishyanda, Netra Shotha, Daha, Pittaja Vikara</i>
2.	<b>Sūkṣma Pindi</b>	शुष्कद्रव्यनिर्मित	Made from dry herbal powders, without any liquid	<i>Kandu, Krimija Netra Roga, Kaphaja Vikara, Allergic eye conditions</i>
3.	<b>Sneha Pindi</b>	स्नेहयुक्तपिण्डः:	Prepared with ghee or medicated oils	<i>Netraklānti, Netra Sūkṣmatā, VātajaVikāra</i>
4.	<b>Uṣṇa Pindi</b>	—	Warm/hot Pindi	<i>KaphajaShotha</i>
5.	<b>Śīta Pindi</b>	शीतलगुणयुक्ताऽष्टध्रव्यः:	Made from drugs with cooling properties	<i>PittajaVikāra, Daha, Rakta Netra</i>
6.	<b>Avaghaṭana Pindi</b>	दृढबंधनपूर्वकनेत्रस्थापिता... दीर्घकालपर्यंतम्	Tied firmly and kept in contact with eyes for long time	<i>Pakva Netra Vikāra, Jīrṇa Netra Shotha, Post-traumatic ocular swelling</i>

drawing from both classical Ayurvedic sources and relevant contemporary scientific literature.

## **MATERIALS AND METHODS**

A comprehensive review was conducted using classical Ayurvedic texts authored by various Acharyas alongside peer-reviewed articles from Ayurvedic research journals. Additionally, modern biomedical

## **AIM AND OBJECTIVE**

The primary aim of this study is to critically evaluate and summarize the methodology and mechanism of action of Pindi Kriyakalpa (medicated poultice therapy) in the management of various ocular disorders,

literature relevant to transdermal drug delivery and pharmacodynamics was referenced to elucidate the probable mechanism of action of Pindi in ocular therapeutics.

### MODE OF ACTION

In Pindi Kriyakalpa, a medicated paste is either enclosed within a sterile cotton cloth (1 kolmātra  $\approx$  6 grams) and applied over the closed eyelid or directly smeared onto a sterile gauze/cotton pad (Kavalika) and placed on the ocular region. This therapeutic approach utilizes the principle of transdermal drug delivery, facilitating absorption of active phytoconstituents through the skin to reach underlying ocular tissues.

Drug absorption via the transdermal route may occur through two primary pathways:

#### A. Epidermal Route:

Transcellular pathway – favours lipophilic (hydrophobic) compounds, which permeate directly through epidermal cells.

Intercellular pathway – better suited for hydrophilic substances, which diffuse through the intercellular matrix of the stratum corneum.

#### B. Appendageal Route:

This includes drug permeation through hair follicles, sebaceous glands, and sweat glands, which together act as shunt pathways, facilitating deeper tissue penetration, especially in localised applications like ocular surface therapies.

Given this multimodal permeation capacity, Pindi Kriyakalpa is effective for delivering both hydrophilic and lipophilic herbal constituents.

Moreover, the therapeutic efficacy of Pindi lies in its dosha-specific action, particularly in the pacification (shamana) of Pitta and Rakta doshas, which are primarily involved in inflammatory ocular pathologies. Herbs commonly used in Pindi, such as Haridra (*Curcuma longa*), Triphala, and Daruharidra (*Berberis aristata*), possess well-documented anti-inflammatory, antioxidant, and antimicrobial properties, supporting both Ayurvedic rationale and modern pharmacological validation.

- Haridra+gheePindi has an anti-inflammatory effect.
- Triphala kwath has a Rasayana effect.

- Karpuradi Pindi has a Soothing effect.
- Daruharidra Pindi has an antimicrobial effect.

### SWEDANA EFFECT OF PINDI-

The application of Pindi using warm herbal decoctions induces a mild local Swedana (sudation or fomentation) effect. This localised warmth promotes vasodilation, enhancing microcirculation and lymphatic drainage in the periocular tissues. As a result, it facilitates the removal of inflammatory mediators and metabolic waste ( $\bar{A}ma$ ), leading to a reduction in inflammatory oedema (Shotha), pain, and congestion. This mechanism is particularly beneficial in conditions such as Meibomian Gland Dysfunction (MGD) and Chalazion, where obstruction and inflammation of the meibomian glands are the primary pathological events.

### SOOTHING EFFECT OF PINDI-

Furthermore, when cooling (Sheetala) herbal decoctions—such as those containing Chandana (*Santalum album*) are used in Pindi and applied in the form of Kavalika or poultice over the eyes, the gentle pressure, moisture, and prolonged contact provide a soothing and neuro-calming effect on the ocular surface and periocular nerves. This contributes to the alleviation of ocular fatigue, stress-induced ocular discomfort, and dry eye syndrome by enhancing tear film stability and reducing ocular surface inflammation.

Herbal components such as Camphor (*Cinnamomum camphora*) and Sandalwood (*Santalum album*) are known to possess analgesic, anti-inflammatory, and neuro-relaxant properties. Camphor has demonstrated mild counterirritant and vasostimulatory effects, which can enhance sensory relief. At the same time, sandalwood provides anti-anxiety and cooling effects through its influence on the limbic and autonomic nervous system.

Hence, Pindi not only enhances drug absorption through improved circulation and skin permeability but also aids in the therapeutic modulation of local tissue response, making it a promising non-invasive modality in ocular inflammatory and functional disorders.

## CONCLUSION

The present review and analytical study on Pindi Kriyakalpa establish its efficacy as a locally acting therapeutic modality in the management of various ocular disorders. Classical Ayurvedic texts, such as the Sharangadhara Samhita, describe Pindi as being highly effective in conditions characterised by Netra Daha (burning sensation), Shool (pain), and Shotha (inflammation) —

**“पिण्ड्यादाहशूलशोथम्रीनेत्ररोगेषुयोजिता।” (Sha. MadhyamKhand, 10).**

Furthermore, the Ashtanga Hridaya emphasises the therapeutic benefits of mild Swedana in alleviating Vata-Kapha symptoms such as stiffness and heaviness:

**“स्वेदस्तुस्तम्भगौरवशीतवात्कफस्तम्भेषुहितः।” (A.H. Su. 19/61).**

The mechanism of action of Pindi can be explained both through Ayurvedic pharmacodynamics and modern scientific principles. The localised application of a warm, medicated paste (prepared from disease-specific Kwatha Dravyas) facilitates Srotoshodhana and Dosha Shamana at the site of pathology. The prolonged contact of the medicated poultice over the periocular area allows sustained absorption of active phytoconstituents. Mild thermotherapy, provided through the warmth of the Pindi, promotes vasodilation, enhances microcirculation, and thereby improves tissue oxygenation and lymphatic drainage, which is crucial for reducing oedema and inflammatory mediators.

From a contemporary standpoint, the transdermal absorption of herbal bioactives through thin peri-orbital skin layers is pharmacologically relevant. Active constituents from herbs like Haridra (*Curcuma longa*), Daruharidra (*Berberis aristata*), Yashtimadhu (*Glycyrrhiza glabra*), and Triphala exhibit anti-

inflammatory, antimicrobial, antioxidant, and wound-healing properties, which collectively support the observed clinical benefits of Pindi in conditions such as Meibomian gland dysfunction, Chalazion, Blepharitis, and Abhishyanda (conjunctivitis-like conditions).

Thus, Pindi Kriyakalpa emerges as a validated Bahirparimarjana (external application) therapy, offering a non-invasive, cost-effective, and holistic approach to ocular care. The convergence of classical Ayurvedic knowledge and emerging biomedical evidence underscores the therapeutic potential of this modality.

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