

# Exploring the Concept and Mode of Action of Nasya Karma: An Ayurvedic and Contemporary Approach

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## ABSTRACT

*Acharyas* have stated, “Nasa hi Shiraso Dwaram” — the nose is the gateway to the head. It is regarded as one of the *Panchagyanendriyas*, whose functions extend beyond olfaction and respiration. In Ayurveda, the nasal passage is also considered an important route for drug administration. While modern pharmacology describes various routes of drug delivery, Ayurveda has long emphasized specific therapeutic pathways, which have proven beneficial over centuries of practice. Among these, the nasal route is considered particularly effective in managing disorders of the supraclavicular region. The administration of medicated oils, herbal formulations, or liquid preparations through the nostrils is known as *Nasya Karma*. The present review article explores the probable mode of action of *Nasya Karma* from both Ayurvedic and modern perspectives, highlighting its potential influence on vital centers in the brain and related anatomical structures.

**Keywords:** Nasya karma, Nasal drug administration

## INTRODUCTION

In Ayurveda, selection of the appropriate *Aushadha Sevana Marga* is fundamental for achieving optimal *Vyapti* and *Karya Siddhi*. Among the various routes described, *Nasya Karma* is a unique therapeutic procedure specifically indicated for *Urdhvajatrugata Rogas*. *Acharyas* have stated, “Nasa hi Shiraso Dwaram”, emphasizing the nose as the gateway to *Shiras*. Hence, administration of *Sneha*, *Churna*, *Swarasa*, and other *Yogya Dravyas* through the nostrils is considered the most effective approach to eliminate vitiated *Doshas* and exert both *Shodhana* and *Shamana* effects on *Shiras*, *Indriyas*, and *Mana*. Distinct from ordinary nasal medication in its *Prayojana*, *Vidhi*, and *Dravya*, *Nasya* is designed to influence higher centers. Modern pharmacokinetic and pharmacodynamic principles also support the intranasal route as an efficient pathway for CNS drug delivery<sup>1</sup>, owing to the absence of hepatic first-pass metabolism and the direct nose-to-brain pathway that bypasses the blood–brain barrier<sup>2</sup>.

Thus, both Ayurvedic and contemporary perspectives validate *Nasya Karma* as a potent and targeted modality for drug delivery to the *Shiras*.

## ETYMOLOGY OF NASYA

The word Nasya is derived from "Nasa" dhatu which conveys meaning of 'Gati'- Motion (*Nasa Gatau*). Here the gati means towards the internal structures mainly to head through Nose, accessory Structures of Nose and head proper. In Ayurvedic texts, *Nasa Dhatu* is used in sense of nose (*Nasa Nasikayam*).

Nasa – The Gateway to *Shira*, *Shira* is described in Ayurveda as *Uttamanga*, the supreme and most vital organ of the body, as it is the seat of *Prana*, *Indriyas*, *Mana*, and *Chetana*. The sensory and motor channels (*Sira* and *Dhamani*) emanating from *Shira* are compared to the rays of the sun<sup>3</sup>, indicating its central regulatory role. Being one among the *Traya Pradhana Marma*, the sustenance of life depends upon its proper functioning.

The Acharyas have clearly stated, “Nasa hi Shiraso Dwaram”, establishing the nose as the principal gateway to *Shira*<sup>4</sup>. Though *Nasa* is one of the *Panchagyanendriyas* primarily responsible for *Gandha Grahana*, it is also an important *Aushadha Sevana Marga*. Medicines administered through the nostrils reach the *Shiras* through subtle channels, thereby influencing the structures of the head region. Therefore, *Nasya Karma* is recommended to eliminate deeply seated vitiated *Doshas* of *Urdhvajatrugata Pradesh* and to produce both *Shodhana* and *Shamana* effects directly on the tissues of the head.

**DEFINITION** - The administration of medicine or medicated oil through the nostrils is called *Nasya Karma*<sup>5</sup>

**SYNONYMS:** *Shirovirechana*, *Shirovireka*, *Murdha virechana*, *Navana*, *Nasta Karma*.

*Shirovirechana*, *Shirovireka*, and *Murdha Virechana* are terms that highlight the main function of *Nasya*—expulsion of vitiated *Doshas* from the *Urdhvajatrugata*, especially from *Shira*.

*Navana* and *Nasya (Nasta) Karma* denote the method of administration through the *Nasika Marga* and emphasize its therapeutic benefits for the nose and structures of the head region.

## SIGNIFICANCE OF NASYA KARMA

The primary objective of any *Panchakarma* therapy is the elimination of vitiated *Doshas* through the nearest and most appropriate *Marga*. In this context, *Nasya* is regarded as the principal *Dwara* to *Shira*. Since *Nasika* is intimately connected with the vital centers of the head, administration of *Bheshaja* through this route directly influences *Shiras*. The medicament instilled through the nostrils spreads to the *Shira*, facilitating the expulsion of vitiated *Doshas* and thereby alleviating *Urdhvajatrugata Rogas*. *Nasya* is considered the prime line of treatment for disorders above the clavicle and is the only *Shodhana Karma* specifically indicated for *Urdhwanga*.

When properly administered, *Nasya* eliminates vitiated *Kapha* and accumulated *Doshas* from the *Shirapradesha* and Paranasal Sinus, while simultaneously providing *Poshana* to the region. As a result, the patient experiences *Shirah Shoolahara*, lightness of the head, and enhanced clarity of the *Indriyas*.

In addition to these effects, *Nasya Karma* offers several other therapeutic benefits.

- Improves nasal airflow, helping in better breathing and sound sleep.
- Enhances the sense of smell by stimulating the nasal lining.
- Can be administered in selected unconscious or uncooperative patients under supervision.
- Enables rapid absorption of drugs through the highly vascular nasal mucosa, leading to quicker action.
- Can be used as a preventive therapy when included in daily health practices.
- Bypasses the gastrointestinal tract and avoids hepatic first-pass metabolism.
- Offers better bioavailability with fewer systemic side effects.

- Clinically useful in conditions such as chronic sinusitis, headache, chronic rhinitis, throat disorders, chest congestion, epilepsy, migraine, voice disturbances, certain eye disorders, and cervical spondylosis.

**CLASSIFICATION OF NASYA:**

All the *Acharyas* have classified *Nasya* into various categories; however, in essence, these classifications are practically similar in their principles and therapeutic applications.

**Table 1: Classification of *Nasya* according to various *Acharyas*.**

Name of Acharya	Number	Types
<i>Charaka</i>	5	<i>Navana, Avapeedana, Dhmapana, Dhooma, Pratimarsha</i>
<i>Sushruta</i>	5	<i>Shirovirechana, Pratimarsha, Avapeedana, Pradhamana, Nasya</i>
<i>Vagbhata</i>	3	<i>Vairechanika. Brumhana, Shamana</i>
<i>Kashyapa</i>	2	<i>Shodhana, Poorana</i>
<i>Sharangadhara</i>	2	<i>Rechana, Snehana</i>
<i>Bhavaprakasha</i>	2	<i>Avapeedana, Pradhamana</i>
<i>Vangasena, Chakradatta</i>	5	<i>Pratimarsha, Avapeedana, Pradhamana, Shirovirechana, Nasya</i>
<i>Bhela</i>	4	<i>Avapeedana, Pradhamana, Dhooma, Anuvasana (sneha)</i>
<i>Bhoja</i>	2	<i>Sthambana, Sangnaprabhodhaka</i>

***Nasya Karma Procedure:***

The procedure of administration of *Nasya* can be divided into 3 steps:

**1. *Poorva Karma:***

The preparatory stage comprises *Sambhara Sangraha*, appropriate selection of the patient, and systematic preparation of the patient prior to performing *Nasya Karma*.

*Sambhara sangraha:*

The required materials include *Nasya Dravya, Taila* for *Abhyanga*, sterile cotton pads and gauze, *Padma Patra* for protection of the eyes during *Swedana, Gokarnika, Ushna Jala* for *Kavala* or *Gandusha*, and *Dhumavarti* for *Dhumapana*, etc

Selection of the patient:

Prior to initiating *Nasya Karma*, *Vaidya* should carefully assess the patient to determine *Yogyata* or *Ayogyata* for the procedure, considering factors such as *Roga Bala, Rogi Bala, Dosha Avastha*, and overall suitability for procedure.

Preparation of the position:

The patient should first be advised to evacuate natural urges. Thereafter, the face and mouth should be cleansed with lukewarm water. *Abhyanga* followed by mild *Swedana* is administered over the *Uttamanga*. Subsequently, the patient is made to lie in a supine position with arms and legs comfortably extended. The legs may be slightly elevated, and the head should be gently extended to approximately 45 degrees to facilitate proper administration of *Nasya*.

**2. *Pradhana Karma:***

Following completion of *Purva Karma*, the patient’s eyes are covered with *Chaturguna Vastra* for protection. The *Nasya Dravya* should be made mildly lukewarm prior to administration.

The physician gently elevates the tip of the patient’s nose using the *Vama Pradeshini* (left index finger), and with the *Dakshina Hasta*, instills the medicament into each nostril sequentially by using a *Pichu, Pranadi*, or dropper.

During and after the procedure, the patient should remain calm and relaxed, avoiding speech, anger, sneezing, laughing, or excessive head movements to ensure proper absorption and therapeutic effect of the *Nasya*.

### 3. Paschat Karma

- After administration of *Nasya*, the patient should remain in the supine position for approximately 100 *Matra Kala* to facilitate proper absorption of the medicament.
- The patient is then instructed to inhale gently with moderate force and expel the accumulated secretion through the mouth, turning the head alternately to either side without getting up from the cot.
- Subsequently, *Mukhaprakshalana* should be performed with lukewarm water.
- Acharya Sushruta further recommends procedures such as *Dhumapana*, *Kavala*, and *Gandusha* to eliminate residual *Kapha* from the *Shira*, throat, and nasal passages.

## PHARMACODYNAMICS OF NASYA

**Ayurvedic view:** *Nasya Karma* is one among the *Panchakarma* procedures that not only alleviates vitiated *Doshas* but also facilitates their complete elimination, thereby addressing the root cause of disease. However, a detailed and explicit description of its exact mode of action is not clearly elaborated in the classical Ayurvedic texts.

According to *Acharya Charaka*, “*Nasa hi Shiraso Dwaram*”, signifying that the nose is the gateway to *Shira*. The *Aushadha* administered through the *Nasika Marga* reaches the *Shiras* and specifically eliminates the vitiated *Doshas* responsible for the manifestation of disease. To illustrate the mechanism of *Nasya Karma*, *Chakrapani*, in his commentary, provides the analogy of *Munja* and *Ishika*. Just as the inner pith (*Ishika*) is extracted by removing the outer fibrous covering of the *Munja* grass<sup>6</sup>, similarly, *Nasya* facilitates the expulsion of deeply seated morbid *Doshas* from the *Shiras*, thereby restoring normalcy.

*Acharya Sushruta* describes *Shringataka Marma* as a *Sira Marma* formed by the confluence of *Siras* supplying the *Nasa*, *Karna*, *Netra*, and *Jihva*. This indicates that medicaments administered through the *Nasika Marga* may reach these interconnected channels and help in their *Shodhana* and regulation<sup>7</sup>. He further mentions that improper or excessive administration of *Teekshna Nasya* may lead to *Mastulunga Srava* (discharge resembling cerebrospinal fluid), thereby implying a close anatomical and functional relationship between the nasal pathway and the intracranial structures (*Mastishka*).

*Acharya Vagbhata* has elaborated the probable mode of action of *Nasya Karma* in a systematic manner. The *Aushadha* administered through the *Nasika*, being the *Dwara* of *Shira*, reaches the *Shringataka Marma* located in the head. *Shringataka*, described as a *Sira Marma*, is formed by the confluence of *Siras* supplying the *Nasa*, *Netra*, *Shrotra*, and *Kantha*<sup>8</sup>.

From this vital center, the drug disseminates through the associated channels, performs *Lekhana* of the vitiated *Doshas* situated in the *Urdhwajatru Pradesh*, and facilitates their expulsion from the *Uttamanga*. By eliminating the morbid *Doshas*, *Nasya* restores the normal physiological functioning of the organs in the head region.

*Indu*, the commentator of *Ashtanga Samgraha*, further opines that *Shringataka* is situated in the inner middle part of the head “*Shiraso Antar Madhyam*” highlighting its central anatomical and functional significance.

## INTERPRETATION OF SHRINGATAKA MARMA

*Shringataka Marma* is described as a vital *Sira Marma* representing the confluence of vascular channels

supplying the *Nasa, Karna, Netra, and Jihva*. On anatomical correlation, it may be compared to the cavernous sinus, which serves as an important venous nexus receiving blood from the cranial bones, brain, and meninges, and maintaining communication with extracranial venous channels.

This vascular interconnection supports the Ayurvedic concept of *Santarpana* of the sense organs. The channels draining the nose, eyes, ears, and oral region are functionally interconnected, thereby enabling dissemination of substances administered through the nasal route. Thus, when *Aushadha* is administered through *Nasika*, it reaches the *Shringataka Marma* and through the network of *Siras*, facilitates *Tarpana* and functional regulation of the *Karna, Netra, Nasa, and Kantha*. This explains the therapeutic influence of *Nasya* on the organs of the *Urdhwanga*.

In Table No:2, from an Ayurvedic perspective, the assimilation and distribution of the *Nasya Dravya* occur through the *Shringataka Marma*, from where it disseminates via the interconnected *Siras* to exert both local and systemic effects. The probable mode of action may be interpreted as follows (Table 3).

**Table 2: Facts about *Shringataka Marma*.**

SI NO	FACTS	INTERPRETATION
1	<i>Shringataka</i> is the union point of <i>Srotas</i> of <i>Jihwa, Ghrana, Netra</i> and <i>Shrotra</i>	Confirms the influence of <i>Nasya Karma</i> on senses
2	<i>Shringataka</i> is a <i>Sadya Pranahara Marma</i>	Proper stimulus can cause desired effect suddenly.
3	<i>Shringataka</i> is a <i>Siramarma</i> where <i>Vata, Pitta Kapha</i> and <i>Rakta Vaha Siras</i> are present	Through these <i>Nasya Dravya</i> is absorbed.
4	The locus of <i>Aajna Chakra</i> and <i>Buddhi Vaisheshika Pitta</i> somewhat corresponds with <i>Shringataka</i>	Stimulus of which may influence psychological activities and higher mental functions

**Table 3: Pharmacokinetics of *Nasya Karma*.**

PHARMACOKINETICS	AYURVEDIC COMPARISON
Drug absorption maybe through	<ul style="list-style-type: none"> <li><i>Shringataka marma</i></li> </ul>
<ul style="list-style-type: none"> <li>Receptor cells in olfactory mucosa</li> </ul>	
<ul style="list-style-type: none"> <li>Sensory receptors of trigeminal nerve</li> </ul>	
<ul style="list-style-type: none"> <li>Cavernous sinus</li> </ul>	
Circulation of drug	<ul style="list-style-type: none"> <li><i>Prana</i></li> </ul>
<ul style="list-style-type: none"> <li>Neuronal pathway</li> </ul>	<ul style="list-style-type: none"> <li><i>Siramarma</i></li> </ul>
(a) Olfactory (b)Trigeminal	
<ul style="list-style-type: none"> <li>Circulatory pathway</li> </ul>	
(a) Cavernous sinus	

Target	
• Limbic system	• <i>Prana vayu</i>
• Sensory area of trigeminal nerve	• <i>Prana vayu</i>
• Circulation	• <i>Prana vayu</i>

### MODERN VIEW

All ancient Acharyas have described *Nasa* as the *gateway of Shira*, which does not necessarily imply a gross anatomical channel directly connecting the nose and brain. Rather, it suggests a functional relationship that may be mediated through *Siras* or neural connections such as the olfactory tract. From a modern perspective, although there is no obvious direct pharmacological channel between the nose and brain, the olfactory region represents a unique site where the external environment is in close proximity to the central nervous system. Hence, drugs administered through the nasal route may influence the brain through neurovascular pathways.

The effects of intranasal drug administration on the brain can be understood through the following examples:

- The nasal route is widely utilized for the administration of inhalational anesthetic agents and topical decongestants in the management of paranasal sinusitis.
- In contemporary medical practice, certain anterior pituitary hormones have long been administered in the form of nasal sprays for systemic therapeutic effects.
- Intranasal administration of a luteinizing hormone-releasing hormone (LHRH) antagonist for a duration of 3–6 months has been reported to effectively inhibit ovulation as a contraceptive method (Berger et al., 1979).

To understand the influence of *Nasya dravya* on the central nervous system, it is essential to consider the probable pathways through which it exerts its action. Based on the procedural stages of *Nasya Karma*, the mechanism may be rationally interpreted at the following levels:

1. At the level of blood circulation.
2. At the level of lymphatic channels, including cerebrospinal fluid (CSF) dynamics
3. At the level of neurovascular and neuroendocrine stimulation
4. At the level of neuropsychological responses

#### 1. Level of Blood circulation:

Drugs administered via nasal route → Rapid absorption through the nasal mucous membrane → Entry into general systemic circulation (due to high vascularity of nasal mucosa) → Passage into facial vein → Retrograde venous flow through inferior ophthalmic vein → Drainage into intracranial venous sinuses → Influence on cerebral circulation and brain tissues

- Venous pooling from the paranasal sinuses may also occur through similar vascular pathways.
- It has been reported that approximately 22% dilation of cerebral capillaries induced by facial efferent stimulation can result in nearly a 150% increase in cerebral blood flow (Chatterjee, 1980).

Lowering of the head, elevation of the lower extremities, and facial fomentation → Alteration in blood circulation of the head and face leading to momentary hyperemia → Stimulation of efferent vasodilator nerves over the superficial facial region → Peripheral vasodilatation resulting in a fall in arterial pressure → Rise in cerebrospinal fluid (CSF) pressure causing compression of cerebral arteries → Transient cerebral

ischemia→ Compensatory rise in arterial pressure (Cushing reflex)→ Increased intracranial fluid dynamics (“slush” effect)→ Enhanced transudation of fluid into brain tissue→ Facilitation of possible drug action on central structures

After absorption, the drug may reach its site of action through neural pathways (olfactory and trigeminal nerves) as well as through vascular channels, including the cavernous sinus circulation.

## 2. Level of lymphatic channels including C.S.F.:

*Nasya* formulation containing water-soluble and lipid-soluble active principles→ Aqueous components absorbed through nasal and olfactory mucosa→ Entry into local circulation

Lipid-soluble components (e.g., *Taila*, *Ghrita*, *Kshara*) → Rapid permeation across epithelial membrane→ Absorption through olfactory and trigeminal nerve endings→ Faster transport compared to water-soluble substances → Possible access to lymphoid tissue → Rapid dissemination through lymphatic channels. Additionally, Extension of arachnoid sheath from brain to nasal submucosa → Direct nose-to-brain absorption pathway → Facilitation of drug action on intracranial structures

## 3. Level of Neuroendocrinal and Neurovascular stimulation:

Stimulation of peripheral olfactory system during *Nasya Karma*→ Olfactory receptors (chemoreceptors) identify chemical nature of drug particles→ Transmission of impulses through olfactory nerves→ Signals reach olfactory bulbs→ Further conduction to higher centers (hippocampus, limbic system, hypothalamus) → Activation of limbic–hypothalamic axis→ Regulation of anterior and posterior pituitary function→ Modulation of endocrine and nervous system responses.

Additionally, Terminal nerves running along olfactory nerves→ Direct connections to limbic system and hypothalamus→ Hypothalamus integrates endocrine and neural functions→ Direct neural connection with posterior pituitary→ Indirect regulation of anterior pituitary→ Systemic neuroendocrine effects of *Nasya*

## 4. Neuro-psychological levels:

Terminal nerves accompanying the olfactory nerves→ Direct connections with limbic system including hypothalamus→ Influence on neuroendocrine regulation→ Modulation of behavioral and emotional responses. Intranasal drug administration→ Action through olfactory neural pathways→ Direct effect on limbic system→ Immediate influence on psychological functions

## CONCLUSION

*Shira* is regarded as *Uttamanga*, the supreme and most vital part of the body; hence, its protection and maintenance in a disease-free state are essential. *Nasya Karma* is considered the foremost *Shodhana* therapy for disorders of the *Urdhwajatru Pradesh*. Following instillation into the nostrils, the medicament is absorbed through the highly vascular nasal mucosa. After absorption, it may reach its site of action through neural as well as circulatory pathways. Additionally, it can exert influence at the psychic level—particularly on the limbic system—and through systemic circulation, ultimately producing either stimulatory or sedative effects depending upon the nature of the drug administered.

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