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THERAPEUTIC EFFECT OF PLANTS USED FOR WHOOPING COUGH AND THEIR CONTENT OF BIOLOGICALLY ACTIVE SUBSTANCES

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ТЕРАПЕВТИЧЕСКИЙ ЭФФЕКТ РАСТЕНИЙ, ИСПОЛЬЗУЕМЫХ ПРИ КОКЛЮШЕ И СОДЕРЖАНИЕ В НИХ БИОЛОГИЧЕСКИ АКТИВНЫХ ВЕЩЕСТВ

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Abstract. Azerbaijan is a country with the richest medicinal resources in the world. Favorable climatic conditions, fertile soils, abundant sunlight, and sufficient water reserves create the basis for the growth of various types of valuable medicinal plants here. In the cold months, phytotherapy is used not only for treatment, but also for prevention. Among infectious diseases caused by cold weather, whooping cough prevails over others. There are enough medicinal plants and natural remedies to eliminate the main symptom of the disease, coughing and irritation caused by suffocation. The composition of plants used in whooping cough is rich in saponins, mucus, glycosides, flavonoids, and essential oils. Extracts, infusions, and cooking made from them, taken in a certain dose, increase the body's natural defenses and prevent the disease from becoming chronic. Experts have given rules on how much and in what ratio to take them. The use of fresh air in combination with phytomedicines for whooping cough is even more effective. Since treatment with phytotherapy is effective, it has been used at all times and research is constantly being conducted in this direction.

Аннотация. Азербайджан богат лекарственными ресурсами. Благоприятные климатические условия, плодородные почвы, обилие солнечного света и достаточные запасы воды создают здесь основу для произрастания различных видов ценных лекарственных растений. В холодные месяцы фитотерапия применяется не только для лечения, но и для профилактики. Среди инфекционных заболеваний, вызванных холодной погодой, преобладает коклюш. Лекарственных растений и природных средств достаточно для устранения основного симптома заболевания — кашля и раздражения, вызванного удушьем. Состав растений, используемых при коклюше, богат сапонинами, слизью, гликозидами, флавоноидами и эфирными маслами. Экстракты, настои и отвары из них, принимаемые в определенной дозе, повышают естественные защитные силы организма и не дают заболеванию перейти в хроническую форму. Использование фитопрепаратов при коклюше очень эффективно. Поскольку лечение фитотерапией применялось во все времена, в этом направлении постоянно ведутся исследования. Автор дает подробное описание видов растений Азербайджана и методов их использования при коклюше.

Keywords: pertussis, phytoncide, alternative medicine, immunocorrector, adaptogen.

Ключевые слова: коклюш, фитонцид, альтернативная медицина, иммунокорректор, адаптоген.

Whooping cough is a highly contagious respiratory disease caused by the bacterium *Bordetella pertussis*. Whooping cough is an acute infectious disease transmitted by airborne droplets, characterized by a long-lasting cyclic course and spasmodic attacks, the incubation period is usually 7-15 days. The disease is considered contagious for 30 days from the date of onset [1].

After falling into the mucous membrane of the upper respiratory tract, pertussis germs settle in the ciliated epithelium of the larynx and bronchi. The bacteria cannot penetrate deep tissues. The toxins secreted by the bacteria cause a local inflammatory reaction. The disease is usually accompanied by a runny nose, mild fever, and mild cough. The cough gradually decreases over one to two weeks, then increases in frequency and severity. A focus of excitation is formed in the respiratory center of the medulla oblongata. A severe cough occurs during breathing, ending with a "whooping cough" sound. During the course of the disease, exacerbations are most often observed in the evenings, and 5-30 coughing fits are observed during the day. Sometimes choking is observed with vomiting. Like many infectious diseases, whooping cough also occurs seasonally and is considered a serious threat to children's lives. The most common complication of the disease is pneumonia caused by the addition of a second infection. This disease is most often infected by children under 7 years of age. Close and prolonged contact with the patient leads to its further spread. The cough can last for several weeks or months and worsens at night. Antibiotics are used to treat the disease. This helps both to alleviate the symptoms of the disease and shorten the recovery period. However, if the cough lasts more than 2-3 weeks, antibiotics may not help. There is no innate immunity against such an infection. Stable immunity is formed after the disease [8].

Coughing attacks in children are prolonged, and sometimes convulsive attacks occur. Coughing can occur as a result of increased viscosity of bronchial secretions, insufficient activity of the ciliated epithelium of the bronchi, and insufficiency of the contractile apparatus of the bronchi, which is most characteristic of children of early and preschool age. In this case, medicinal herbs are shown that stimulate the removal of bronchial secretions due to dilution and stimulation of the motor activity of the ciliated epithelium, as well as the motor function of the bronchi. The list of expectorant herbs at this stage of the disease is very extensive — black birch, linden, yellow sweet clover, fragrant and tricolor violet, sage, mint, thyme, oregano, buckwheat, plantain, eucalyptus, licorice, wheatgrass, marshmallow, fennel fruits, flax seeds, pine buds [2].

Taking herbal medicines increases the effectiveness of the body's defense mechanisms, normalizes metabolic processes disrupted by the disease, and enhances the removal of toxic metabolites from the body. Treatment with herbs allows you to reduce the risk of side effects of synthetic drugs and achieve full restoration of the functional activity of damaged organs. And although many drugs are based on medicinal plants, the whole plant has a more complete and versatile effect than one of the fractions of its active substances. In many cases, the cost of a course of herbal treatment can be up to 5 times lower than that of traditional medicines. To treat whooping cough, it is first necessary to monitor its stage and course [3].

Plants used in whooping cough

Hawthorn, blackcurrant, ginger, chamomile, blackcurrant, tricolor violet, etc. are used for whooping cough. Essential oil plants also have a mucolytic effect in whooping cough: fennel, dill, eucalyptus, cumin, thyme, wild rosemary, chamomile, lavender, pine, fir, sage, licorice root, flax seeds [4].

All of these plants have a high phytoncidal and anti-inflammatory effect. Since the phytoncidal effect of essential oil plants is short-lived, inhalation of their infusions can be carried out up to 4 times a day, and oil inhalations have a perfectly effective effect on dry and painful cough [3].

For laryngitis, the use of plants with a significant content of saponins should be limited. Since saponins, glycyrrhizin, flavonoids predominate in licorice roots, they are prescribed in cases where it is necessary to facilitate mucus production and make the cough reflex effective. At the same time, it is used against bacterial and viral infections [5].

Information about the active ingredients in the plants used

The composition of the decoctions is made up of equal amounts of antitussive herbs. For a painful dry cough, expectorant plants with an analgesic effect are added to the decoction: linden, thyme, pine buds, plantain, licorice root, poplar, cumin, etc. In case of excessive phlegm, plants that reduce secretion should be added to the decoctions: pomegranate with honey, cherry, carrot and beet juices are prescribed. Thyme, ginger, honey and garlic have anti-inflammatory, antimicrobial effects and soothe whooping cough. The essential oil contained in these plants has antiseptic properties. The essential oil (thymol, carvacrol, borneol, terpinen) and flavonoids contained in thyme have an effective antimicrobial effect against the causative agent of whooping cough and an anti-inflammatory effect in the bronchi. However, thyme growing on the roadside can be very harmful [6].



Figure 1. *Viola tricolor* L.



Figure 2. *Thymus vulgaris* L.

The reason why ginger is so useful as a spice is its essential compounds, mono- and sesquiterpenoids (curcumin). The curcumin substance in ginger has an antimicrobial effect. Taking them together with honey further enhances the therapeutic effect and strengthens immunity. Antihypoxant plants (linden, poplar, blueberry, hawthorn, yarrow, mint) are also taken to facilitate breathing [6].

Strong antihypoxants are clover, hawthorn, linden, mullein, nettle plants. Mint, chamomile, licorice, poplar, blueberry plants have a slightly weaker antihypoxant effect. Vitamin-containing plants (blueberry, yarrow, etc.) can also be taken to strengthen immunity. If the cough lasts more than 2 weeks, it is absolutely necessary to prescribe herbal immunocorrectors (wheat, plantain, rose hips) and adaptogens (eleutherococcus). Adaptogens have a stimulating effect, especially in the cold months [7].

To activate the rapid absorption of inflammation, plants containing silicon and zinc are used (mulberry, nettle, birch leaves, sage) [7].

To use alternative medicine, it is first necessary to check for allergies to any plant. Since the disease lasts a long time, it is necessary to use folk medicine as much as possible, otherwise excessive intake of synthetic drugs can lead to liver damage and weakening of the immune system. During treatment with plants, a break is made after a certain period and then it is taken again.

Various plants and their uses

Folk remedies for the treatment of whooping cough.

- Effective juice of onion or radish with honey in a ratio of 1: 1, anise and dill infusion.
- Thyme or licorice tea, which has a bactericidal, antiseptic and expectorant effect, is taken 1 cup per day.
- 1 tablespoon of blackcurrant fruits is brewed in 1 cup of boiling water, kept for 1-2 hours, taken 3 times a day. Since it contains vitamins, it is useful for whooping cough.
- 2 teaspoons of common thyme are brewed in 1 cup of boiling water, 1 teaspoon is given to the child 3 times a day.
- During the treatment of a hoarse voice caused by whooping cough, cumin infusion is prescribed internally and gargled. In this way, it is possible to restore the voice in 1-2 days. 1 teaspoon of cumin is brewed in 100 ml of water and taken throughout the day.
- 1 teaspoon of violet is brewed in 1 cup of boiling water, 1 tablespoon is drunk every 2 hours during the day.
- Pine buds and large plantain are taken in equal quantities, 2 teaspoons are brewed in 1 cup of water, taken 3 times a day. Plantain infusion is also used alone.
- The mucous substances contained in the rhizomes of the orchid have an expectorant effect. 1 tablespoon of orchid rhizomes is brewed in 1 cup of water and taken throughout the day.
- For whooping cough, drink 1-2 tablespoons of barberry juice per day.
- Rosemary is taken 5-6 times a day, one tablespoon. Only rosemary is prescribed in small quantities to children under 3 years old, because an overdose can cause hallucinations.
- 5 figs are boiled in 250 ml of milk for a short time, both drunk and eaten during the day.
- Mix 50 grams of ginger, 1 stick of cinnamon and 1 tablespoon of honey with 250 ml of water and take 3 times a day.
- Brew 1 teaspoon of ginger powder in 1 cup of water. Take 1 cup 3 times a day after meals.
- Since the essential oil in mint is antispasmodic, it relieves whooping cough. Brew 1 tablespoon of dried mint in 1 cup of water and take it throughout the day.
- The astringent substances and essential oil in sage have an anti-inflammatory effect. Sage helps to eliminate toxins from the body faster, strengthens immunity and stops coughing. Brew 1 tablespoon of crushed sage leaves in 1 cup of water and take it throughout the day.
- After grinding licorice roots, boil 1 teaspoon in 1 cup of water and drink it. It can also be taken with honey to lose its bitter taste.

Conclusion

Whooping cough is observed in all seasons of the year, especially when the weather gets colder, as a result of the multiplication of bacteria and viruses.

The drugs used to treat the disease are taken for a long time.

However, although long-term medication destroys the bacteria that cause the disease, its negative effect on the liver is inevitable, and it also leads to a weakening of immunity:

1. The use of phytotherapy along with antibiotics gives positive results. Even phytoncidal (onion) preparations that act as antibiotics can be used.
2. Plants with bactericidal properties (thyme, ginger, sage, licorice, the above-ground part of orchids) destroy the bacteria that cause whooping cough.
3. Many plants containing essential oils (mint, violet, rosemary) have sedative and spasmolytic effects, so they calm whooping cough attacks.

4. Plants containing mucus (orchid tubers, plantain, licorice root) have an expectorant effect and eliminate choking.
5. Plants containing vitamins (currants, violets, etc.) have an immunoprotective effect and increase resistance to infectious diseases.
6. Since fig fruits are emollient, choking is reduced when cooked in milk and eaten.

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