

Honey as a medicine of traditional and official medicine

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Honey is a unique food product, which is at the same time a traditional medicine in almost all countries of the world since ancient times. And to this day, many phytotherapists to one degree or another use the rich natural complex of biologically active substances that make up honey for the prevention and treatment of diseases.

The history of the medicinal use of honey goes back several centuries. Even in the ancient Egyptian pyramids, information was found that the Egyptians were actively engaged in beekeeping and used honey not only for food, but also as a medicinal, cosmetic and preservative agent. Evidence of the medicinal use of honey was found in ancient Assyria, ancient China, Palestine, and Arabia. The Chinese used it as an independent remedy. The Arabs considered honey to be a gift from God and called it an elixir. In India, beekeeping was widely developed as early as 4000 years ago, and various nutritional and medicinal properties were attributed to honey. The Indians used it as an antidote for poisoning with plant, animal and mineral poisons. Beekeeping was a favorite pastime of the ancient Slavs.

I. ORIGIN OF HONEY AND ITS SPECIES

Honey is produced by honey bees (*Apis mellifica*, *Apis dorsata fabricius*) from nectar, honeydew or sweet juices found in various parts of herbaceous and shrub plants and trees, and from substances secreted from the salivary glands of bees.

Depending on the source of receipt, honey is divided into 3 main types:

- floral,
- honeydew,
- mixed.

Flower honey is a product obtained from the nectar of plant flowers (a sweet, sugary and aromatic juice secreted by the nectaries of flowers).

Bees produce honeydew honey from honeydew - a sweetish liquid containing sugar-like, nitrogenous, mineral and other substances. Pad can be of vegetable or animal origin.

Vegetable - stands out from the leaves and stems of some plants (oak, maple, linden, willow, pine, fir, spruce, larch, apple, hazel, aspen, elm, yellow acacia, bird cherry, rose, pear, plum, etc.). Deads of animal origin are the sweetish secretions of some insects (plant aphids, lice, scale insects, etc.) living on various types of woody and herbaceous plants. These insects feed on the sap of plants, and liquid sweet drops of their secretions fall down from the leaves of the trees; that's why they got the name "pad". Freshly isolated honeydew is a transparent drop of sweetish taste, chemically very close to nectar. Bees produce honeydew honey in the absence of nectar sources near the apiary or in hot dry summers.

In accordance with the current State Standard, natural flower honey obtained from the collection and processing of nectar by bees is

sweet aromatic syrupy liquid or crystallized mass of various consistency and size of crystals, colorless or with a color of yellow, brown, brown and transitional tones between them.

By its botanical origin, flower honey, as one of the main products of the bee family's life, can be monofloral (if the nectar is collected mainly from one nectar-bearing plant) and polyfloral, if the nectar is collected by bees from several nectar-bearing plants (flower honey, combined).

In our country, there are more than 60 types of honey (linden, white acacia, buckwheat, sunflower, rapeseed, burdock, meadow, sainfoin, apple, rape, sage, etc.). Each species has a unique bouquet, i.e. its specific aroma and taste, its color and consistency, appropriate nutritional and medicinal properties.

II. CHEMICAL COMPOSITION OF HONEY AND ITS NUTRITIONAL VALUE

The chemical composition of honey is unstable and subject to significant fluctuations. This diversity depends on the composition of the nectar of the melliferous plants or the type of honeydew; from the soil on which they grow; time elapsed from collecting nectar to receiving the finished product; on the method of obtaining honey from combs (gravity [1], centrifugal, pressed and melted); the term and conditions of honey storage (dishes, temperature, storage location, etc.).

Feeding bees with sugar syrup and minerals has a significant effect on the composition and nutritional value of honey. The fluctuations in the quantitative content of water (from 16 to 25%) and sucrose (from 0 to 3%) are especially significant in various honey samples. For example, when feeding bees with sugar syrup, the sucrose content in honey can increase to 5–10 and even up to 20%, although in accordance with the regulatory document

Honey obtained from combs exposed to the sun (GOST 19792-87), this figure should not exceed 6%. The possible spread of the quantitative content of the main active substances in the composition of honey, depending on the above conditions, is clearly shown in Table 1.

Table 1

The chemical composition of honey

Название БАВ	Количественное содержание БАВ, %
Инвертированный сахар (глюкоза, фруктоза)	65–80
Сахароза	1–5
Декстрины	2–10
Азотистые вещества	0,1–1,0
Органические кислоты:	
- определяемые по муравьиной кислоте	0,05–0,2
- определяемые в градусах кислотности	1,0–4,0
Минеральные вещества	0,1–0,2
Витамины (В1, В2, В6, С и др.)	0,5–6,5 (на 100 мг меда)
Вода	15–20
Ферменты инвертаза, диастаза (амилаза)	имеются

The main component of all types of honey is carbohydrates. In percentage terms, in a natural product, glucose is about 35%, and fructose is about 40%. They are obtained from nectar in which they are in a free state, or from sucrose due to its breakdown by enzymes. Glucose and fructose make up honeyinverted sugar. The more invert sugar, the more valuable honey is. Thesesugars determine the dietary properties of honey, because they do not require additional processing in the gastrointestinal tract, quickly and almost 100% (like, in fact, all other components of honey), are absorbed and assimilated in the human body. This property of honey is of great importance for debilitated, malnourished patients, patients with digestive problems, persons of geriatric age and children. Sucrose in flower honey contains only up to 5%. This percentage can be higher during a high honey harvest, when the enzymatic processing capacity of bees is impaired by a large inflow of nectar or honeydew. An increase in sucrose is observed in honey obtained from bees with a decreased activity of the salivary glands, as a result of which optimal processing of sucrose enzymes from nectar or honeydew is not performed, and also with special feeding of bees with sugar. Of course, sucrose is considered a significantly less valuable product in the diet than glucose and fructose.

An important component of honey are the enzymes invertase, diastase, amylase, catalase, peroxidase, etc. These are complex organic catalyst substances that significantly accelerate the processes of food breakdown and oxidation, its digestion and assimilation. The enzyme invertase is involved in the breakdown of ordinary sucrose (complex carbohydrate) into easily digestible carbohydrates: glucose and fructose; the enzyme amylase (diastase) breaks down the complex carbohydrate starch to maltose, etc.

Organic acids (malic, lactic, citric, formic, tartaric, etc.)determine some, not perceptible to the taste, acidity of honey (normally it ranges from 1o to 5o according to Turner). They prevent the development of microorganisms in it and, together with its constituent aromatic substances, give honey an original bouquet, increase appetite and stimulate the secretory activity of the digestive glands,

promoting digestion and absorption of food. It is believed that organic acids have a beneficial effect on the well-being of a person in general.

The composition of honey also includes various mineral salts: macroelements (sodium, potassium, calcium, magnesium, phosphorus salts) and about 30 microelements (salts of copper, manganese, iodine, zinc, aluminum, cobalt, nickel, etc.). It is the presence of salts and other minerals that mainly determines the color of honey. Many mineral salts, especially trace elements, although they are necessary for the body in small or negligible amounts, play a very important role in ensuring the activity of vital organs and systems, in the normal course of metabolism. The intake of acutely deficient microelements with honey in the body eliminates their possible deficiency. Many trace elements (for example, magnesium, sulfur, phosphorus, iron, iodine, etc.) are found in honey in the same concentration and in the same ratio to each other as in human blood.

Thus, when comparing the mineral composition of honey and human blood, the difference is insignificant. This similarity makes honey akin to a living organism; when taking honey, determines its rapid assimilation along with the enzymes present in honey. Therefore, today honey is one of the most effective remedies for the treatment of microelementosis.

Pollen is a natural admixture to honey. The presence of pollen in it testifies to its naturalness. By the nature of the pollen grains, it is possible to establish from which plants the nectar was collected, i.e. set the type of honey. 1 kg of honey can contain tens and hundreds of thousands of pollen grains. Pollen enriches honeyprotein substances and a number of vitamins. These are mainly B vitamins (B1, B2, B6 and B3 - pantothenic acid) and C, although a number of others are also present - vitamins PP, K, E, carotene - provitamin A. The number of the latter is variable and is practically of a secondary nature.

With a deficiency of vitamins of group B and C, many links of metabolism are disrupted, which primarily affects the activity of the cardiovascular and nervous systems. This is usually manifested by the appearance of weakness, fatigue, headaches and pain in the region of the heart. Reduced mental and physical performance, increased susceptibility to various infectious diseases. The use of honey, due to the replenishment of the deficiency of vitamins and microelements, helps to restore metabolic processes and increase the immune status, especially in the elderly.

In a small amount, honey contains coloring yellow and green pigments: carotene, xanthophyll, chlorophyll, aromatic substances that differ in strength, character and quality of smell. The taste and commercial qualities of honey largely depend on them. In addition, histamine and acetylcholine are found in it. There are also colloidal substances - the smallest particles insoluble in water, which are constantly suspended in honey. They contain a significant amount of pollen grains, proteins, wax particles, silicon dioxide, etc.

The chemical composition of honeydew honey

In accordance with the State Standard, honeydew honey is classified as a natural beekeeping product. It differs from flower honey, first of all, in less attractive color - from dark (black, tarry) and dark brown (honey from various deciduous tree species) to dark green in the cells of combs; from coniferous trees can be light yellow. Compared with flower honey, honeydew honey has: less pronounced aroma; lower content of glucose, fructose, enzymes; less pleasant, and sometimes even unpleasant sourish specific taste or bitter aftertaste. In consistency, it is thicker than flower, syrupy, stringy, does not melt in the mouth for a long time.

Crystallizes very slowly. However, honeydew honey contains more nitrogenous protein substances; 3.5 times more vital mineral salts of manganese, iron, phosphorus and cobalt; 1.7 times more organic acids and potent phytoncides, especially honey from mountain-forest areas, which has a high antimicrobial activity. According to a number of authors, it can be significantly higher than that of flower honey. However, according to other sources, honeydew honey has significantly weaker bactericidal properties compared to flower honey. Honeydew honey contains more dextrans - intermediate decomposition products of starch, sucrose and ash.

The chemical composition of honeydew honey: fructose - 37%, glucose - 31%, sucrose - 1-16%, dextrans - 11%, proteins - 3%, acids and minerals - 0.7%.

Besides honeydew honey contains raffinose, maltose, melezitose and 7 more unidentified sugars. Of the free amino acids, alanine, arginine, aspartic and glutamic acids, cystine, glycine, histidine, leucine, lysine, methionine, proline, serine, threonine, tryptophan, tyrosine, and valine were found.

The most characteristic feature of honeydew honey is a high ash content (8 times more than in flower honey). The total acidity of honeydew honey is 2.5 - according to Turner.

In our country, honeydew honey is mainly used in bakery and confectionery production. Although, due to its rich and unique chemical and mineral composition and due to its increased alkalinity, honeydew honey can be used as a food product with a wide therapeutic and prophylactic effect in a number of diseases. Nutritionally, like the darker types of flower honey, it is considered even healthier than flower honey.

Artificial honeys are obtained by acid hydrolysis (using lemon or other organic acids) beet or cane sugar, as well as the juice of watermelon, melon, grapes, etc., evaporating it to the desired density. In terms of the content of glucose, fructose and other easily digestible monosaccharides, such honey is similar to bee honey. Watermelon, melon and other honeys are prepared from the pulp of vegetables and fruits by squeezing, filtering and evaporating in an open container to the consistency of honey. Some natural honey is sometimes added to add aroma and taste. The result is a good-quality food product with a sweet taste and pleasant aroma with a large amount of easily digestible carbohydrates and minerals. Such honey has no therapeutic and prophylactic value, but is valued as a dietary food product.

An indispensable condition for the successful medical use of honey is its quality, which depends on a whole range of factors - from the health of bees to the storage conditions of the finished product. When choosing honey, it is necessary to pay attention to the appearance of the product - fresh honey is a transparent semi-liquid mass that gradually crystallizes and hardens over time. Ripe honey is wound on a spoon (stick) like a ribbon and slowly flows down from it in continuous threads. Unripe honey contains significantly more water and simply flows off. Sour, sour or adulterated honey is also more liquid. The color of honey can be different depending on the coloring substances found in the nectar (carotene, xanthophyll, chlorophyll-like substances, etc.) - from colorless, light yellow and other shades of it to brownish-green and even black.

The smell of honey is due to the presence of volatile organic substances in the original nectar of flowers. These are essential oils with a fairly high specificity, which makes it possible to determine the origin of honey with high accuracy. However, some varieties, such as chestnut, rapeseed, and honeydew honey,

have a weak aroma, by which the variety cannot be identified.

Due to the combination of aroma with the sweetness of sugars and acidity due to the presence of organic acids, honey has a sweet and at the same time slightly sour taste. Such varieties as chestnut, tobacco, willow have a bitter taste.

The sweetest taste is found in honey, in which fructose is the predominant sugar.

Storage of honey

For medicinal purposes, it is advisable to use fresh honey or honey with a shelf life of no more than a year. The medicinal properties of honey largely depend on the conditions of its storage.

Honey must be stored in a tightly sealed container (hygroscopic, absorbs moisture from the air); in a cool (in the warmth, fermentation processes begin) dark place (under the influence of both direct sunlight and scattered light, enzymes are destroyed, especially inhibin and catalase, i.e. antimicrobial activity, vitamins decrease, partial decomposition of sugar is noted, darkening of honey). At home, it is advisable to store honey in the refrigerator.

When honey is stored for more than one year, there is a gradual weakening of its biological activity. For example, at a temperature of 23-28-C for 8-12 months, the amount of inhibin, glucose and fructose decreases by 5-10%, vitamins B1, B2 and C - by 10-20%; the diastase number falls by almost half, the amount of sucrose and organic acids increases.

When honey thickens and crystallizes, it is not recommended to heat it above 40-C (approximately the same temperature in a bee's nest, and, thus, it should not change the natural state of honey). With prolonged heating and temperatures above 40-C, almost all biologically active components are partially or completely destroyed. First of all, enzymes (diastase is the most sensitive, then catalase, invertase and phosphatase), then vitamins, proteins, inhibin, glycosides and aromatic substances. High temperature practically does not affect sugars, therefore only they remain in their original state and do not lose their properties after heat treatment of honey.

III. PHARMACOLOGICAL PROPERTIES OF HONEY

The chemical and biological composition of honey, which, according to various sources, includes more than 70 different biologically active substances and elements, makes it not only nutritious, but also an important object from a pharmacological point of view. Based on a wide range of biologically active substances, the effect of honey on the human body is diverse. The following types of its pharmacological action have been clinically confirmed: anti-inflammatory; diaphoretic; antispasmodic; regenerating; diuretic; sedative-hypnotic; detoxifying.

In particular, the anti-toxic effect is explained by the fact that honey catalase neutralizes hydrogen peroxide, which is formed in the human body as a result of exposure to various adverse factors: bacterial and viral infections, sudden weather changes, stress conditions, overwork, etc. (hydrogen peroxide, lingering in cells liver and erythrocytes, disrupts their vital activity).

It is interesting that honey has a double effect on appetite: it enhances the weakened one, inhibits the increased one; increases or decreases the secretory function of the stomach, depending on the method and conditions of use. It has a normalizing and laxative effect on the intestines with weak motility and constipation, especially in combination with wheat bran, and in combination with acidophilic milk and other fermented milk products, honey helps to restore intestinal microflora

after some infectious diseases (dysentery, salmonellosis) and antibiotic treatment. With dysbiosis, the combination of honey with drugs such as colibacterin, bifikol, bifidumbacterin, lactobacterin is especially effective.

Honey also has antiallergic effect and increases the immunobiological resistance of the body. The anti-allergic properties of honey are of great interest. On the one hand, honey is distinguished by sensitizing properties, on the other hand, it is desensitizing. Animal studies have shown that these properties depend on the dosage and method of use of the honey. Thus, large doses of honey with a single subcutaneous injection or as an application in the nasal passage lead to sensitization of experimental animals. However, prolonged use of honey inside at 3 g per kg of animal weight (several doses daily) does not lead to sensitization, but increases the protective properties of the animal's body. The introduction of honey by an aerosol apparatus to sensitized animals in the form of inhalations in more than 50% of cases causes nonspecific or specific desensitization.

The proven beneficial effect of honey on the cardiovascular system. At the same time, an increase in the rate of metabolic processes, an improvement in the nutrition of the heart muscle, a noticeable increase in muscle performance and contractile activity of the heart were noted. This effect of honey is enhanced by microelements and biogenic stimulants that activate the activity of tissue respiration enzymes and increase the overall vitality of the body. Literary data sometimes raise questions. In particular, in one of the publications it is reported that with a regular daily intake of 100–150 g (!) Of honey instead of sugar, it has a pronounced capillary-strengthening effect. In our opinion, this kind of dosage recommendation (150 g per day) should be given with caution, especially in patients with a tendency to high blood sugar levels.

The antimicrobial effect of honey is known from traditional medicine in many countries. It has been reliably shown that it has a pronounced antimicrobial effect even in significant dilutions: a 9–10% solution of honey kills many types of microorganisms in 24–48 hours. This effect is due to the presence of a number of biologically active substances in honey: first of all, phytoncides, as well as sugars, organic acids, inhibin and glucose oxidase enzymes. It has been established that the antimicrobial properties depend primarily on the type of plant from which the honey was extracted. For example, in relation to *Escherichia coli*, chestnut honey, mountain honey and honey from oregano nectar have the strongest effect, while *Staphylococcus aureus* is more strongly influenced by linden, thyme and some other species.

The results of a study of different varieties of honey show that a wide range of pronounced antimicrobial activity is due to various types of phytoncides contained in it. Moreover, at higher dilutions this action is bacteriostatic, at lower dilutions it is bactericidal. Antimicrobial properties are most pronounced in relation to gram-positive cocci (staphylococci and streptococci), bacteria (diphtheria bacteria), bacilli (*Bac. Anthracis*, *Bac. Mesentericus*), but gram-negative microorganisms are less sensitive to the action of honey.

Honey has antiprotozoal properties. The research results show that the full range of dilutions - from 1/5 to 1/80 - in all tested varieties of honey showed a bactericidal effect on *Paramaecium caudatum*, *Stylonichia mytilis*, *Stenor coeruleum*, *Cepeda dimidiata* *protociliata*, *Euglena viridis*, *Amoeba limax*, *Rotharia chilomonas*, *Trychomon vaginalis*. For comparison, in table 2, we present data on the intensity of the antimicrobial action of garlic phytoncides, a 20% solution of lime honey and penicillin.

Table 2 shows that the antimicrobial activity of honey is comparable to the action of phytoncides of garlic and significantly exceeds the intensity of the antibiotic action of penicillin.

Thus, the chemical composition of honey, studied using modern methods of analysis, makes it possible to explain the widest spectrum of biological activity and therapeutic use of this product from ancient times to the present day. Today it is considered proven that taking honey helps to improve general well-being, increase mental and physical performance, as it promotes the expansion of blood vessels in the brain and heart, improves the activity of the nervous and endocrine systems.

table 2

The intensity of the antimicrobial action of garlic phytoncides, 20% solution linden honey and penicillin

Вид микроорганизмов	Время (сек.) наступления дегенеративно-некротических изменений простейших		
	фитонциды чеснока	20% липовый мед	пенициллин 20000 МЕ в 2 мл воды
<i>Amoeba limax</i>	120	40	300
<i>Paramecium caudatum</i>	55	9	100
<i>Rotharia chilomonas</i>	130	50	180
<i>Bac. subtilis</i>	80	35	180
<i>Euglena viridis</i>	60	30	90

IV. METHODS OF APPLICATION OF HONEY IN VARIOUS TRADITIONAL SYSTEMS OF THE WORLD

1. Oral administration

Ingestion is the traditional method of introducing drugs into the body. Honey is usually taken in its natural form, as well as in the form of solutions, mixtures and tablets made on its basis. Subject to the technological regulations in the process of manufacturing medicines, it retains its medicinal and nutritional properties.

To maximize the antimicrobial and anti-inflammatory effects, honey should be taken in small portions (one teaspoon) and retained in the mouth for as long as possible. With this method of administration, substances with an antibacterial effect are absorbed through the mucous membrane of the oral cavity and pharynx and exhibit both resorptive and local effects. It has been established that after the resorption of honey in the oral cavity, the number of pathogenic microorganisms in the mouth, throat and nose decreases, and with rapid swallowing, a similar effect is not observed.

If it is necessary to use the antibacterial effect of honey for diseases of the gastrointestinal tract (enteritis and colitis), it is recommended to use it in the form of a thick solution (with a concentration of more than 10%) in water at room temperature. If honey is used as

expectorant, then it is better to take it with milk, infusion of breast collection or mixed with butter.

Therapeutic single and daily doses of honey vary depending on the type of disease. The average daily dose in domestic traditional medicine is 100 g for adults and 30-50 g for children. The dose is divided into several doses. A dose of more than 200 g per day is considered inappropriate, and with prolonged use - harmful.

2. External (local) application

Local application of honey is widely used in various traditional medical systems of the world for skin diseases. The affected area of the skin can be lubricated with natural honey or compresses and baths with a 20-40% solution of honey in water can be applied. For example, purulent and infected wounds are usually recommended to be smeared with honey first and then a light sterile dressing should be applied. For the treatment of patients with neuroses and with depletion of the central nervous system, honey-foam baths are used, and in the presence of pain, compresses with honey are applied. A solution of bee honey is successfully used to rinse and rinse the mouth for sore throat and gums.

For eye diseases (with conjunctivitis, keratitis, wounds of the conjunctiva), apply ointment or drops of 20-30% solution of bee honey in distilled water.

For diseases of the ears and paranasal sinuses, use a 20-30% solution of honey as drops or for washing. In addition, local applications are carried out in the nose with pure honey, better sugared, adding to it anesthesin or other substances that reduce its irritant effect on the mucous membrane. With a glass stick, a piece (about the size of a bean) of honey is injected into each nostril. From the warmth of the body, honey begins to melt and flow down the mucous membrane to the pharynx and larynx, where absorption takes place.

Honey is well absorbed by the rectal mucosa (for this, it is administered with enemas or in the form of suppositories). An enema is prepared immediately before the introduction in a 20-30% solution of honey with a temperature of 38-40°C. Pre-do a cleansing enema. Suppositories are successfully used for nervous exhaustion, anemia, inflammatory diseases of the pelvic organs, and impotence in men.

For the aforementioned diseases, sitz baths are also used. 50 ml of chamomile infusion, coltsfoot, St. John's wort (or their mixture) is poured into a basin, 30-50 g of honey and 5 liters of warm water are added. The procedure lasts 40 minutes, the course of treatment is 12-15 sessions.

From traditional medicine came the use of honey in gynecological practice. For example, local vaginal applications are performed with floral sugared honey. After examining the vagina and cleaning the secretion with gauze, 15-30 g of honey on sterile gauze is injected into its front part. 1 procedure is carried out daily. The course of treatment is from 10 to 20 applications. With *Trichomonas colpitis* and vaginal leucorrhoea, vaginal douching is performed with a thick (with a concentration of more than 10%) honey solution. For inflammatory diseases of the female genital organs, sitz baths are used (see above).

3. Application of honey by inhalation

Honey solutions are well sprayed with aerosol machines. Various biologically active substances of honey pass into the jet released during spraying, which determine its medicinal properties, including those with antimicrobial action. For inhalation, a fresh 10-40% solution of honey is prepared daily (the sensitivity of patients to honey varies considerably). It is necessary to use pure flower honey, the antimicrobial properties of which have been previously established by bacteriological research. The solution is prepared

subject to the rules of asepsis by dissolving honey in distilled water at room temperature. The procedure lasts 20 minutes. When the resulting aerosol is inhaled, the active substances enter the body through the mucous membrane of the respiratory tract and have an appropriate therapeutic effect, bypassing the digestive system. Especially indicative in this respect are studies carried out on patients with rhinitis. The secretions of the nasal mucosa were cultured on a solid nutrient medium before and after two successive aerosol inhalations. In crops made before inhalation, abundant growth of microorganisms was observed. After inhalation on the nutrient medium, only a small number of microorganisms were found.

Bee honey can also be used in the form of steam inhalation. The therapeutic effect in this case is weaker, so longer treatment is needed.

4. Application of honey by electrophoresis

A series of relevant clinical trials have revealed that by ion galvanization into the patient's body, it is possible to introduce in the ionic state the substances found in bee honey, which have an antibacterial effect. Treatment is carried out in a course of 15-20 procedures, daily. A 50% honey solution is used.

V. USE OF HONEY IN MODERN CLINICAL PRACTICE

When treating various diseases with honey, it should be borne in mind that honey is a food product with a number of unique properties that allow it to be used as a means of non-specific therapy, normalizing the physiological functions of the body, stimulating its protective and regulatory functions. Therefore, as a rule, it is recommended in the complex treatment of a wide variety of diseases (in the absence of contraindications) and is very rarely used for monotherapy.

In some cases, the effectiveness of therapy may also depend on the choice of honey variety. So, for diseases of the respiratory tract, mountain honey is recommended, as well as honey from oregano, thyme, linden; for diseases of the digestive system - steppe, with oregano, thyme and mint; cardiovascular system - with lavender, mint, steppe and forest honey. For renal diseases, chestnut honey is most effective, as well as honey from field herbs and fruit crops.

The use of honey for diseases of the stomach and intestines

a) Gastritis

The study of the effect of honey on the gastric juice and secretory activity of the stomach of healthy people, patients with gastritis with high acidity and patients with gastritis with low acidity of gastric juice made it possible to establish that honey reduces the secretion of gastric juice in hypertrophic gastritis, and in achilia increases the amount of pepsin and acidity. Daily use of 30 to 100 g of honey instead of sugar and other sweets has a beneficial effect on the stomach and intestines, contributes to their normal functioning, regulating not only their secretory, but also motor functions.

Patients with hypertrophic and hyperacid gastritis are prescribed honey for 90-120 minutes before meals, which reduces the acidity of gastric juice and inhibits the release of pepsin.

Drinking honey just before a meal increases the acidity of gastric juice. Thus, honey is usually prescribed for patients with gastritis with reduced secretory activity and low acidity.

It should also be borne in mind that honey dissolved in warm water is quickly absorbed, lowers the acidity of gastric juice, does not irritate the mucous membrane

stomach and duodenal ulcer, normalizes the peristalsis of the stomach and its evacuation function, quickly relieves pain attacks, helps to thin mucus, improves appetite. Honey taken with cold water stimulates the motor function of the stomach and intestines, increases their secretory activity, helps to restore appetite and improve digestion.

Clinical experience of use honey confirms enough high
the effectiveness of the treatment of gastritis. Honey is taken 3-4 times a day. The daily dose should not exceed 150 g. Recommended in the morning and evening, 30 g, in the afternoon - 40 g. Duration of treatment - 1-2 months. The method of application depends on the nature and symptoms of the disease (see above).

b) Peptic ulcer and 12 duodenal ulcer

Based on the results of studies of the effect of honey on the normal and pathological activity of the gastrointestinal tract and its general effect on the body, as well as taking into account the experience of traditional medicine, honey is prescribed as an additional or even the main agent in the treatment of gastric ulcer and duodenal ulcer.

Bee honey contributes to the proper functioning of the stomach and intestines; reducing the irritability of the nerve endings of the mucous membrane of the stomach and duodenum, has an analgesic and enveloping effect. It has a calming effect on the central nervous system, which is important, since among the factors involved in the development of these diseases, emotional stress and increased excitability of the nervous system are especially distinguished.

The composition and pharmacological action of honey determine a decrease in the rate of enzymatic processes in the stomach, since the sugars prevailing in it (glucose and fructose) are used without additional transformations. The presence of a micro-level of radioactivity in honey, as well as biostimulants and antimicrobial substances, stimulates the regenerative capacity of cells, which leads to ulcer healing. In addition, honey also has a general strengthening effect, which extends primarily to the nervous system, the state of which plays an important role both in the onset and course of this disease. Medical treatment of peptic ulcer disease is well combined with medication.

For peptic ulcer disease, honey should be taken for 90-120 minutes before meals or 3 hours after meals. A good result is observed when taking honey diluted with warmwater. This contributes to a decrease in the tone of the stomach walls, rapid absorption of honey by the intestines, a decrease in the acidity of gastric juice, normalization of gastric juice secretion, elimination of nausea and heartburn, faster pain relief. The course of treatment is from 1 to 2 months. It is recommended to take 30 g of honey in the morning and in the evening, and 40 g in the afternoon. In case of incomplete recovery, the treatment can be repeated.

Patients with stomach ulcers on the background of decreased secretory activity, with low acidity, should take honey directly (a few minutes) before meals.

Another effective method of treating honey for stomach and duodenal ulcers, which came into modern clinical practice from traditional medicine, is to take 2 tablespoons of liquid honey 1 time per day on an empty stomach, usually late at night.

Diseases of the liver and biliary tract

In folk and official medicine, honey treatment is widely used for liver diseases, hepatitis of various etiologies, including epidemic ones. As a rule, in these diseases, many physiological functions of the liver are disrupted, and, above all, neutralizing and antitoxic. A wide range of pharmacological

activity of honey allows you to recommend it for various diseases of the liver and gallbladder. Bactericidal substances of honey - phytoncides and glucose oxidase - suppress the development of putrefactive flora of the intestine; catalase neutralizes hydrogen peroxide retained in the liver; fructose provides the formation of glycogen - the main energy material of the liver; trace elements create optimal conditions for the functioning of liver enzymes.

The complex of the listed biologically active substances promotes the activation of all processes occurring in the liver, especially the increase in its antitoxic function, including with degenerative changes - cirrhosis.

Therefore, to increase the detoxification function of the liver with hepatitis, before operations in the abdominal cavity, etc., it is recommended to take honey in the morning and in the evening, one teaspoon in half a glass of apple juice (the acidity of apple juice contributes to a better manifestation of the antibacterial properties of honey).

In folk medicine for diseases of the liver, gallbladder, spleen, it is recommended to mix a glass of honey and a glass of black radish juice and take 1/2 cup 3 times a day. The systematic use of honey for these diseases prevents the formation of stones in the gallbladder, improves the processes of tissue metabolism.

Bowel disease

In diseases of the intestines, in particular, enteritis and colitis, honey has found limited use, since its bactericidal and anti-inflammatory properties are practically not manifested under these conditions. Passing through the stomach and duodenum and being exposed to digestive enzymes and juices, honey almost completely loses its antimicrobial properties. However, when directly injected into the stomach, duodenum and intestines through a tube, honey and its solutions of various concentrations (due to the presence of bactericidal substances - phytoncides, glucose oxidase, inhibin), significantly suppress the pathogenic and putrefactive microflora.

For the treatment of inflammatory processes in the lower parts of the large intestine (rectitis, proctitis, hemorrhoids, cracks, ulcers and erosion in the rectum), gauze and cotton swabs moistened with liquid honey or its 50% aqueous solution are rectally prescribed; microclysters are used with honey or Konkov's ointment (composition: honey - 34 g; fish oil - 64 g). In addition, 50-100 ml of a 50% aqueous solution of honey is injected into the intestine through a thick probe.

Due to the large amount of sugars and organic acids, honey has a laxative effect, stimulating intestinal motility, which is used for intestinal lethargy and constipation.

In the medical literature there are indications of the advisability of the medical use of honey in infants and premature babies (in the absence of allergies) for digestive disorders (dyspepsia, dystrophy) and other pathological processes.

Diseases of the oral cavity

For injuries and operations of the oral cavity, pharynx, larynx (in cases of impossibility of eating), honey is the most suitable food product and at the same time has a therapeutic (antimicrobial and hemostatic) effect.

Bee honey has bactericidal and antimycological properties, therefore it can be used for various bacterial and fungal diseases of the oral cavity and inflammation of the gums. In this case, rinse with a solution of honey or

retain honey in the mouth.

Diseases of the cardiovascular system

Due to the presence of a complex of substances, ensuring the normalization of metabolic processes, contractile activity of the heart muscle, honey, especially lavender, mint, forest and steppe, is an appropriate nutritional and therapeutic agent in the complex treatment of coronary heart disease, hypertension in the initial stage, myocarditis, coronary atherosclerosis, weakening of myocardial contractile activity, disorders heart rate, pre-infarction state, myocardial infarction.

After taking honey, glucose and fructose quickly pass into the bloodstream and serve as an energy substrate for the heart muscle and other tissues. The diuretic properties of honey are also important in the treatment of cardiovascular diseases. Long-term use of honey (from 1–2 months) promotes the expansion of coronary vessels, improves blood supply to the myocardium, normalizes nervous activity and blood pressure, and improves the general well-being of patients. Take honey 1-2 teaspoons 2-3 times a day (no more than 50-70 g per day) for 1.5-2 months with milk, cottage cheese, pomegranate juice, black currant, rosehip decoction, fruits and vegetables rich in vitamin C.

In folk medicine for diseases of the cardiovascular system, honey is also used with other medicinal and food plants: viburnum fruits, valerian preparations, black radish juice, onions (1: 1, 2-3 times a day, a tablespoon before meals for atherosclerosis), grated garlic (1: 1, 1 tablespoon 3 times a day 40 minutes before meals with endarteritis, varicose veins).

However, in case of diseases of the cardiovascular system, one should not consume large quantities of honey, especially with hot tea - this leads to general agitation, increased sweating and the appearance of tachycardia.

Diseases of the nervous system

With neuroses, neurasthenia, hysteria and insomnia, the normalizing and calming effect of the honey BAS complex on the central nervous system and the general strengthening effect on the body as a whole comes to the fore. Honey is prescribed at 100 (up to 120) g per day, taken in equal parts 3 times a day for 1-2 months. In case of sleep disorders of various origins and increased excitability, it is recommended to dissolve one tablespoon of honey in a glass of warm water or milk and drink it 30 minutes before bedtime. It is advisable to use flower honey (field and meadow), acacia or mint.

Kidney and urinary tract diseases

For these diseases, honey is recommended as an anti-inflammatory, diuretic. In addition, the fructose of honey has a positive effect on fat and protein metabolism, which allows maintaining a positive nitrogen balance when eating less protein. When honey is used in the diet of such patients (most often - salt-free), honey corrects the taste of food. It is recommended to use chestnut, meadow and field honey from herbs, from fruit crops, in particular, cherry honey, which exhibits high antimicrobial activity. For diseases of the kidneys and urinary tract, honey is prescribed at 80-100 (up to 120) g per day, preferably with lemon juice or rosehip decoction.

The use of honey in gynecological practice and urology

The effectiveness of the use of medotherapy for various gynecological and urological diseases has been clinically confirmed.

Local vaginal applications and vaginal electrophoresis with honey (course - 12 - 15 procedures) are successfully used in the complex treatment of *Trichomonas colpitis* and erosion of the cervix, vaginal and cervical leucorrhoea. In the treatment of metritis, parametritis and adnexitis, the electrophoretic method of using honey (15–20 procedures) is also effective. In the course of treatment, the inflammatory process, pain in the abdomen are objectively reduced, and the clinical picture of blood is normalized.

With *Trichomonas* disease in men, honey is used internally and the bladder is washed with a thick solution of honey using catheterization or electrophoresis of the bladder is performed. Honey and other apiproducs are widely used in the complex therapy of prostatitis, prostate adenoma and other diseases.

Acute viral diseases, diseases of the upper respiratory tractThe healing effect of honey in the listed diseases is due to antimicrobial, anti-inflammatory, expectorant, diaphoretic, detoxifying, increasing the body's resistance and general strengthening effect.

For colds, flu, diseases of the upper respiratory tract, lungs, it is advisable to use mountain honey, sweet clover, with oregano, with thyme, linden, 1 tablespoon at night (you can in a glass of hot tea, milk, with lemon juice). It is also advisable to take honey with medicinal plant preparations with diaphoretic and expectorant properties (thyme herb, violets, wild rosemary shoots, coltsfoot leaves, linden flowers, raspberries, marshmallow, elecampane root).

Inhalations with honey give a good effect, for laryngitis and sinusitis - iontophoresis with a 50% solution of honey (see the section "Using honey by inhalation" and "Using honey by electrophoresis").

In folk medicine, radish with honey is widely used for coughing: they make a depression in the root crop, put 2 tablespoons of liquid honey there, cover with thick paper and leave for 3-4 hours. Take a teaspoon of juice 3-4 times a day before meals and before bedtime. In chronic inflammatory diseases of the lungs and bronchi, honey is also used with horseradish juice or grated garlic in a 1: 1 ratio, take 1 tablespoon before bedtime, washed down with warm water.

In addition to the listed diseases, honey is widely used to treat wounds and skin diseases (see section "External use").

Preventive use of honey in old age

In older people, with aging, the regulatory influence of the central nervous system on the physiological functions of a number of vital organs and systems, which is carried out with the help of neurohumoral factors, in particular, acetylcholine and histamine, is naturally weakened. With age, the formation of acetylcholine in the nerve endings decreases. Therefore, regular intake of honey, one of the biologically active substances of which is acetylcholine, partially compensates for the lack of this substance. Thus, honey has a positive effect on the body, especially in case of heart rhythm disturbances and tachycardia.

It is also known that in the geriatric age, as well as during severe illness and during the period of convalescence, the production of histamine in the body decreases. As a result, the secretory function of the stomach, appetite decreases, digestion processes in

the whole. Histamine of honey compensates for the deficiency of this substance in the body, as a result of which the secretory function of the stomach and intestinal motility is stimulated, appetite is stimulated, the absorption of food is improved and conditions for recovery are created, and in the case of the elderly, the normal functioning of the digestive system is restored. In addition, honey increases the body's resistance to infectious diseases, improves the general condition of the body and appetite, normalizes sleep, which is very important for geriatric patients.

The recommended daily dose of honey (in the absence of contraindications) is no more than 80-100 g.

Vi. CONTRAINDICATIONS AND ORGANIZATIONS FOR TREATMENT WITH HONEY

Contraindications for honey treatment

1. Intolerance to honey (idiosyncrasy) or hypersensitivity to it.
Possible clinical manifestations of allergic reactions include: burning lips, general malaise, nausea, salivation, vomiting, increased blood pressure, pruritus, urticaria, the onset or exacerbation of existing dermatoses, palpitations, a feeling of suffocation, etc.
2. Acute inflammatory diseases of internal organs (acute gastritis, pancreatitis, exacerbation of gastric ulcer and duodenal ulcer, cholelithiasis and nephrolithiasis, etc.).
3. Obesity, diabetes mellitus.
4. Introduction of honey by inhalation at elevated temperature, tuberculosis lungs, severe emphysema, hemorrhage in the lungs and in the respiratory tract, heart failure caused by organic lesions of muscles (myocarditis) and heart valves, cardiac and bronchial asthma, pulmonary sclerosis.

Restrictions on the use of honey

1. For some skin diseases (dermatoses) caused by increased delay in the skin of carbohydrates (hyperglycoderma), acute articular rheumatism, acute and chronic cholecystitis, accompanied by stagnation of bile, chronic pancreatitis. Allowed for breakfast 1 dessert or teaspoon of honey in a glass of tea and the same - for dinner in a glass of warm water, preferably before bedtime.
2. With exudative diathesis - the intake of honey is reduced to a minimum.
3. Limit carbohydrates in old age, with atherosclerosis, enterocolitis, in within 3-4 months after resection of gastric and duodenal ulcers, resection of the gallbladder and removal of gallstones.

Thus, when prescribing honey treatment, as in the case of other natural remedies, a strictly individual approach to each patient is needed, the selection of the appropriate type of honey and its strict individual dosage in order to avoid the adverse effect of a large amount of easily digestible carbohydrates on the autonomic nervous system and general metabolism. substances.

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[\[1\]](#) Honey obtained from combs exposed to the sun

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