



## TRADITIONAL INDIAN HERBAL MEDICATION BASE NASAL SPRAY: A NOVEL APPROACH FOR PREVENTING NASAL CONGESTION, COMMON COLD, AND SINUS PRESSURE

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## ABSTRACT

Common health conditions like nasal congestion, sinus pressure, and the common cold cause a bigger problem in people's productivity and quality of life. Traditional over-the-counter nasal sprays frequently provide momentary comfort but may also have adverse effects and cause reliance. The use of an herbal nasal spray is a unique strategy for treating nasal congestion, rhinitis, and the common cold. Bibo Health (Hilt Brands India Pvt. Ltd.) has BIBO SALINE NASAL SPRAY which contains the herbal phytoconstituents of plant extracts recognized for their anti-inflammatory, antiviral, and nasal decongestant effects. Herbal nasal spray taps into the healing power of nature. The cough and cold symptoms can be relieved more quickly by adding herbs like Tulsi to a saline solution. Additionally, xylitol combats nasopharyngeal germs and lowers the risk of infections. The herbal nasal spray fits well with the expanding trend toward complementary and alternative medicine by providing a holistic and natural approach to treating nasal congestion and the common cold.

**Key words:** Nasal spray, Nasal congestion, Allergic rhinitis, Common Cold, Saline Solution, Upper respiratory tract infection, naturally derived ingredients, Inflammation, Herbal therapy.

## INTRODUCTION

Nasal tissues and blood vessels become enlarged and irritated, resulting in nasal congestion, commonly known as a stuffy, clogged or blocked nose. Numerous symptoms, such as a runny or stuffy nose, sneezing, coughing, and trouble breathing through the nose, can be brought on by nasal congestion<sup>1,2</sup>. It can cause pain, interfere with sleep, and alter one's perception of taste and smell when tissues lining your nose get irritated in nasal congestion results. It becomes difficult to breathe through your nose as a result of the irritation, which starts a chain reaction of swelling, inflammation, and mucus production. Nasal congestion usually goes away in a few days, but if it persists for a week or more, it might indicate an infection<sup>3</sup>. Nasal polyps, middle ear infections, and sinusitis can all result from untreated nasal congestion. Nasal disorders, especially those brought on by ongoing inflammation and infection like rhinosinusitis, have a substantial impact on the patient's quality of life<sup>4</sup>. About 5–15% of the general population suffers from rhinosinusitis, a common nasal condition<sup>5</sup>. However, any intervention will inevitably cause mucosal damage, and this damage might result in major known consequences including synechia, osteitis, or fibrosis, particularly in challenging regions like the frontal recess<sup>6</sup>. This can be caused by a number of things, such as the mucosal lining metaplasia brought on by persistent inflammation or secondary harm to the procedure's healthy tissues that endanger the regeneration of the nasal mucosa<sup>7</sup>. Intranasal therapy like herbal nasal spray is widely used for treating the common cold, nasal congestion, and sinusitis problems. Bibo saline nasal spray is an herbal spray that is formulated by traditional Indian herbal medicament to improve nasal symptoms associated with rhinitis. Bibo saline nasal spray was prepared by the addition of phytochemicals: Tulsi (*Ocimum sanctum*) 1-5%, Lavana (*Saindhava lavana*) 0.3-2%, Eucalyptus globulus 0.5- 5%, Capsicum minimum 0.02-2%, Mentha piperita 0.05-3%, Xylitol 2-6%.

According to several research, a saline solution can irrigate the nasal and sinus cavities. An experiment looked at how well isotonic saline treatment prevent-

ed the recurrence of the cold and flu in children (n=401)<sup>8</sup>. Saline irrigation has been demonstrated to be useful in lowering nasal and sinus complications, such as the common cold, sinusitis, and nasal polyps. Saline solutions of various strengths are used for nasal irrigation<sup>9</sup>. According to a study, saline irrigation is efficient and well-tolerated by paediatric patients with allergic rhinitis and chronic rhinosinusitis. If a child has allergic rhinitis and does not want to utilise intranasal corticosteroids, nasal saline irrigation is an effective and alternate therapy<sup>10,11</sup>.

## TULSI



Tulsi is Known as the 'Queen of Herbs' in Ayurveda and rightly so because it possesses a wide range of therapeutic benefits. Tulsi is considered the 'Mother of Herbs' and a symbol of Celibacy. It is called Holy Basil or Sacred Basil because it's considered auspicious and has wide therapeutic usage<sup>12</sup>. Its leaf extracts are used to treat respiratory ailments like cough and cold, skin infections, etc. It is rich in antioxidants and boosts immunity. Tulsi was obtained from the fresh and dried leaves of *Ocimum sanctum* Linn. belonging to the family of *Liabiatae*<sup>13</sup>. The Tulsi plant was found throughout India and Asia. The plant is grown in front of the temples, and houses and cultivated in the garden. The various chemical constituents present in Tulsi are volatile oil content (0.1 to 0.9%) depending upon the geographical area in which the plant is growing and its cultivation season. Steam distillation is used for the volatile oil collection. The main chemical constituent present is eugenol, which is approximately 70%. 20% methyl eugenol present in the Tulsi plant. Carvacrol is present at approximately 3%. Additionally found is caryo-

phyllin. Seeds contain fixed oil, which is ideally suited for drying<sup>14</sup>. Alkaloids, glycosides, saponin, tannins, maleic, citric, and tartaric acids, as well as a considerable amount of vitamin C, are also rumoured to be present in the plant. Fresh leaves, their juice, and volatile oil have a variety of applications in respiratory care management. The anti-inflammatory ingredients in Tulsi include Eugenol, Rosmarinus acid, and Oleanolic acid. These substances may lessen respiratory system inflammation, alleviating allergies, asthma, and bronchitis symptoms. The expectorant quality of Tulsi is that it can aid in facilitating the ejection of mucus from the respiratory system. Additionally, it could function naturally as a decongestant, easing nasal and pulmonary congestion. Antioxidants including vitamin C, vitamin A, and polyphenols are abundant in Tulsi. These substances assist in preventing oxidative stress and damage brought on by free radicals, which may contribute to respiratory illnesses. The herb contains immunomodulatory properties, which means it can assist in controlling the immune system. Numerous research studies have revealed the *Ocimum sanctum* to possess a range of pharmacological and therapeutic properties, making it useful in the treatment of a variety of ailments. Future The importance of sacred basil studies for the prevention and treatment of different illnesses<sup>15,16</sup>.

### **Eucalyptus**



Since a very long time, *Eucalyptus globulus* has been used to treat intermittent fever. The leaves and their preparations have been effectively employed in a variety of conditions, including dyspepsia, stomach catarrh, typhoid fever, asthma, whooping cough, etc. as

a tonic, stimulant, stomachic, etc. It has more recently been advocated for use as a diuretic in the management of dropsy. The herb also shows anti-viral and anti-bacterial action in respiratory disease treatment like common cold, nasal congestion and cough<sup>17</sup>.

The family *Myrtaceae* tree species *Eucalyptus globulus* and others like *E. polybractea*, *E. viminalis*, and *E. smithii* provide fresh leaves are used to distil the essential oil known as eucalyptus oil<sup>18</sup>. The essential oil known as eucalyptus oil is produced by distilling fresh leaves of the plant. Australia, Tasmania, the United States, Spain, Portugal, Brazil, North and South Africa, India, France, and Southern Europe are the primary locations where it may be found. The phytochemical constituent found in the eucalyptus plant was 1,8-cineole, commonly known as eucalyptol, 70 to 85% of the volatile oil in eucalyptus oil. Aldehydes, ketones, alcohols, ledol, minor amounts of sesquiterpenes like aromadendrene, and p-cymene and pinene are also found in this plant. Additionally, it contains flavonoids such as eucalyptin, hyperoside, and rutin as well as polyphenolic acids including ferulic acid, caffeic acid, and gallic acid<sup>19,20</sup>. The oil has several medicinal uses, including those of a stimulant, antiseptic, flavouring agent, aromatic, deodorant, expectorant, antibacterial, febrifuge, diuretic, and antispasmodic. Additionally, it is used to treat bronchitis, sore throats, and colds, as a vapour bath for asthma, and other respiratory conditions. Eucalyptus oil can relieve the symptoms of colds and coughs, including sinus congestion. Eucalyptus oil contains a compound called cineole which is effective in the treatment of sinus, headache, and inflammation. However, always remember that essential oils are very potent and hence they need to be always diluted with carrier oils when applying directly to the skin. Also always test for any allergic reaction by applying a few drops of diluted essential oil to the skin. If there is no reaction in 24 hours, it should be safe to use<sup>21</sup>.

### **Capsicum**



The dried, mature fruits of the *Solanaceae* plant species *Capsicum minimum* and *Capsicum annum* Linn<sup>22</sup>. Capsicum is a native of America and is grown in tropical areas of Sri Lanka, Kenya, Tanzania, and Sierra Leone in Africa, as well as in southern Europe, India, Japan, and Mexico. Most capsicum cultivation takes place as a rainfed crop. It is a cold-weather crop grown in the Gangetic region. Various types of soils, including common red loams, black soils, and clayey loams, are used to grow the crop. Water buildup is bad, and good drainage is crucial. The nursery is where seedlings are first grown. By broadcasting, seeds that have been extracted from chosen pods and combined with ashes are sown. In approximately a week, germination takes place. The land has been tilled and composted manure applied. The capsicum is globular, ovoid, or rectangular in form, 5–12 cm long, 2–4 cm broad, with a conspicuous, bending pedicel and a shrivelled orange or red pericarp. The calyx has teeth. Calices and pedicels should not make up more than 3% of the total. The seeds are linked to a membrane dissepiment that divides the fruits internally into two halves. The 3–4 mm long, reniform, flattened seeds have an oily endosperm and a coiled embryo. The aroma and flavour of capsicum are very pungent. The *Capsicum annum* Linn content the phytoconstituents are fixed oils (4–16%), oleoresin (4–16%), carotenoids (4–16%), capsacutin (a volatile alkaloid), thiamine (4–4%), volatile oil (1.5%), and ascorbic acid (4–4%) are all present in capsicum (0.2%). The resin contains capsaicin (decylenic vanillyl amide), an exceptionally pungent principle (about 0.5%)<sup>23</sup>. In a dilution with water of 1 part in 10 million, capsaicin retains its distinctive pungency. The primary carotenoid in red fruits is capsanthin. Along with cryptocapsin, it also comes in monoester and diester forms. Zeaxanthin is among the other carotenoids. Capsorubin, rubixanthin, phylofluene, capsanthin-5,6-epoxide, capsanthin-3,6-epoxide, lutein, cryptoxanthin, alpha- and beta-carotenes, and a few xanthophylls are among the carotenoids present. Fructose, galactose, sucrose, and other carbohydrates have been found in chillies. Trace levels of tocopherol (vitamin E) are detected (2.4 mg/100 g)<sup>24</sup>. Capsi-

cum is used for the preparation of nasal spray to treat nasal congestion and reduce allergic rhinitis treatment. Capsinol is a natural decongestant and can also help with the symptoms of Sinus congestion and nasal polyps' treatment. Capsicum is used internally for carminative, stomachic, dyspepsia and also helps to thin the nasal mucosa<sup>25</sup>. It has also been used topically as a stimulant, counterirritant, rubefacient, and in sore throat, scarlatina, hoarseness, and yellow fever. Rheumatism and lumbago are treated with it in the form of ointment, plaster, and medicated wool. Capsaicin is used to treat migraines, cluster headaches, and in rare cases, neurogenic ladder dysfunction in individuals<sup>26–28</sup>.

### Mentha



Mentha is a member of the *Lamiaceae* family, which Jussieu (1789) first described and named in reference to its unusual blossoms with a prominent lower petal that resembles a lip. This family is mostly found in the Mediterranean Basin but has a nearly global range, from temperate to tropical areas. Herbs, shrubs, and small trees of this family can be annual or perennial. Since the *Lamiaceae* and *Verbenaceae* are closely related, numerous genera have recently been moved to the *Lamiaceae*. The United States, Europe, and moist areas of England are where it is most commonly found. The oil is obtained by distilling the aerial parts of *Mentha piperita* called as peppermint oil<sup>24</sup>. Menthol, along with lesser amounts of Methyl acetate, isovalerate, menthone, cineol, inactive pinene, limonene, and other substances are the main components in peppermint oil. When cooled to a low temperature (-22°C), menthol separates. Both the ester and the alcoholic components of the oil are responsible for the oil's flavouring effects, but only the alcoholic components are responsible for the oil's

therapeutic efficacy. Menthol makes up 60 to 70% of the English oil, 85% of the Japanese oil, and just around 50% of the American oil<sup>29,30</sup>. It has stimulant, stomachic, carminative, inflatant, and colic effects. Mentha acts as an expectorant to remove cough and is also used as an anti-contestant action in respiratory therapy as a nasal spray. The menthol in peppermint acts as a decongestant, decreasing swelling nasal membranes and easing breathing. It also aids in liquifying mucus that has built up in the lungs. It also helps with cholera and diarrhoea as well as some cases of dyspepsia, abrupt aches, and cramping in the belly. Infants' cordial and peppermint oil both relieve nausea and motion sickness. It is beneficial to use peppermint to increase body temperature and encourage sweating. Hysteria and other nerve illnesses are also treated with it. As an antibiotic, a component in many analgesic lotions, and a topical treatment for oral mucosal irritation, Mentha spp<sup>31,32</sup> essential oil is popular. The oil from Mentha spp., which is approved for internal use, is also used to treat diverticulitis, irritable bowel syndrome, myalgia, neuralgia, irritation of the oral mucosa, and discomfort from menstrual cramps. It also acts as an expectorant and an anti-inflammatory action<sup>33-35</sup>.

### Xylitol



Nasal administration of xylitol/xylose in a saline solution is an adjunctive treatment and preventative measure for nasopharyngeal congestion, irritation, and inflammation as well as related upper respiratory infections such as otitis media and sinusitis. The alcohol version of the pentose wood sugar xylose is called xylitol. The phrase "xylitol/xylose" is used here to refer to "xylitol" or "xylose" or "xylitol and xylose" because both forms are easily interchangeable<sup>36</sup>. For all the therapeutic purposes listed in this document, xylitol, xylose, and combinations of the

two are comparable and similarly efficacious in equal doses. Several fruits and vegetables, as well as other plants, contain xylitol, a natural sugar alcohol. It tastes sweet and is frequently used to replace sugar in recipes. Unlike sugar, xylitol has a sweet flavour but doesn't contribute to tooth decay. In addition to acting against certain bacteria that cause ear infections, it lowers salivary levels of germs that cause tooth decay<sup>37</sup>. It is frequently found in chewing gum, mints, and other sweets that are "sugar-free." Products containing xylitol are permitted to claim in the US that they lower the risk of cavities. Additionally, xylitol is used by many people to avoid dry mouth, ear infections, dental decay, and other problems. Xylitol is also used in the nasal spray for the treatment of anti-inflammatory, anti-bacterial, and anti-microbial action in nasal congestion for upper respiratory treatment during common cold and allergic condition<sup>38,39</sup>.

### Saindhava Lavena



*Saindhava lavana* or rock salt is considered the best salt among the other salts. According to Ayurveda rock salt is advisable for daily use. The *Saindhava lavana* also called Himalayan Sea salt or Himalayan pink salt is derived from in-landsea salt that was deposited from the previously existing ocean hundreds of years ago. The *Saindhava lavana* contains Sodium chloride (NaCl) – 97.6% w/w, Sodium bicarbonate (NaHCO<sub>3</sub>)- 0.07% w/w, and insoluble substances- 0.031 % w/w. Additionally, it contains minor amounts of Magnesium chloride, Calcium chloride and Calcium sulphate<sup>40</sup>. People with sinus and respiratory issues might benefit from it. Gargling with rock salt can assist with tonsils, throat swelling, dry cough, and soreness in the throat. Patients with some diseases can use brine, which is made by dissolving rock salt in water, to steam their faces, other nose and ear discomforts, bronchitis, or asthma. Also, know that the taste of salt often makes Pitta more active, yet



*Saindhava Lavana's* cold potency helps to balance Pitta. It balances Vata owing to its salty flavour and alleviates Kapha, which in turn helps to reduce chest congestion brought on by sputum buildup<sup>40</sup>. As a result, it is one of the uncommon Ayurvedic ingredients that harmonises the three Doshas. It is one of those substances, in Charaka's opinion, that may be consumed every day. Chakshushya is beneficial for the eyes and relieves infection. *Saindhava Lavana's* Avidahi (unlike normal salts) does not produce a burning feeling. Hrudya is heart-healthy, and Hikanashana is effective for hiccups. Characteristic is the basis for its inclusion in Lavana Bhaskar Churna, which is used to treat respiratory illnesses (as well as digestive disorders) since it aids in the dissolution and expulsion of sputum. People with sinus and respiratory issues might benefit from it<sup>41,42</sup>.

## CONCLUSION

People with sinusitis and other respiratory tract infections might benefit from an efficient alternative medicine called Bibo saline nasal spray. It functions as an additional treatment to lessen respiratory disease symptoms as a nasal spray, nasal irrigation, and gargle, Tulsi extracts and xylitol can be added to a saline solution. Nasal applications of Tulsi extract with Xylitol may have a synergistic antibacterial effect. Additionally, they have antioxidant and anti-inflammatory properties that help to lessen the inflammatory process in the sinuses and nasal mucus production. The nasal spray adds Eucalyptus oil to protect from antimicrobial action in the nasal congestion and common cold. Menthol helps to reduce dyspnoea, is used as a natural nasal decongestant also used as a flavouring agent. Capsaicin helps to remove cough and mucus as a stimulatory action and prevents sore throat. Bibo Health (Hilt Brands India Pvt Ltd) has Bibo saline nasal spray which is an innovative phytoconstituent-based herbal product to treat nasal congestion, and common cold during allergic conditions, and helps to treat allergic rhinitis.

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