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## HALOTHERAPY – BENEFITS AND RISKS

**Evgeniya Vladeva, Liliya Panajotova**

*Department of Physiotherapy, Rehabilitation, Thalassotherapy and Occupational Diseases, Faculty of Public Health, Medical University of Varna*

### ABSTRACT

Salt has been used for millennia in different parts of the world by different cultures because of its health benefits and therapeutic effect. Halotherapy is a dry salt therapy that is provided in environments, with special equipment called a halogenerator. In the last decades halotherapy has gained the trust of more and more people around the world and has been spreading quickly in many countries. The positive results from the therapy last for more than a year. The possibility to combine it with other physical therapy methods, as well as with pharmacological therapy, makes halotherapy a treatment of choice in mild and moderate forms of bronchial asthma, chronic obstructive bronchitis, post-pneumonia states and various other respiratory and skin diseases. The insignificant side effects, together with the conduction of this treatment in a cosy environment, have a beneficial effect on the psycho-emotional state of adult patients and children.

The aim of the article is to reveal the benefits of halotherapy as an alternative method for treating pulmonary and skin diseases and some other conditions. Technology and application method are mentioned as well as main therapeutic factors, the positive effects, contraindications for its application and some side reactions that may occur during treatment.

**Keywords:** *halotherapy, salt therapy, application, indications, side effects*

### INTRODUCTION

Salt has been used for millennia in different parts of the world by different cultures because of its health benefits and therapeutic effect, but this was initially proved in 1843 by the Polish therapist Feliks Boczkowski. He noticed that people working in the

salt mines in Poland enjoyed excellent health despite the harsh working conditions and the lack of sufficient food. In addition to this, they almost never suffered from colds or any respiratory diseases, which were frequently observed among the rest of the population. This prompted the physician to conduct research by which he established that all this was due to the saturated with salt air that the miners breathed daily. Thus, salt mines in Poland and Eastern Europe gradually became popular sanatoriums, attracting visitors from all over the world. A new method of treatment was established – Halotherapy (salt therapy). Lately, in many places, predominantly in Eastern Europe, artificial salt rooms and caves have been established, because of uncomfortable feelings when visiting salt mines, their difficult accessibility and too high expenses for their visitation.

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#### Address for correspondence:

*Evgeniya Petrova Vladeva, MD, PhD  
Department of Physiotherapy, Rehabilitation,  
Thalassotherapy and Occupational Diseases  
St. Marina Univesity Hospital of Varna  
1 Hr. Smirnenski Blvd  
e-mail: jeni.vladeva@gmail.com*

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In the last decades halotherapy has gained the trust of more and more people around the world and has been spreading quickly to Western Europe, Canada, Israel, North America, and many other countries. Lots of studies that prove its effectiveness and application with different diseases are published.

The aim of the article is to reveal the benefits of halotherapy as an alternative method for treating pulmonary and skin diseases and some other conditions.

### *Halotherapy and salt therapy – what is the difference?*

Salt therapy can be dry or wet. Halotherapy is a dry salt therapy that is provided in environments, supplied with special equipment called a halogenerator. The halogenerator disperses a precise dry salt aerosol into the salt chamber. According to the Salt Therapy Association there are two types of salt rooms – active and passive. Active salt room is supplied with a special piece of equipment known as a halogenerator where pure sodium chloride is placed and dispersed into microsized particles into the air of the salt room. This kind of salt therapy is called halotherapy. Wet salt therapy includes gargling, drinking salt water, bathing in salt water or nasal irrigations (1).

On the other hand in many SPAs there are rooms filled with large amounts of varying types of salt such as Dead Sea, Himalayan, rock salt, Mediterranean, Caribbean, etc. There is no halogenerator in these chambers and they are created to look like salt caves but they do not provide the same salt air particles present in natural salt caves. They are known as passive salt rooms. The temperature, humidity and airflow are controlled but the concentration of sodium chloride is smaller than in dry salt rooms and the stay in these rooms is not considered to be halotherapy. Passive salt rooms provide an environment suitable for relaxation, meditation and improve the psycho-emotional condition of a person (1). As a result of many scientific searches it is proven that salt therapy is based on the inhalation of salt particles into the upper and lower parts of the respiratory system and penetration through the skin of microsized particles. This is possible to happen only by using halogenerators. That clarifies the difference between ac-

tive and passive salt therapy, and halotherapy and salt therapy.

### *Technology of halotherapy:*

At the base of this technology is the Halocomplex. The Halocomplex consists of a chamber with a halogenerator, and walls and floor covered with salt. In most of the cases the walls and floors are made of sea salt, and do not provide the real treatment. The special salt covering on the walls and floor acts as a buffer for air. Dry sodium chloride is produced in this room by a special nebulizer – halogenerator, which brings a flow of clean, dry air, saturated with highly dispersed negatively charged particles of sodium chloride into the salt room. The halogenerator is supplied with microprocessor that monitors the temperature, relative humidity and mass concentration of aerosol in the chamber (2).

### *Application method:*

When conducting the procedure, the patients are left in the salt room or cave for 45 minutes and breathe the saturated with salt air, which is transported to the smallest of the bronchi as well as to the sinuses and the nasal cavity. The halotherapy rooms have air with low humidity and a temperature in the comfort zone – 22-24°. The low humidity in the room is of vital importance. There are no requirements for special clothing or other equipment. Benefits are better if patients are bare-legged. The number of sessions depends on the patient's condition and the disease treated. Twelve to twenty sessions for 45 minutes each and for a short period of time are recommended for patients with chronic pulmonary diseases like asthma, bronchitis, sinusitis, COPD, allergic disease (3).

The main therapeutic factor is sodium chloride with an aerosol particle size of 2 to 5 millimicrons. A study by Chervinskaya, including 124 patients with different pulmonary diseases, showed a considerable improvement of the clinical status of the majority of the participants after a one-hour stay in a salt room daily for a period of 15-20 days (4). Similar results were observed in another study based on a chemiluminescent test in 49 patients with chronic obstructive bronchitis. Halotherapy leads to positive changes in the oxidation of free radicals, improves local immunity and the clinical presentation of the disease (5,6).

The **mechanisms of action** of halotherapy are manifold:

- ◇ mucolytic
- ◇ antibacterial
- ◇ anti-inflammatory
- ◇ immunomodulating
- ◇ hyposensitizing.

Halotherapy is a natural and safe treatment without serious side effects. This method is very beneficial for the overall wellness of a person by improving function and removing toxic substances from respiratory system, improving the function and appearance of the skin, boosting the immune system and reducing stress.

There is evidence from several scientific researches that inhaled dry salt particles have bactericidal, moistening and anti-inflammatory properties, which may reduce inflammation in the entire respiratory tract and widen the airway passages. Salt inhalation leads to a quicker improvement of the parameters of respiratory failure, which can be observed in the worsening of obstructive pulmonary diseases (6). Dry salt particles accelerate the transportation of mucus, the elimination of residual toxic substances and foreign allergens. The application of salt therapy thus results in a clean respiratory system with higher oxygen intake, increases energy and improves the immune system.

Scientific researches have confirmed that halotherapy has an influence over superficial and deeper skin layers providing healing and cosmetic effects. This increases activity of the skin cell ion channels, activates electrophysiological activity and improves skin's protective properties. Halotherapy leads to pH normalization and stimulates reparative and regenerative processes in the epidermis and derma, increasing skin rigidity (7). Dry salt improves skin microcirculation and cellular membrane activity, enhances skin regeneration and elasticity, and reduces wrinkles and edema.

#### *The positive effects of halotherapy:*

The efficiency of salt therapy is mainly due to three reasons:

1. salt has an antibacterial, antimycotic and anti-inflammatory effect (it has been established that the environment in salt rooms is three

times more sterile than the cleanest operating room);

2. salt has a natural ability to emit negative ions, neutralizing a positive charge;
3. salt is superabsorbent when it is dry.

#### *Indications for use:*

Halotherapy is indicated in most **respiratory diseases**, including:

- ◇ respiratory tract infections
- ◇ asthma (8,9)
- ◇ allergic and chronic bronchitis
- ◇ frequent colds
- ◇ pharyngitis
- ◇ sinusitis
- ◇ rhinitis
- ◇ tonsillitis
- ◇ pneumonia, after an acute stage
- ◇ cystic fibrosis.

It has been proven that this is a highly effective way of positively influencing numerous respiratory diseases with a prompt resolution of symptoms, improvement of pulmonary ventilation and tolerance of physical strain, as well as increase in the immunity and protective capacity of the organism (10).

Immunological and cardiorespiratory indicators were studied in 88 metallurgists diagnosed with a toxic dust bronchitis. The conducted therapy consisted of sinusoidal modulated current and ultrasound in the intercostal region, and respiratory exercises combined with massage and halotherapy. The patients were divided into three groups:

1. halotherapy and ultrasound treatment;
2. halotherapy and sinusoidal modulated current treatment, and
3. halotherapy alone.

The study proves that combining halotherapy with the use of physiotherapy equipment increases the efficiency of salt therapy by 86.5%. The combination of electric current procedures and halotherapy can be used both for treatment and prevention of obstructive syndrome in toxic dust bronchitis (11).

Because of the influence of halotherapy over superficial and deeper skin layers which increases the activity of the skin cell ion channels, activates electrophysiological activity and improves skin's protec-

tive properties this treatment can provide healing and cosmetic effects. Halotherapy leads to pH normalization. It stimulates restorative and regenerative processes in the epidermis and derma, resulting in an increase in skin rigidity (7). Dry salt improves skin microcirculation and cellular membrane activity, enhances skin regeneration and elasticity, and reduces wrinkles and edema. Halotherapy can be applied in some **skin diseases (12)** such as:

- ◇ Psoriasis
- ◇ Eczema
- ◇ Dermatitis
- ◇ Acne
- ◇ Rosacea
- ◇ Onychomycosis
- ◇ Skin aging

Halotherapy is conducted in a pleasant and cosy environment, which has a beneficial effect on the psycho-emotional state of the patients. This treatment can be used with some **psychosomatic conditions** including:

- ◇ stress and fatigue;
- ◇ headache,

and also for increasing immune reactivity.

Salt therapy is recommended as an additional treatment for some pediatric diseases. It is safe, non-invasive, with no side effects and potential health risks. Clinical researches have proven that children react quicker and more intensively. There is evidence about the high effectiveness of halotherapy for prophylaxis in frequently ill children and the possibility of its use for the treatment of acute respiratory diseases with children affected with chronic ears, nose and throat (ENT) disorders, respiratory and skin problems (13). This treatment is easily workable with children. There are special salt rooms supplied with toys and occupational appliances which makes children feel calm and comfortable.

#### **Side effects:**

During the treatment itself, certain side effects might be observed, such as increased coughing and more abundant secretion, which is actually considered a positive effect because it leads to respiratory tract clearing and it is a signal for a change and adaptation of the organism to the specific irritant.

Skin irritations are rare side effects and are normally resolved by the third or fifth session. Conjunctivitis as result of irritation of the mucoid membrane is rarely observed. It is not a reason to interrupt the sessions. In such cases, it is recommended to keep the eyes closed when spending time in the salt room (14).

**Contraindications** include hyperthyroidism, active tuberculosis, high-grade hypertension, cardiovascular and respiratory failure, acute-stage blood disorders, contagious diseases, fever, open wounds and malignant diseases. Caution should be exercised when prescribing this therapy to patients with claustrophobia.

## CONCLUSION

Halotherapy is an alternative treatment method in numerous respiratory and skin diseases. It has insignificant side effects. It is conducted in a pleasant and cosy environment, which has a beneficial effect on the psycho-emotional state of the patients. This treatment is easily workable with children. The positive results from the therapy last for more than a year. The possibility to combine it with other physical therapy methods, as well as with pharmacological therapy, makes halotherapy a treatment of choice in mild and moderate forms of bronchial asthma, chronic obstructive bronchitis, post-pneumonia states and various other respiratory and skin diseases.

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