



Acute respiratory tract infections and treatment in herbal cornucopia

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ABSTRACT

Acute respiratory infections are a key contributor to antibiotic overuse. Manufacturers, the WHO's spontaneous reporting programmes, and national drug safety organisations were all contacted and asked for additional information that had not already been found via systematic literature searches. The evidence suggests that *A. paniculata* is more effective than placebo in relieving subjective symptoms of acute respiratory tract infections that are not complex. Preliminary data also suggest a potential preventive benefit. Mild and uncommon adverse effects were recorded after *A. paniculata* treatment. Few adverse events were reported by patients on their own. Further study is needed to determine if *A. paniculata* is a safe and effective therapy for the alleviation of symptoms of a simple upper respiratory tract infection. This research paper is a review of work done in this area.

KEYWORDS: Respiratory Infections, Significant, Over-prescriptions, Antibiotics.

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INTRODUCTION

Among of the most frequent viral diseases are acute upper respiratory infections, which mostly affect the nasal passages and the throat. They may linger for up to three weeks and are usually easily treated at home. Millions of individuals worldwide suffer from URIs every year [1]. Bacteria and viruses both have a role in their development. While most individuals with URIs get well on their own within a week or two, others may have more serious consequences that call for medical attention. In this post, we'll look at what causes URIs, how to spot them, what puts you at risk, and how to treat them.

An upper respiratory tract infection that manifests quickly and spreads easily is called an acute URI. Mouth, throat, tongue, larynx, and bronchial are all components of the upper respiratory system [2]. The most widespread occurrence of a URI is the common cold.

"Sinusitis, pharyngitis, epiglottitis, and tracheobronchitis" are further examples of upper respiratory tract infections (URIs). Contrarily, influenza is not a URI since it affects the whole body.

OBJECTIVE

- (i) To list the acute respiratory tract infections
- (ii) To list herbal treatments for the upper respiratory tract

METHODOLOGY

Conducted grouping and categorization of upper respiratory tract infections. Infections caused by viruses include "rhinovirus, adenovirus, parainfluenza virus, respiratory syncytialvirus (RSV), coronavirus, enterovirus, metapneumovirus, and bocavirus."

DISCUSSION OF FINDINGS

Bacteria can cause the following specific bacteria based afflictions:

Corynebacterium diphtheriae (diphtheria); Group A beta-hemolytic Streptococcus; Group C beta-hemolytic Streptococcus; Infections caused by Neisseria gonorrhoeae (gonorrhoea) and Chlamydia pneumoniae (chlamydia).

Types of Acute Upper Respiratory Infections

The several categories of URIs are named after the specific regions of the upper respiratory tract that tend to be affected by the disease. Some examples of upper respiratory infections (URIs) include the common cold and inflammation of the sinuses, the air passages located behind the cheekbones and forehead, is known as sinusitis [3]. Most cases of sinusitis are brought on by a viral infection.

- (i) Inflammation of the bronchial passages is called bronchitis. Through the windpipe (trachea), air travels to the right and left lungs via the bronchial tubes.[4]
- (ii) When the epiglottis becomes inflamed, you suffer from epiglottitis. The epiglottis serves as a barrier between the airway and the lungs, preventing inhaled debris from entering the system. A swollen epiglottis may prevent oxygen from entering the trachea, which is life-threatening [5].
- (iii) The voice box, often known as the larynx, may become inflamed, a condition known as laryngitis. Both bacteria and viruses are capable of causing laryngitis, although viruses are much more common.

In the United States, the common cold is the leading cause of medical visits [6]. Aerosol droplets and hand-to-hand contact are the two most common modes of URI transmission. Infectious agents come from the following:

- (i) Droplets carrying the viruses are sprayed into the air and the surroundings when a sick individual sneezes or coughs without covering their nose and mouth.
- (ii) When many individuals are confined in a small space, as occurs in nursing homes, classrooms, and daycares, the risk of infection increases.
- (iii) Symptoms of a preexisting medical condition, such as asthma or hay fever, are present.
- (iv) diseases that weaken the immune system, such as cystic fibrosis and HIV
- (v) Those who use prednisone or other medications

Symptoms of Acute Upper Respiratory Tract Infection

“Runny nostril, difficulty breathing, sneezing, and cough are the most common symptoms of an upper respiratory tract infection (URI). Upper respiratory tract mucous membrane irritation” is the root cause of the symptoms. Fever, exhaustion, headache, difficulty swallowing, and wheezing are further symptoms.

Diagnosing upper respiratory tract infection

The majority of persons with URIs seek medical attention for treatment [7]. In most cases, a diagnosis of URI is made after reviewing a patient's medical history and doing a physical examination. In order to diagnose URIs, the following tests may be performed:

- (i) An immediate diagnosis of group A beta-hemolytic strep may be made from a throat swab by using rapid antigen detection.
- (ii) If you're having trouble breathing, your doctor may recommend an X-ray of your neck's lateral view to rule out epiglottitis.
- (iii) If your physician suspects pneumonia, they may recommend a chest X-ray.
- (iv) Sinusitis may be diagnosed using a CT scan.

Treatment of URIs

“URIs are mostly treated for the relief of symptoms. Some people benefit from the use of cough suppressants, expectorants, vitamin C, and zinc to reduce symptoms or shorten the duration. Other treatments include:

- (i) Nasal decongestants can improve breathing, but they may be less effective with repeated use and can cause rebound nasal congestion.
- (ii) Steam inhalation and gargling with salt water are a safe way to get relief from URI symptoms.
- (iii) Analgesics like acetaminophen (Tylenol) and NSAIDs can help reduce fever, aches, and pains”

Prevention Rather than Cure

“The best protection against URIs is frequent handwashing with soap and water. Washing hands reduces exposure to secretions that can spread infection. Other strategies include:

- (i) Avoiding being in close contact with people who are sick.
- (ii) Wiping down objects such as remote controls, phones, and doorknobs that may be touched by people in the house who have a URI.
- (iii) Covering mouth and nose if sick.
- (iv) Staying home if you're sick.”

Difference between a Cold and Flu

While both the common cold and the flu are viral infections, they are not the same. The majority of cold symptoms, such as a runny nose, congestion, sneezing, cough, and sore throat, develop over the course of two to three days. It normally only lasts a week or so before a cold goes gone on its own.

Fever, chills, muscular aches, headache, exhaustion, and a dry cough are just some of the symptoms of the flu, which may strike abruptly and with greater severity. See a doctor if you suspect you have the flu since it may develop to pneumonia and other dangerous problems [8].

Pneumonia is a dangerous consequence that may arise from any kind of URI, and it can happen with this illness in certain circumstances [9]. Coughing up green or yellow mucous, chest discomfort, shortness of breath, and a high temperature are all symptoms. Pneumonia is a potentially fatal illness.

Vulnerable Groups at Risk of Acute Respiratory Infection

Viruses and bacteria are nearly tough to prevent, “but there are ways to lessen your risk of having an acute respiratory infection. Viruses are more likely to infect the immune systems of young children and the elderly [10]. Because of their frequent interactions with other children, who may themselves be virus carriers, children are particularly vulnerable.” Many children do not practice good hygiene by often washing their hands. In addition, they are more prone to touch their faces and eyes, so increasing the risk of contamination. It is more probable that someone with preexisting lung or heart illness may get an acute respiratory infection [11]. The danger increases for those whose immune systems have already been compromised by another illness. Smokers are also at increased risk and have a harder time healing.

Bacterial Pneumonia: Symptoms, Treatment, and Prevention

Pneumonia is an extremely frequent lung illness characterised by the inflammation of the lung air sacs. There is a possibility of fluid, pus, and cellular debris collecting in these sacs. The condition may be brought on by a virus, fungus, or bacterium. In this piece, we will discuss bacterial pneumonia. Bacterial pneumonia may affect a very localised area of your lung, or it might spread across the whole lung. If you have pneumonia, it may be hard for your body to provide enough oxygen to your blood, which may disrupt the normal function of your cells. Incidences of bacterial pneumonia range from mild to deadly.

Symptoms of bacterial pneumonia

“The most common symptoms of bacterial pneumonia are:

- (i) A cough with thick yellow, green, or blood-tinged mucus
 - Stabbing chest pain that worsens when coughing or breathing
 - Sudden onset of chills severe enough to make the patient shake
 - Fever of 102-105°F or above (fever lower than 102°F in older persons)”

Other symptoms that may include “headache, muscle pain, breathlessness or rapid breathing, lethargy or severe fatigue, moist, pale skin, confusion, especially among older persons, loss of appetite, sweating.”

Symptoms in children

Little children, babies, and toddlers are especially vulnerable to the devastating effects of pneumonia. They could experience signs that are similar to those listed above. When a baby breathes, their nostrils may flare or its chest may slump, both of which may be signs of difficulties breathing. If they aren't receiving enough oxygen, they may also have blue lips or nails.

Causes of Bacterial Pneumonia

Pneumonia is an infection of the lungs brought on by the multiplication of germs that have made their way there [12]. It's possible to get it on its own or after suffering from anything else, such the common cold or the flu. Those who are more likely to get pneumonia may:

- (i) suffer from compromised immune systems (due to age, diseases, or malnutrition)
- (ii) suffering from a respiratory illness
- (iii) Having just undergone surgery and making a full recovery

Treatment of Bacterial Pneumonia

Most patients are able to avoid hospitalisation by receiving treatment at home with medicines. A healthy individual could feel better in a matter of a few weeks. It may take a little longer for someone with a compromised immune system to feel back to normal.

Bacterial pneumonia is a serious medical condition that often necessitates hospitalisation for its treatment. Hospitalization is more common for the treatment of respiratory illnesses in young children and the elderly, as well as for the administration of intravenous antibiotics. Antibiotics are used to combat the pneumonia-causing germs in the hospital.

In contrast to popular belief, the illness that leads to bacterial pneumonia is very infectious. It may be transmitted from person to person by respiratory droplets or contaminated surfaces. Hygiene has an important role in reducing the spread of pneumonia and the likelihood of contracting it.

Acute Sinusitis – Symptoms

“Short-term inflammation of the membranes lining your nose and sinuses is termed acute sinusitis or acute rhinosinusitis. This hinders the natural drainage of mucus from the nasal and sinus passages. Acute sinusitis is most commonly due to a cold causing viral infection.” It may also have non-infectious causes. Acute sinusitis is prevalent, as stated by the American Academy of Otolaryngology. Each year, it affects around one in eight individuals.

Most cases of acute sinusitis can be treated at home:

Acute sinusitis is usually treated successfully at home:

- (i) Use a warm, wet washcloth. You may relieve sinus discomfort by holding it over your nose.

- (ii) Humidifier, n. The moisture in the air is maintained this way.
- (iii) Nasal sprays containing saline solution. You should use them many times a day to flush your nasal cavities.
- (iv) Drink plenty of water. Mucus may be made thinner by drinking plenty of fluids.
- (v) Nonprescription nasal corticosteroid spray. Anti-inflammatory sprays like fluticasone propionate (Flonase) are effective against nasal and sinus irritation.
- (vi) Over-the-counter decongestant pills. Medicines like pseudoephedrine (Sudafed) may help eliminate mucus by drying it out.
- (vii) Over-the-counter medications to ease discomfort. Sinus discomfort may be alleviated with medication such as acetaminophen (Tylenol) or ibuprofen (Motrin, Advil).
- (viii) Try propping your feet up as you sleep. This helps open up the passageways in your nose so that mucus can drain.

The following alternative treatments may help relieve your acute sinusitis symptoms:

Herbs: Several people have found relief from acute sinusitis symptoms with the use of nasturtium herb and horseradish. According to German research from 2007, this treatment had less negative effects than conventional antibiotic treatment. Inquire about precautions and proper dose with your healthcare provider.

Acupuncture and acupressure: Acute allergic sinusitis is reportedly helped by acupuncture and acupressure, however there is no concrete data to support these claims.

Patients were asked to rate the severity of their most bothersome symptom before and after using a “spray containing aromatic essential oils from five plants (Eucalyptus citriodora, Eucalyptus globulus, Mentha piperita, Origanum syriacum, and Rosmarinus officinalis) and a placebo spray five times daily for three days (sore throat, hoarseness or cough). A total of 60 patients took part in the research (26 in the study group and 34 in the control group).” The results of this investigation indicated that the spray application of five aromatic plants significantly and immediately reduced the severity of symptoms associated with an upper respiratory illness.

DISCUSSION AND CONCLUSION

The widespread use of herbal treatments by the general public in both developed and developing nations worldwide has contributed to herbal medicine's growing recognition as one of the key modalities in both traditional and CAM. Herbal remedies for breathing problems date back thousands of years in the Middle East. The usage of 25 different plants for the treatment of respiratory problems was clarified by many ethnobotanical studies undertaken in Israel and the Palestinian Authority during the last three decades.

A number of in vitro and clinical investigations have shown that aromatic herbs may have therapeutic use in the management of respiratory disorders. Aromatic herbs are multi-purpose, since they are employed in both traditional medicine and the kitchen due to their potent pharmacological effects. Peppermint, or *Mentha piperita*, includes the active ingredient menthol, which has antibacterial and antiviral effects as well as relieving a cough (in a study of guinea pigs). *Origanum syriacum* has antibacterial and antifungal activities because to the presence of the active compound's thymol and carvacrol. “Carvacrol was reported to have a bronchodilator effect in studies conducted on guinea pigs by Boskabady and Jandaghi. In addition, the guinea pig and rabbit studies showed that the volatile oil of *Rosmarinus officinalis* had a calming effect on tracheal smooth muscle (which contains camphor and cineol). Cineole, the main active component of *Eucalyptus globulus* oil, has been shown to have an anti-inflammatory impact on chronic bronchitis produced by lipopolysaccharide in rats and to prevent the hypersecretion of airway mucins, as was discovered by Lu et al [12]. The positive benefits of cineole were explored who observed secretolytic alterations in ciliary frequency and lung function in patients with obstructive lung disease.” Both *Eucalyptus globulus* and *Eucalyptus citriodora* (containing citronellal) were discovered to exhibit anti-inflammatory and analgesic effects, both of which were found to be reliant on and independent of neutrophils in a study by Silva et al. After treating their acute runny nose with a volatile oil blend of eucalyptus, menthol, and camphor, participants in a clinical experiment performed by Cohen and Dressler reported better breathing. A randomised controlled double-blind research done in Germany by Kehrl et al. on patients with acute nonpurulent rhinosinusitis demonstrated that therapy with cineole is beneficial in lowering symptoms of rhinosinusitis and is safe before antibiotics are necessary.

Since standard therapy for upper respiratory tract infections (URTIs) is so unreliable, the authors decided to investigate whether or not aromatic herbs may help reduce URTI symptoms.

Its anti-inflammatory and analgesic impact may account for the quick amelioration of symptoms seen 20 minutes after using the herbal spray. Both human and animal investigations have shown that eucalyptus and mint oil have these properties. Fast symptom alleviation may be due to the antitussive impact of menthol and camphor and the bronchodilating effect of carvacrol. It would be helpful to know how much

of each herb in the mix should be taken to alleviate URTI symptoms and whether or not the herbs have a cumulative or synergistic impact.

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