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Article / Review

EFFECTIVENESS OF AROMATHERAPY IN ACUTE RESPIRATORY INFECTIONS IN FREQUENTLY ILL CHILDREN

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Abstract.

This review article is devoted to the use of aromatherapy in acute respiratory infections in frequently ill children. Children who often suffer from acute respiratory infections belong to the group of «frequently ill children», which make up 20-80%.The high incidence of acute respiratory infections in children is due to the immaturity of the immune system, but with age, they develop antibodies to viruses and bacteria, which helps to reduce the incidence. One of the promising methods for preventing respiratory pathology and improving the health of children is aromatherapy using essential oils. Studies have confirmed the high antiseptic activity of essential oils, which is primarily due to the presence of phytoncides. Such features of essential oils as anti-inflammatory and antiseptic action, the ability to improve the qualitative composition of the microflora of the upper respiratory tract and their patency, increase local immunity, can become an effective and safe method for the prevention and treatment of ARI in children's groups.

Key words: aromatherapy, frequently ill children, risk factors, infection, acute respiratory infections, essential oils.

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Acute respiratory infections (ARI) are very common in childhood. The incidence of ARI in children is 3-4 times higher than in adults. Children who often suffer from acute respiratory infections are classified as «frequently ill children» (FIC) [1-6].

Frequently ill children (FIC) belong to the 2nd health group and are a group for dispensary observation. Among children, FIC accounts for 20-80% [2,3]. These children are subject to repeated respiratory tract infection up to 6-8 times a year [2]. Factors that increase the risk of developing respiratory pathology are aggravated family history, maternal age, toxicosis of pregnancy, stressful situations in the family, perinatal lesions of the central nervous system, purulent-septic diseases in the neonatal period, prematurity, morphofunctional immaturity, early transfer of children to artificial and mixed feeding, background diseases such as malnutrition, vitamin and protein deficiency, previous rickets, anemia, which cause dysfunction of the immune system. Exogenous factors leading to the development of respiratory diseases are unfavorable material and living conditions, low level of sanitary culture, passive smoking, improper daily routine, poor nutrition, various infectious diseases [3-15].

The high incidence of acute respiratory infections in children is due to the immaturity of the immune system, but with age, they develop antibodies to viruses and bacteria, which helps to reduce the incidence [12]. In this regard, the maximum incidence of acute respiratory infections is observed in children aged 6 months to 6 years, when their immune memory is at the formation stage. This problem is also especially relevant for preschool and school-age children.

One of the promising methods for preventing respiratory pathology and improving children's health is aromatherapy using essential oils.

Aromatherapy is the ancient art of treating diseases using plant aromas. The term «aromatherapy» (using smell as a medicine) was first introduced by the French chemist Dr. Rene M. Gattefosse in 1928. He proved that essential oils have not only antimicrobial, but also reparative effects. This is a method of inhalation of natural essential oils with antimicrobial and antiviral properties. Inhalation of vapors of such oils has a bactericidal, anti-inflammatory and antiseptic effect, improves the qualitative composition of the microflora of the upper respiratory tract and their patency, increases local immunity [5].

Each type of essential oil has its own composition, characteristic only for it. Thus, in the essential oil of geranium about 300 components have been identified, in the essential oils of rose, bergamot, lemon, mandarin, orange - about 500 components in each and some of them play a certain role in the formation of odor and biological activity [12,19,20].

Modern studies have confirmed the high antiseptic activity of essential oils, which is due, first of all, to the presence of phytoncides. Essential oils are able to suppress the development of gram-positive and gram-negative microorganisms, many types of

fungi, protozoa, have antiviral activity. It has been established that lavender oil inhibits the growth of tuberculosis bacilli [5–8].

The anti-infective activity of essential oils is combined with their complete harmlessness to the human body, which distinguishes them from modern antibacterial drugs. Microorganisms practically do not develop resistance to them. This is due to the fact that the antibiotic effect of essential oils on microbes is due to the destruction of the cytoplasmic (peripheral) membrane and a decrease in the activity of aerobic respiration, which leads to a decrease in the release of energy necessary for the synthesis of various organic compounds [8].В настоящее время установлено, что эфирные масла усиливают проникновение антибиотиков через клеточные мембраны организма человека и тем самым дают возможность снизить дозы препаратов при тяжелых заболеваниях [7].

The aromatherapy method using essential oils has a number of positive aspects:

• convenience and safety of the method, which allows it to be used in children of different ages;

• the most physiological introduction of the drug with inhaled air;

• direct action of essential oils on the mucous membrane of the respiratory organs and relief of inflammatory reactions;

• softening effect of oil on the mucous membranes;

• the ability to avoid irritation of the mucous membrane and maceration of the skin that develop with prolonged use of drugs in the nasal cavity [9];

• the ability to use for a long period of time;

• the ability to use by children of different ages and adults.

Often in pediatrics, complex preparations of essential oils are used for inhalation passive administration into the nasal cavity when inhaling. For example, for the prevention and treatment of acute respiratory infections, the composition of natural essential oils «Breathe Oil» is used. It contains natural essential oils of plant origin (juniper, clove, eucalyptus, mint, wintergreen) and levomenthol, which have antiviral, antimicrobial, analgesic, anti-inflammatory, antiseptic effects, facilitate breathing during a runny nose and are used in the form of passive inhalations.

When administered by inhalation, essential oils have a bacteriostatic and bactericidal effect on the microflora of the upper respiratory tract [18]. Peppermint essential oil also has a pronounced analgesic and antispasmodic effect, and also has high antimicrobial activity [19].

Levomenthol facilitates breathing during ARI, reducing the reactivity of the respiratory tract in response to irritation caused by the inflammatory process. The antibacterial, fungicidal, antiviral, anti-inflammatory and antioxidant effects of eucalyptus essential oil have been shown in many clinical trials [20]. Cajeput essential oil, when applied topically, enhances the therapeutic effect of antibacterial drugs [21]. Wintergreen essential oil has analgesic and anti-inflammatory properties [22]. Juniper essential oil has an antioxidant effect and antimicrobial activity, especially against strains of Staphylococcus aureus, pneumococci and Haemophilus influenzae [23]. Clove essential oil has an antiseptic and analgesic effect, and has antiviral properties. Clove essential oil can reduce the migration of eosinophils, and also has antioxidant and anti-inflammatory effects [24-27].

Antimicrobial activity against methicillin-resistant strains of Staphylococcus aureus, vancomycin-resistant strains of enterococci, is shown when using a combination of essential oils - mint, eucalyptus, clove and juniper. The effectiveness and safety of the composition of essential oils «Breathe Oil» were studied in a number of clinical studies and high efficiency of «Breathe Oil» was shown for the prevention of respiratory pathology in children of different ages [7,13]. Essential oils can be used for «mass» prevention of acute respiratory infections in children in preschool and school institutions. In a study conducted in preschoolers (5-7 years old) with functional or organic pathology of ENT organs and a tendency to frequent respiratory infections, inhalations of «Breathe Oil» contributed to a decrease in the frequency and duration of acute respiratory infection by 2-4 times and complications were observed 5 times less often.

The conducted studies have shown a reduction in the symptoms of ARI in children with functional and organic diseases of the nasopharynx, which has led to a decrease in the need for antibacterial therapy [17].

No cases of side effects were noted in children with atopic dermatitis [14,18].

Against the background of the use of «Breathe Oil», an increase in secretory IgA in nasopharyngeal washes was found, which indicates stimulation of the local immune

response [8,16].

Prescribing the drug for 30 days helped to avoid relapses of acute respiratory infection [2]. Children who received «Breathe Oil» in the complex therapy of ARI did not experience complications of the disease, while children in the comparison group who received traditional treatment experienced complications, most often obstructive bronchitis [20].

Currently, there are several forms of release of «Breathe» essential oils, which expands the possibilities of their practical application - oil and spray for the prevention of ARI, a warming gel for children with hypothermia and cough, an inhaler patch for eliminating nasal congestion, drinks and lozenges based on natural plant extracts and essential oils

Currently, the «Breathe» series is released in a new form - a composition of natural essential oils in a set with an inhaler bracelet, which is indicated for children from 2 years of age for the active prevention of ARI among children and adults during the epidemic season. This form is easy to use, put the bracelet on your hand before leaving the house and apply a small amount of «Breathe Oil» to it. Essential oils will destroy bacteria and viruses in the inhaled air for several hours.

Thus, the use of inhalations with «Breathe Oil» for the prevention and in the complex therapy of ARI is appropriate and justified in pediatric practice. Inhalations with «Breathe Oil» are very convenient to use, do not require instillation into the nasal cavity. The use of oil for the prevention of respiratory infections leads to a decrease in the number of cases of ARI and prevents the development of complications. The use of inhalations with «Breathe Oil» can be attributed to the mass prevention of acute respiratory infections.

Such properties of essential oils as anti-inflammatory and antiseptic action, the ability to improve the qualitative composition of the microflora of the upper respiratory tract and their patency, and to increase local immunity, can become an effective and safe method for the prevention and treatment of ARI in children's groups.

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