

POTENTIALS OF PRATIMARSHA NASYA IN PREVENTION OF NASO- BRONCHIAL AILMENTS CAUSES DUE TO ENVIRONMENTAL POLLUTION - A REVIEW

¹Kumar Munna

¹Lecturer Dept. of Shalakyia SSMD Ayurveda College & Hospital, Moga (Punjab)

ABSTRACT :

Developments are going on around the world in very speedy way, especially in developing country like India. The industrial development, infrastructure development and housing construction are main field producing huge air pollutant making the life breath choking by causing many Naso-bronchial diseases. Overcrowding due to huge population is also fouling the environmental condition and immunity of individual leading to many infective and non-infective Naso-bronchial diseases. Naso-bronchial disorders are usually ignored by patients as well as by physician considering it as common flu or non-serious issue which ultimately leads nasal disease like rhinitis, rhinosinusitis to respiratory distress disease like asthma due to close association between nasal and bronchial symptoms. In era of globalization it seems to be difficult to check the spreading pollution but through precaution and prevention toward it can make the life free from hazards. In *Ayurveda Pratimarsha Nasya* is indicated to use before going outside, considering the known effect of environmental pollution by Ancient Saint. Other than this, 17 others time have been indicated to perform *pratimarsha nasya* for relieving from *vata* and *kapha doshas*. Pharmacodynamic action of *pratimarsha nasya* is potent to check the contact as well as the absorption of pollutant particle through nasal mucosa. If medicated oil is used then it would also stat/kill the micro-organism enters into naso-bronchial tract with flow of air.No concrete work has been done in this way. So here it has been broadly analysed about *pratimarsha nasya* in *Ayurveda* and tried to explained the pharmacodynamics to express its value in prevention of Naso-bronchial ailment which would be check the mortality and morbidity caused by respiratory disorders due pollution.

Key words: Naso-bronchial diseases, Rhinitis, Rhinosinusitis, *Pratimarsha Nasya*, Pharmacodynamics.

INTRODUCTION TO POLLUTION

AND ITS HAZARDS: Air pollution in India is quite a serious issue with the major sources being fuel wood and biomass burning, fuel adulteration, vehicle emission and traffic congestion.^{1,2} In autumn and winter months, large scale crop residue burning in agriculture fields – a low cost alternative to mechanical tilling – is a major source of smoke, smog and particulate matters pollution.^{3,4,5} India has low per capita emissions of greenhouse but the country as whole is the third largest after China and United States.⁶ A 2013

study on non-smokers has found that Indians have 30% lower lung function compared to Europeans.⁷The Air (Prevention and Control of Pollution) Act was passed in 1981 to regulate air pollution and there have been some measurable improvements. However, the 2013 Environmental Performance Index ranked India 155 out of 178 countries.⁸ India's Central Pollution Control Board now routinely monitors majorly find four air pollutant are sulphur dioxide (SO₂), oxides of nitrogen (NO_x), suspended particulate matter (SPM) and respirable

particulate matter (PM10), these are target air pollutants for regular monitoring at 308 operating stations in 115 cities/towns in 25 states and 4 Union Territories of India. For 2010, the key findings of India's central pollution control board are that most Indian cities greatly exceed acceptable levels of suspended particulate matter (SPM). This may be because of refuse and biomass burning, vehicles, power plant emissions, industrial sources. The Indian air quality monitoring stations reported lower levels of PM10 and suspended particulate matter during monsoon months and high levels in winter months. So India's air quality worsens in winter months and improves with onset of monsoon season.⁹

Health costs of air pollution : Exposure to particulate matter for a long time can lead to nasal, respiratory and cardiovascular diseases such as allergic/chronic rhinitis, asthma, bronchitis, lung cancer and heart attacks. The global burden of disease study for 2010, published in 2013, had found that outdoor air pollution was the fifth-largest killer in India and around 620,000 early deaths occurred from air pollution-related diseases in 2010.¹⁰ According to a WHO study, 13 of the 20 most-polluted cities in the world are in India; however, the accuracy and methodology of the WHO study was questioned by Government of India led by Manmohan Singh.¹⁰

Relationship between nasal and bronchial tract in context of diseases:

The presence of high nasal symptom scores was associated with bronchial symptoms. This may indicate a coexisting inflammation in the upper and lower airways. There is an intricate relationship between rhinitis and asthma which has been discussed in a number of studies^{11,12-}

¹⁴ . Rhinitis is a significant risk factor for adult onset asthma in both atopic and nonatopic subjects¹⁵. The prevalence of asthma is greater in rhinitic than nonrhinitic subjects, after accounting for atopy¹⁶, and bronchial hyper-responsiveness is a common finding in subjects with allergic rhinitis¹⁷. It has also been reported that the relationship between rhinitis and asthma symptoms is stronger for animal and mite allergy than for pollen allergy probably due to smaller particle size.¹⁸

The study has shown that in House dust mites' (HDM) allergic subjects with persistent rhinitis, living in an environment where allergen levels are known to be continually high, the occurrence of high nasal symptom scores were significantly associated with bronchial symptoms. Nasal symptom scores were higher in persistent rhinitic subjects than in nonrhinitic controls, and persistent rhinitic subjects reported high nasal symptom scores on average for 65% of the time assessed in the study. Bronchial responsiveness and inflammation (DRR and eNO) were increased in persistent rhinitic subjects compared to the control group, but were not different between persistent rhinitic subjects with and without bronchial symptoms. In subjects with both HDM and pollen allergy, however, the additional allergen load in spring was only associated with some seasonal variation in eNO¹⁹. An important finding from this study is the relation found between bronchial and nasal symptoms in persistent allergic rhinitis, a relationship that possibly places these subjects at more of a risk of developing asthmatic symptoms. It could be reasoned that persistent rhinitics are at a greater risk of developing bronchial symptoms than intermittent rhinitics because they are

continuously exposed to the perennial allergen, rather than just for a small portion of the year as seen with seasonal allergens. It is likely that these rhinitics may have very mild undiagnosed asthma, and this mild asthma is at risk of worsening if their rhinitic inflammation and symptoms are not treated optimally.¹⁹

AYURVEDIC REVIEW POINT OF NASYA AND PRATIMARSHA:

Nasya: Drugs or drugs processed oil when snuffed/ introduced through nostril, then the procedure is called *Nasya*.²⁰ It is indicated to cure the diseases affecting as well as to strengthen the supra-clavicle part of the body such as head and sense organs because nostril is considered as route of head. The drugs administered through nostril reach to brain, eyes, ears, upper respiratory tract, oral cavity and neck region and cure the diseases of respective organs.^{21,24}

Nasya procedure has been classified^{20,21,22,23} in five types by *Acharya charaka*, three types by *Vagbhata* and two types by *Sushruta* on the basis of *karmukta* (Pharmacodynamics), but tri-fold classification by *Vagbhata* is very important which incorporates almost all types i.e. *Rechana* (Purifying), *Shamana* (Pacifying) and *Snehana* (Rejuvenating). *Marsha* and *Pratimarsha nasya* are the sub-classification of *Snehana Nasya* and the main difference between these two are their doses.

Pratimarsha nasya: It is a type of *snehana nasya* having both *snehana* (oleation) and *shodhana* (purifying) properties. In this process plain oil (or any other *sneha*) or medicated oil is instilled into nose in amount of two drops or finger dipped in oil up to two metacarpal joint and applied inside the each nostril separately. It is indicated to perform in morning, evening

or always to strengthen the head and sense organ. It is a simple and no longer process involving so an individual can perform by himself. It does not have any risk, complications as well as no post procedure care needed.

Indications: It is indicated in hypersensitive people, post trauma convalescence, one who is suffering from polydypsia and dryness of mouth, children even less than 8 years old, aged person even above 70 years old, in apprehensive and delicate nature patients, during unseasonal raining and bad weather, supra-clavicular diseases, wrinkle of skin on face, greying of hairs and to strengthen the sense organs one can undergo for *Pratimarsha Nasya*.^{23,24}

Pratimarsha Nasya indicated^{21,22,23,24} in healthy person in following 18 conditions after combining the view of different *Acharya* with their benefits as follow:

1. After getting up in the morning (*Talpouthita kala*) – causes cleansing the stagnated nasal discharge, make head light and pleases the mind.
2. After tooth brushing (*Prakshalita Danta*) – Provides strength to denture and keep the mouth fresh.
3. Before going out of house (*Grihanirgachchhatah*) – Moistens nasal cavity and upper respiratory tract.
4. After exercise (*Vyayamouuttara*) – remove fatigue, exertion, sweating and stiffness in body.
5. Post coitus (*Vyavayouuttara*) - remove fatigue, exertion, sweating and stiffness in body.
6. After strenuous work/long travelling (*Adhwaparishranta*) – remove fatigue, exertion, sweating and stiffness in body.
7. Post defecation (*Mala visarjanoupranta*) – *Drishtiprasadana* (decongestion of eyes).

8. Post micturition - *Drishtiprasadana* (decongestion of eyes).
9. After Gargling (Kawala) – *Drishtiprasadana* (decongestion of eyes).
10. Post collyrium application (*Anjana paschata*) – *Drishtiprasadana* (decongestion of eyes)
11. Post meal (*Bhojanouttara*) – remove excessive secretion, make head light and pleases the mind.
12. Post emesis (*Vamanpashchata*) – remove *vata*, *kapha* and fatigue.
13. After getting up from day sleep – remove excess sleep, devastation and heaviness of body
14. In evening (*Sayamkala*) – cleansing of respiratory tract, sound sleep at night and fresh awakening in morning.
15. After laughing – *Drishtiprasadana* (decongestion of eyes) and mitigates *vata dosha*.
16. Post flatulence - *Drishtiprasadana* (decongestion of eyes) and mitigates *vata dosha*.
17. Post sneezing - *Drishtiprasadana* (decongestion of eyes) and mitigates *vata dosha*.
18. Head massage (*Shiroabhyanga*) - *Drishtiprasadana* (decongestion of eyes). Additional benefits are if it is performed daily it gives benefits of *marsha nasya*²² and it also check the skin wrinkles, early greying of hairs and falling of hairs do not happened, all sensory organs like eyes etc are potentiated, jaw, neck, *urah trik* (upper chest and back region), arms, shoulders joint and chest are strengthen.

Contraindications: It is contraindicated in *dushta pratishyaya* (Rhinosinusitis), *krimij shiroroga* (worm infestation in head), and weak auditory function, excessive vitiation of *dosha* in *sirah* (head) and after alcohol drinking. In these condition threatening to

exaggerated the same problems if *pratimasha nasya* is performed.^{22,23,24}

Doses: 2 drops or small dose of *sneha* when inhaled through nose with small finger which reached the oro-pharynx that much quantity is the dose of *pratimarsha nasya*.^{20,22,24}

PROCEDURE: Few drops of the desired *sneha* (oil etc) put in the palm and the little finger of the right hand is dipped into the desired *sneha* (oil etc) up to the distal 2/3 i.e. distal inter-phalagial joint and put this part of the little finger in right nasal cavity, close the left nostril with thumb of left hand and inhale through right nostril with moderated pressure, keeping the neck little extended. Repeat the same procedure through left nostril using the small finger of left hand. Shortly the inhaled oil is felt in the naso-pharynx and oro-pharynx, which should be spitted out followed by hot water gargling.²² In the initial very few sitting of this procedure, slight to moderate irritation experienced in the nose by patients but by continuing with the process no irritation occurs after few days.

Probable pharmacodynamic of *Pratimarsha Nasya*: In *Ayurveda* pharmacodynamics of *pratimarsha nasya* is not described in details but in brief the common action of *nasya* has been described. *Acharya Charaka* has described that drug introduced in nostril removed *dosha* smoothly by suction force as *sarkanda* (white stalk of *Saccharum arundinaceum*) is removed from *munja* (leafy circle of *Saccharum arundinaceum*).²² Whereas *Acharya Vagbhata* in *Ashtanga Samgraha* described that when drug is introduced through nostril considered as rout to head, reached to *shringataka marma* (simulated with Cavernous sinus) which is meeting point of all the vessels from nose, eyes,

ears, throat and head so it drag and removed the vitiated *dosha* immediately from eyes, ears, throat and other parts of supraclavicular region with suction force as *sarkanda* (white stalk *Saccharum arundinaceum*) is removed from *munja* (leafy circle of *Saccharum arundinaceum*).²³ *Pratimarsha nasya* has both *snehana* (oleation) and *shodhana* (purifying) properties²¹ so it nourishes as well as purifies the supraclavicular region. Oil is considered best for *nasya* as head is site of *kapha* and *vata*, so oil is prescribed in *vata-kapha dosha*, where as *ghrita* for *pitta dosha* and *vasa* exclusive for *vata dosha* and *ghrita-majja* for *vata* and *pitta dosha*.²⁰

Therefore now, probable mode of action can be described as follow: when oil is applied in drop form or smeared through finger in nostril, it moistens the cilia and mucosa membrane of nasal cavity as well as upper respiratory tract due to high dispersion properties. The oil poured at mucosa membrane pass through following phenomenon as it may gets absorbed in some amount, increased the exudation in little amount from mucosa membrane by irritating it and also acts as a surfactant (thin membrane of fat over mucosa). The absorption and exudation would occur through osmosis, permeability co-efficient etc as occur for lipid soluble drugs. The surfactant formed on mucosa prevents the direct contact and absorption of particulate matter present in environmental air coming through respiratory air to mucosa and trapped in moistened cilia of nose. Surfactant is also impermeable to aqueous and aqueous soluble particles. Most of pollutants in the environmental air are inorganic and lipid insoluble so it does not get absorbed as oil is lipid media. In this way restriction to contact of pollutant to

mucosa leads no irritation consequently no sneezing, no congestion and no further secretion takes place. Other side trapped pollutants mixed with exudates leads to further prohibition of absorption due to high thickness (concentrate) and expelled out through cilia movement with expiratory force. Whereas absorbed oil nourishes and strengthen the mucosa membrane. Strengthen mucosa membrane, liver etc organs have physiological ability to metabolise and neutralise the organic pollutant to large extent. If medicated oil is used having anti-microbial properties then it will also act as disinfectant against micro-organism. In this way it strengthen and keep moisten to mucosa membrane of nasal cavity and upper respiratory tract and make respiration smooth as done by mucin, acts as anti-inflammatory by reducing congestion and oedema, acts as anti-allergic by preventing contacts of pollutants like dusts, smoke, pollens etc and anti-microbial by killing or static effects of drugs used for oil processing.

CONCLUSION: After the analysis of number of researches, it shown that there is close relationship between bronchial and nasal symptoms. Sometime nasal symptoms exist in association with bronchial diseases and sometimes it may aggravate the existing bronchial symptoms. In such condition nasal symptoms treating specialist should also take care about bronchial symptom which is usually missed in practiced and leads serious condition like asthma. In ancient age peoples used to live in around forests, farms and cattle's surroundings where abundant of dust, smog, smoke and pollens as pollutants were there, as still much seen in urban as well as in rural India today. So *Acharya* were well aware with such pollutants like dust, smoke etc causing

diseases and so mentioned as etiological factors for *netra rogas* (eye diseases), *nasa rogas* (diseases of nose), *shiro rogas* (diseases of head), *hikka-swasha* and *kasa rogas* (broncho-pulmonary diseases). *Pratishyaya* (Rhinitis) is a disease of nose and also to be considered as etiology of diseases not only the head and sense organ situated in head but also the etiology of *swasha* and *kasa roga* (broncho-pulmonary diseases). This is why they proposed to use *pratimarsha nasya* before leaving to house. The pharmacodynamics of *pratimarsha nasya* is adequate to check the effect of air pollutant on nasal as well as bronchial mucosa. The additional effects of *pratimarsha nasya* like strengthen to neck; *urah-trik* (cevicothoracic triangle) region and shoulder joint also depict the effects on muscles affected in respiratory distress. Its minimum doses, no pre and post procedural care and no complication are such an advantage over cost and time so it can be used by mass and is a cheap method to check the mortality and morbidity caused by respiratory disorders due pollution. Of course proper hygiene of hand and oil and also ENT examination are suggested before applying the *Pratimarsha Nasya*.

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Corresponding Author:

Dr.MunnaKumar,M.S.(Ayu)Shalakyia
Tantra, Lecturer – SSMD Ayurveda
&Hospital College, Moga
Email:kumar_mr27@yahoo.com

Source of Support : Nil

Conflict of interest :None

Declared