

Treating Asthma with Aromatic Essential Oils

by Lori Torquati

Having suffered with Asthma since childhood, I decided to research the benefits of treatment with essential oils.

Before treatment can begin, an understanding of the respiratory system and the disease itself are in order.

In my research I will attempt the following:

1. Explain the respiratory system
2. Define Asthma
3. Devise a treatment plan using essential oils.
4. Discuss why specific oils were chosen for treatment.

THE RESPIRATORY SYSTEM

Respiration is an exchange of oxygen and carbon dioxide between an organism and the environment. The respiratory system can be thought of as a pathway for air between the atmosphere and the blood. External respiration, or breathing, is when oxygen is taken from the air by alveoli in the lungs and carbon dioxide is released from the blood. Internal respiration is the process whereby the oxygen in the blood is absorbed by cells throughout the body. Waste product carbon dioxide is absorbed by the blood to be transported to the lungs.

Organs of the Respiratory System

Nasal Cavity- Conducts air to pharynx, mucous lining filters, warms & moistens air

Sinuses - Reduces weight of skull, resonant chambers, spaces for conditioning of air

Pharynx - Reduces weight of skull, resonant chambers, spaces for conditioning of air

Larynx - Passageway for air between the Pharynx and the Trachea, houses vocal chords

Trachea - Passage way for air, mucous lining filters air

Bronchial Tree - Conducts air from the trachea to the alveoli, mucous lining filters air

Lungs - Contain the air passages, alveoli, blood vessels and other tissues of lower respiratory tract

Phases of ventilation

Inhalation is considered active and is the process of drawing air into the lungs. The diaphragm presses the abdominal organ downward and forward. The muscles of the diaphragm and intercostal muscles contract in the chest.

Exhalation is passive and is the process of expelling air from the lungs. The diaphragm rises and recoils to resting position.

As air enters the respiratory system through the nose, it is warmed, moistened and filtered. The air then travels to the Pharynx, (throat) and again it is warmed and moistened by the mucus lining. Next, the air travels through the Larynx or voice box where it is warmed, moistened and filtered once again. The air then enters the Trachea, or windpipe which is a continuation of the Larynx. Around the fifth thoracic vertebrae, the trachea divides into two bronchi. The bronchi then continue to branch out and down into bronchioles, terminal bronchioles, respiratory bronchioles and alveolar ducts. There are several alveolar sacs on the end of the alveolar duct which are made up of the alveoli.

Most of the gas exchange occurs in the alveoli.

Diffusion

The movement of molecules from an area in which they are in higher concentration to an area in which they are in lower concentration.

Diffusion takes place in the tissues as oxygen leaves the blood and carbon dioxide enters. Blood flowing into the lungs is low in oxygen. Air in the alveoli is rich in oxygen, hence diffusion causes movement of the alveolar air to the capillary blood. The blood is carried back to the heart and enters general circulation. Carbon dioxide diffuses out of the blood and into the air of the alveolus.

Gas Transport

Most of the oxygen that diffuses into the capillary blood in the lungs is bound to the hemoglobin of the red blood cells. In order to enter cells, oxygen must separate from hemoglobin. Oxygen is released as blood travels into the areas where the oxygen is low. The ability of blood to carry oxygen is seriously reduced with just a small amount of carbon dioxide.

Carbon Dioxide

Carbon dioxide diffuses into the blood to be transported to the lungs in 3 ways:

- 10% dissolved in plasma
- 20% combines with the protein portion of the hemoglobin & plasma proteins
- 70% is an ion known as bicarbonate

Carbon dioxide is important in the regulation of the acid-base balance (pH) of the blood. The blood will become more acidic as the amount of carbon dioxide in the blood rises.

The regulation of respiration depends on moment to moment changes in cellular oxygen requirements and carbon dioxide production. The Medulla which is a part of the brain stem sets the basic pattern of respiration.

Chemoreceptors

Chemoreceptors play a vital role in the control of respiration. They contain numerous small blood vessels and sensory neurons that respond to increases in carbon dioxide and acidity and to decreases in oxygen supply. Carbon dioxide has the most immediate effect in regulating respiration.

How do essential oils enter the bloodstream? Essential oils and oxygen pass through the capillary walls and into the bloodstream. Most of the essential oils are absorbed into the cells lining the respiratory passages and this may be an indicator why they work well on respiratory ailments. Some of them pass with oxygen into blood capillaries where they enter into blood circulation. Essential oils are easily absorbed and can diffuse throughout the body. The oils work with the mucous secreted by the mucosa to expectorate foreign bodies from the respiratory passages.

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What is Asthma?

Asthma as defined by Barron's dictionary is "A respiratory disorder characterized by recurrent episodes of difficulty in breathing, wheezing (especially on respiration), cough and thick mucus production, caused by spasm or inflammation of the bronchi. Most attacks are precipitated by infection, strenuous exercise, stress or exposure to an allergen (e.g. pollen, dust, food). Treatment involves the use of bronchodilators, corti-costeroids, and elimination of causative agents. Between attacks, respiratory function is normal.

Asthma is a chronic disease in which the lining of the airways in the lungs (bronchi and bronchioles) becomes inflamed, swollen and produces extra mucous. The airways narrow and breathing becomes difficult. The symptoms of Asthma can be mild or severe. Asthma causes the following conditions in the bronchi and bronchioles:

1. Swelling of respiratory mucosa lining the airway
2. Thicker & increased mucus secretion into the airway
3. Contraction of the smooth muscle lining the bronchiolar walls

These three changes are obstructive and occurring together, it leaves very little room for air to pass through.

Early or mild episodes of Asthma include coughing or mild chest tightness that can enter more severe stages of wheezing, anxiousness, extreme fatigue and respiratory failure. During an attack, expiration is often more affected than inspiration.

Asthma is also characterized by airway inflammation which leads to a heightened sensitivity to pollen, air pollution, tobacco smoke, mold, animal dander, the common cold and cold and dry air.

Asthma can be triggered by fear, nervous tension and anxiety, cigarette smoke, animal dander, dairy products, dust, molds, pollen, cold air, chemicals and exercise. It can be very difficult to identify the **particular culprit**.

According to the Center of Disease Control, Asthma kills 6,000 Americans annually and as a nation we spend about \$14 billion treating the disease. The prevalence of Asthma is

rapidly increasing in many of the industrialized countries throughout the world.

There have been a few studies done linking the increased exposure to the ultraviolet light resulting from the thinning ozone layer to a weakened immune system. Breathing highly polluted air and a gradual weakening of the immune system may be the primary cause for asthma.

The general principles involved in managing chronic asthma are:

- Treat the underlying pathology. The main focus should be to prevent or reverse the airway inflammation which is the principle factor in the airway hyperresponsiveness that characterizes asthma. Leukotrienes have been implicated as the primary cause of inflammation of asthma. Leukotrienes are a group of chemical compounds released by white blood cells. This group of chemical compounds can also cause the mucous membrane to swell, the airway muscles to constrict and increased mucus secretion. Anti-inflammatory medications are a key component of asthma treatment.

- Treat the individual patient! The treatment plan should address the severity of the disease, tolerance to medications, emotional state, sensitivity to environmental allergens/pollutants.

- Treat the triggers and special problems. Exposure to known allergens must be kept to a minimum if not eliminated altogether. If exercise is a trigger, then treat before exercising.

- Seek consultation from a specialist for pulmonary function studies.

- Use the optimum medication needed to maintain control with minimal risk for adverse effects.

- Monitor the condition continually. Pulmonary function tests and regular visits to the doctor are necessary to ensure proper medications and dosages. A peak flow meter is an important part of asthma management. A peak flow meter measures expiration. This device can warn of an upcoming asthma attack even before the symptoms appear.

Asthma Medications

In 1997, asthma drugs were re-classified as "quick-relief" medications and "long term control" medications. All of the medications in both groups are anti-inflammatory agents or

bronchodilators. The anti-inflammatory meds interrupt the development of bronchial inflammation and have a preventative action.

Anti-inflammatory medications are

- Oral corticosteroids and are used for both short term and long term treatment.
- Inhaled corticosteroids which are used for long term care.
- Cromolyn sodium for long term control
- Leukotriene modifiers are the first new class of asthma medication in twenty years. They have anti-inflammatory properties and are less potent than corticosteroids.

Bronchodilators are used to dilate the airways by relaxing bronchial smooth muscle. There are short- acting and long- acting bronchodilators.

Most of the new asthma drugs being studied are anti-inflammatory and will probably reduce the need for the daily use of corticosteroid inhalers in long-term treatment.

As I have learned throughout my research for this paper, there are many alternative ways of preventing and treating asthma. Some of these methods include breathing exercises, room humidifier, negative ions or air cleaner, saline nasal spray, diet and exercise.

My hope is to create a treatment plan utilizing essential oils and disposing of the inhalers I have used for over twenty years!

The short acting inhaler I currently use is Albuterol and the long acting is Flovent. The Albuterol is used when I have shortness of breath. The Flovent is to be used 2x a day for preventative measures. I have always utilized the Albuterol 2-4x daily and forget to even use the Flovent. Studies indicate that the prolonged use of Albuterol may result in diminished control of asthma.

The essential oils chosen for the various asthma blends were based primarily on their chemical constituents

I have provided a very basic phytochemistry chart on the following page which outlines the basic groups of chemical compounds and their therapeutic effects.

Preventative treatment

Inhalation of an "air pollution" blend to reduce bacteria in the air. The blend may be used in a diffuser, on a tissue or in a spritzer to mist the

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air. This recipe is from Aromatherapy, A complete guide to the healing art by Kathi Keville & Mindy Green. I am thankful to these authors as their chemistry chapter helped me to further understand the importance of chemical constituents.

Disinfectant Room Spray

3 drops Eucalyptus, Eucalyptus citriodora
1 drop Peppermint, Mentha x piperita
2 drops Pine, Pinus sylvestris
1 drop Tea-Tree, Melaleuca alterifolia
2 drops Bergamot Citrus bergamia
add to 1 ounce of filtered water.

Asthma Preventative Inhalation Synergy

Inhalation from the bottle or on a cloth for 2-3 minutes at a time, 3-5x daily. May also add 3-5 drops in the bath. This blend is approximately 21% Esters, 36% Sesquiterpenes and 26% Alcohols. This synergy will be relaxing to the CNS, have anti-inflammatory and spasmolytic actions and be toning and stimulating to the respiratory system.

28 drops Cedarwood, Juniperus virginiana
12 drops Clary Sage, Salvia sclarea

2 drops of Ravensara aromatica applied to the chest just before a morning shower. This is to stimulate the respiratory system, and aid in expelling mucus.

Another preventative treatment is inhalation of Inula, Inula graveolens and Khella, Ammi visnaga right out of the bottle. The use of Inula is to block the actions of histamines. Khella is an antispasmodic and helps to clear deep bronchial congestion. Khella masks the output of the mast cells that line the respiratory mucosa, thereby blocking allergic reaction in the nasal mucosa and in the bronchial tubes. Cromolyn, a mast-cell-stabilizing drug, acts as a bronchodilator and was originally derived from the Khellin plant.

I also believe it is essential to maintain emotional balance and incorporate breathing exercises into a daily routine. Just ten minutes a day of breathing exercises can bring relief and deeper breathing. An essential oil blend to accompany a breathing regime would help facilitate expansion of the bronchiole tubes and increase expiration.

Breathe Easy Synergy

Inhale deeply and slowly for 2-3 minutes prior to breathing exercises. There is a practice in Yoga known as prana yama, or breath work that stimulates and strengthens the respiratory system.

This synergy may also be utilized during a mild asthma attack as it helps to open the airways.

8 drops Peppermint, Mentha x piperita
28 drops Lavender Lavendula angustifolia
20 drops Eucalyptus, Eucalyptus Smithii

Anti-Virus Inhalation

It is very important to boost the immune system and avoid viruses during the flu and cold season. Many times a flu virus turns into bronchitis and other respiratory ailments. This blend is approximately 67% phenols for their bactericidal and immune modulating properties and 20% aldehydes for their anti-infectious and anti-inflammatory properties. I would never have thought to mix these two oils, however I do find the aroma pleasant. When a virus may be lurking around the corner, inhale the blend 3-5x a day. Put 1 or 2 drops on a handkerchief or inhale from the bottle.

3 drops Clove Bud, Eugenia caryophyllus
1 drop Lemongrass, Cymbopogon flexuosus

What to do in case of an attack

Above all, remain calm as I believe it has saved me a few trips to the emergency room. An asthma attack can come on anytime, anywhere, so be prepared. One evening a few months ago I had an asthma attack late in the evening and for the first time I can remember, I did not have my Albuterol inhaler as I ran out and did not pick up the prescription. My fiancée was very concerned and thought we may need to go to the hospital. I told him very calmly, don't worry I know I will be all right. I then proceeded to use an aromatic asthma blend I had made in school. Within 5 minutes I was breathing normal and went right to sleep.

I made this blend based on an article I read by Rachael Shapiro entitled "Psychoneuroimmunology". In a nutshell, PNI is a conditioning of the immune system. In a one-time treatment, Olness and Ader (1992) paired taste and odor with an anti-cancer drug in the treatment of an eleven year old girl. Her body learned to associate the drug therapy with this particular odor and taste and therefore, the use of the anti-cancer drug itself was only needed 6 times out of twelve treatments! The successful pairing of an odor with an immune response in a subject can be achieved with only one trial. This conditioned response may only remain effective for up to 48 hours. For myself, the conditioned response seems to still be in effect.

Every once in a while I have reconditioned myself by inhaling Albuterol and then the blend.

Now whenever I smell Angelica my breathing is calmed and I am able to breathe easier. I made the blend in a salve and rub it on my chest as well as just inhale it. .

Asthma (PNI) Salve - 2oz
12 drops Angelica, Angelica archangelica
16 drops Lemon, Citrus limon
12 drops Clary Sage, Salvia sclarea

Other ingredients:

Sunflower and Olive Oil, Bees wax, Centella, Echinacea and Calendula herbal oils.

Another trick I have learned over the years for a mild to severe attack is to breath into a handkerchief or piece of material or even your cupped hands. Try to concentrate more on expiration than inspiration. This has a very calming effect and has restored my breathing many, many times. A drop of calming essential oil such as Lavender or Ylang Ylang may enhance this treatment.

Asthma Face Splash

During an acute attack, remember to stay calm and try this face splash. The use of sedative-type and antihistamine-like essential oils can be quite effective in helping to restore respiration. This blend is also calming to the CNS. The blend is approximately 23% Esters, 21% Sesquiterpenes and 35% Alcohols. Fill a basin with cold water. Add 2 drops of the synergy and swish. Splash on the face with eyes closed several times, pat dry and repeat 2 more times. This recipe can also be made into a facial mist and kept in the refrigerator. Another use for this remedy would be to simply inhale from the bottle.

7 drops Lavender, Lavendula angustifolia
5 drops Cedarwood, Cedrus atlantica
2 drops Marjoram, Origanum Majorana

Asthma Salve

Asthmatics tend to fight low level congestion on a regular basis. The purpose of this salve is to fight congestion, calm the CNS and reduce inflammation and spasms in the bronchial tract. Although my goal when developing this blend was to achieve approximately 20% Esters, 20% Sesquiterpenes and 20% Monoterpenes, I ran shy of German chamomile and the blend was born! I have found in the past that when a blend changes course for whatever reason, I usually need it either physically or emotionally. Although I do not care for its aroma, I will use it with an open mind and heart!

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Asthma Salve

4 drops Frankincense, *Boswellia carteria*
4 drops Sandalwood, *Santalum album*
4 drops German chamomile,
Matricaria chamomila
8 drops Clary sage, *Salvia sclarea*
4 drops Ginger, *Zingiber officinalis*

After the breath of life returns to “normal” Often times after a prolonged attack or bronchitis, the back, shoulder and chest muscles are very tight and sore from labored breathing. A massage oil to decrease inflammation of the bronchioles, reduce muscle spasms and calm the CNS is to be applied to the entire back and shoulders as well as the upper chest and feet. Great at bedtime too. This recipe is from “Aromatherapy, A lifetime guide to healing with essential oils by Valerie Gennari Cooksley, Pg. 109

Asthma Massage Oil

16 drops Lavender, *Lavendula angustifolia*
3 drops Peppermint, *Mentha x piperita*
3 drops Eucalyptus, *Eucalyptus smithii*
3 drops Ylang, Ylang, *Cananga Odorata*
2 tablespoons vegetable oil (Almond)

Conclusions

It is the authors opinion that in order to evaluate the efficiency of treating asthma with essential oils, a treatment plan must be rigorously followed for a period of a least 3 months. During that time period, new blends and remedies will evolve to treat the disease appropriately. I have already begun the Aromatherapy treatment plan as outlined in this paper and I will write and submit a follow-up paper with the results. I am hopeful that at the end of three months I will be off the prescription inhalers and breathing easier.

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