



## Pear (lat. Pýrus)

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**Abstract.** The article discusses the main properties of the pear and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The chemical composition and nutritional value of the product are indicated, the use of pear in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of pear on the human body under certain medical conditions and diseases are analyzed separately. The scientific foundations of diets with its application are considered.

**Keywords:** pear, benefit, harm, beneficial properties, contraindications

## Beneficial features

Table 1. The chemical composition of the pear (according to [Food+](#)).

Main substances (g/100 g):	Fresh pear [1]	Dried pear [2]	Pear canned in light syrup [3]
Water	83.96	26 , 69	84.46
Carbohydrates	15.23	69.70	15.17
Sugar	9.75	62.20	12.10
Squirrels	0.36	1.87	0.19
Alimentary fiber	3.1	7.5	1.6
Fats	0.14	0.63	0.03
Calories ( kcal )	57	262	57
Minerals (mg/100 g):			
Potassium	116	533	66
Phosphorus	12	59	7
Calcium	9	34	5
Magnesium	7	33	four

Sodium	one	6	5
Iron	0.18	2.10	0.28
Zinc	0.10	0.39	0.08
<b>Vitamins (mg/100 g):</b>			
Vitamin C	4.3	7	0.7
Vitamin PP	0.161	1.372	0.154
Vitamin E	0.12	0.06	0.08
Vitamin B6	0.029	0.072	0.014
Vitamin B2	0.026	0.145	0.016
Vitamin B1	0.012	0.008	0.010
Vitamin A	0.008	0.001	0

It should be borne in mind that the concentration of all minerals and some vitamins increases (often 4-5 times) in dried pear fruits. However, at the same time, the calorie content of the fruit also increases by the same 4-5 times due to a noticeable increase in the amount of sugar, so people who build their diet should take into account that fresh and dried pears in the diet cannot be considered interchangeable products.

### Medicinal properties

The medicinal properties of pear pulp are not due to the vitamin composition (there are relatively few vitamins in this fruit), but, first of all, the presence of:

- **dietary fiber** (pectin), which improves bowel function, is responsible for the elimination of harmful substances and toxins, lowers cholesterol;
- **potassium**, a heart-healthy mineral, thanks to which the pear demonstrates a slight diuretic effect;
- **folic acid** (up to 0.2 mg / 100 g, which is more than in apples and plums) and cobalt - hematopoietic elements involved in the formation of new cells;
- **arbutin** (up to 60 mg / 100 g in some varieties), which can prevent the development of pathologies of the kidneys and bladder.

One fruit of a moderately ripe pear contains up to 15-18% of the daily fiber requirement. These coarse indigestible fibers are necessary for the life of beneficial bacteria in the stomach, the activity of which largely determines the state of the body as a whole. Also, coarse fiber in the intestines acts as a cleansing sponge, stimulates the contraction of the intestinal walls, lowers cholesterol levels by binding its precursors (fatty acids), and can reduce the activity of sugar absorption. However, the riper (and, accordingly, softer) the fruit, the less coarse fibers remain in it.

Pear skin contains bioflavonoids, tannins, and arbutin, which has antiseptic properties. They provoke protein coagulation of bacterial cells, promote healing of damage to the mucous membrane of the alimentary tract. Since the fruits exhibit both antimicrobial and diuretic effects at the same time, the pear is useful in case of urinary tract infections.

In terms of quantity and quality of sugars, a pear is generally similar to an apple. However, in terms of the content of sorbitol (sweet glucite that replaces sugar), the pear is noticeably superior to its fruit competitor. There is especially a lot of sorbitol in the juice of unripe pear fruits, which is important for diabetics who use this food product as a sweetener. The pear is also ahead of the apple in terms of the content of chlorogenic acid (30-80 mg / 100 g), which gives the fruits diuretic and capillary - strengthening properties.

The controversial ability of pears to cause both a laxative and a fastening effect is widely discussed on the Internet. The reason for this is called different methods of processing the fetus - it is believed that fresh pear in large quantities provokes diarrhea, and pear broth, on the contrary, normalizes emptying. Representatives of the Clinic of the Research Center for Nutrition and Biotechnology explain this paradox by the different composition (and, accordingly, action) of the fruit pulp and its peel.

Pear pulp really has a laxative effect, so it can be eaten with constipation. But the skin of the fruit, which contains tannins, on the contrary, demonstrates a fastening function and is able to stop diarrhea and diarrhea. But since tannins manifest themselves more brightly in decoctions, such a "medicine" from the skin of a pear will act more efficiently than a raw fruit. At the same time, the pulp from a decoction or compote with diarrhea should still not be eaten - it can provoke the opposite effect.

### **In medicine**

In pharmacology, components obtained from various parts of fruits and plants are used. So, the peel of this fruit is rich in biologically active substances that have antiseptic properties, contains tannins, bioflavonoids. Arbutin (a glycoside found in the skin of the pear and even more in the leaves of the tree) is part of the medical preparations used to treat the urinary tract and kidneys.

Numerous nutritional supplements are produced based on pear components. And the Ukrainian manufacturer uses a concentrate of *Pyrus* tree shoots as a base element for his Forest Pear balm. *pyraster* - wild pear, popularly called "soletrus". The balm is declared as a powerful antitumor, wound healing, antirheumatic, antifungal and bactericidal agent. One bottle (20 ml) is enough for a course of treatment with the recommended intake 3-4 times a day, 1-2 drops of balm per glass of water.

### **In folk medicine**

Even the ancient Greeks, creating the traditions of European folk medicine, actively used pear fruits for the prevention and treatment of various diseases and conditions. They even saved themselves from seasickness by continuously sucking pieces of these fruits, due to which the characteristic signs of motion sickness disappeared - nausea and dizziness. The pear was also used as a medicine for mushroom poisoning. And pear seeds were used as an antihelminthic.

Modern adherents of naturopathy actively use both the fruits themselves and pear juice:

- treatment of urolithiasis and removal of inflammatory processes in the bladder;
- therapy for inflammatory lesions of the prostate;
- restoration of pancreatic function;
- normalization of the action of the heart muscle;
- activation of hematopoietic processes;
- stimulation of the kidneys and liver.

Some of these diseases and conditions are manifested by symptoms that may be the basis for the appointment of folk pear therapy. So, for example, fatigue, muscle pain, palpitations, sensitivity to cold, dizziness and loss of appetite may be signs of pathology of blood formation, problems with blood vessels and capillaries, or disorders of the heart, which becomes indications for treatment using decoctions and infusions of pears in as a therapeutic agent.

Pear, as one of the main medicinal ingredients, is also used by traditional healers in diagnosing urological inflammation and intestinal disorders. In addition to the fact that dietary fiber activates intestinal motility, tannins deprive pathogenic bacteria of mobility. In general, we must remember that

the pulp in large quantities will help to relax the digestive system, and the peel and decoction of the leaves, on the contrary, will strengthen it.

### Decoctions

For decoctions, a “wild pear” is more often used, the fruits of which are rarely eaten, but often, together with the plant part of the tree, are used in various folk medicinal practices.

- Escape from osteochondrosis. 1-2 young pear branches should be cut into pieces (5-10 cm long) and boiled in a liter of water (if necessary, the amount of raw materials increases proportionally). After boiling, the shoots are kept for another 20-30 minutes on low heat, after which the broth should cool and infuse for two hours. Then the raw material is removed, the liquid is filtered and taken daily for a month. Before a second course, take a two-week break.
- Dried pears for prostatitis. Dried pear fruits in the recipe are taken at the rate of 100 g per half liter of water. Dried fruits are first filled with water (about 30 C), infused for about half a day and only then sent to the fire until boiling. After cooling, the decoction is taken half a glass three times a day until symptoms are relieved.
- Dried pear skin for gastrointestinal upset. Half a glass of chopped dry skin is mixed with 3 tablespoons of oatmeal and poured with 0.5 liters of boiling water. The mixture is boiled for 15-20 minutes, and then cooled and infused for about an hour. The filtered liquid is taken half a glass before meals until the normal functioning of the gastrointestinal tract is restored.

Similarly, using dried pears with pulp and oatmeal, decoctions are prepared, which traditional healers recommend taking for allergies. Only in this case, usually porridge in a larger volume (100 g / 1.5 l) is boiled separately and mixed with pear broth (100 g / 1 l) after cooling. Drink one glass twice a day.

### infusions

In folk medicine, infusions from the pulp of fresh and dried pears, leaves and flowers of the plant are used by healers to treat a wide range of diseases from prostatitis to adenoma.

- Infusion of dried fruits from adenoma. For the treatment of benign tumors of the glands, modern healers recommend pouring 250 grams of dried fruit with a liter of boiling water and leaving it in a thermos for 8-9 hours. After aging in hot water, the fruits are ground and filtered. Take the remedy should be 4 times a day for a quarter cup.
- Leaf infusion for rheumatism. 2 tablespoons of dried leaves are poured into a glass of hot water and aged for 2 hours. "Medicine" is taken three times a day, 2 tablespoons.
- Infusion of leaves for dermatitis and rashes. An agent for external use is recommended as an anti-inflammatory in the treatment of oily facial skin with seborrhea, as well as with dermatitis. The astringent properties of the infusion help to reduce the treatment time for teenage acne. To prepare the infusion, dried leaves collected during the flowering period of the plant are usually used. They are poured with boiling water at the rate of 25-30 g per 100 ml and allowed to brew for 5-8 hours.
- Infusion of leaves from prostatitis. For infusion, you will need about 1/3 cup of dry leaves, which are poured with boiled water for 5 hours. After straining, the infusion is recommended to be taken daily until cured.
- Infusion of flowers from prostatitis. Flowers are taken at the rate of 30 g per 250 ml glass of boiling water. The flowers filled with hot water are infused for 10 minutes. Then the infusion is divided into 3 servings and drunk throughout the day.

### in oriental medicine

Pear fruits came to the attention of ancient Chinese healers at least 2 thousand years ago. However, in those days, all medical treatises spoke, first of all, about the possible harm of pears. In particular, a 3rd-century collection entitled "Herbalism Wu Pu" warns that pears should not be eaten by pregnant women, women after childbirth, the sick, and all people with stab and cut wounds. Even healthy people, according to the author, with excessive use of pears risked getting sick. A 12th-century book, The Expanded Meaning of Herbalism, clarified that if these fruits were consumed in excess, damage to the spleen would occur. And only drunkards can love pears, because these fruits quench their thirst.

This attitude is largely provoked by the place of the pear on the famous Yin-Yang scale. The closer the food product is to the value of the equality of the two principles - to zero on a scale from -3 (Yin) to +3 (Yang), - the more useful it is. However, the pear has a value of -3, concentrating the maximum Yin (feminine), so this fruit is contraindicated for people with a good balance.

In the later medical writings of Chinese healers, the attitude towards the pear begins to be gradually revised. Progressive specialists for their time, one after another, begin to admit the possibility of using a pear in certain conditions in the treatment of specific diseases. In the book of 1409, "Recipes for all kinds of help," there is such a recipe for "Drink for the treatment of diabetes": from the fruits of one of the three varieties (e-li, yang - shui - li or jiang - nan - xue - li), juice is squeezed out, boiled with honey, bottled and sometimes taken after dissolving in cold or hot water. After recovery, the drug should be stopped.

A detailed description of the use of pears was left in his herbalist of 1590 by the famous healer Li Shizhen. He collected several cases of almost magical cures for diabetes described in various sources, after which he reasonably doubted that the influence of pears was as harmful as it was claimed in ancient medical treatises. In particular, the stories cited tell of people who were considered hopelessly ill, but healed either by a horse veterinarian, or by a monk, or by a doctor. In these stories, patients were advised to eat fresh pears if possible, but if it doesn't work out, then at least drink pear juice or soak dried fruits in boiling water.

The cumulative experience of using pear in traditional Chinese medicine can be summarized in the following recommendations:

- Pears can and should be eaten with a syndrome that is called "heat syndrome" in Chinese and Tibetan medicine. This syndrome can also include manifestations of diabetes, and in addition to them, such signs as the desire for coolness, dry mouth (which you want to relieve with cold water), redness of the face and tongue (up to raspberry color).
- Pears are acceptable (but in moderation) to get rid of a hangover and thirst in the summer heat.
- These fruits are contraindicated in the "cold syndrome", which is manifested by chills, freezing of hands and feet, a pale tongue, and a desire to warm up with hot drinks.
- It is undesirable to include pear fruits in the diet after childbirth and with significant blood loss, accompanied by pallor, dry skin, dizziness, and tinnitus.

Cough syrup made from pears is still very popular in China. But its use also depends on the nature of the cough and the underlying syndrome. So, with the "heat syndrome", which is characterized by a cough with viscous and difficult to separate dark yellow sputum, the syrup is indicated. And with the "cold syndrome" with a cough, accompanied by copious secretions of rare pale sputum, it is forbidden to drink such a syrup.

Ancient Arab healers also used a boiled or baked pear for lung diseases to relieve the cough reflex. Pear tree resin was also used for this, washing down a few grams of gum with water.

## In scientific research

In recent years, in scientific research on pears, scientists were mainly interested in the effect of the fruit on the cardiovascular system, antidiabetic, anti-inflammatory, antioxidant properties, as well as the ability of the fruit to reduce the risk of developing certain cancers.

- A large-scale statistical study conducted by members of the European Prospective investment into Cancer and Nutrition (EPIC) for 8 years, studying the eating habits of almost half a million people, has revealed some of the relationship between diet and the occurrence of lung cancer. So it was found that in the group of non-smokers, the consumption of fruits (and especially pears and apples) reduced the risk of this disease, despite the fact that no such dependence was found for vegetables. ( In the group of smokers, however, the incidence of lung cancer was lower in people who actively included vegetables in the diet) <sup>[4]</sup> .
- More recently, in 2019, American scientists studied the effect of daily consumption of fresh pears on the heart condition of middle-aged and older people. In a placebo-controlled clinical trial over 3 months, there was a trend towards a slight decrease in blood pressure at the time of contraction of the heart muscle, and a significant decrease in pulse pressure (this is the difference between the pressure at the time of contraction and relaxation of the heart muscle). In addition, a qualitative decrease in waist circumference was recorded in the group of subjects who daily received two fresh medium-sized pears for meals. <sup>[5]</sup> .
- The ability of biologically active components derived from pears to exhibit anti-diabetic properties was tested on laboratory mice. During the experiment, the ability of pear extracts to stabilize the development of type 2 diabetes was established. Moreover, when comparing the concentration of active components in the pulp and peel of a pear, a significant predominance of these components in the peel was recorded (2-18 times, depending on the variety) <sup>[6]</sup> .
- An in vitro laboratory study conducted by Chinese scientists revealed which popular varieties in this country show the highest antioxidant activity, and which show the most pronounced anti-inflammatory effect. Experts have established a direct correlation between the high concentration of triterpenoids in the Dangshansu variety and the anti-inflammatory abilities of the fruit. Also, a very high content of phenols, flavonoids and various anthocyanins was noted in the Xuehua and Nanguo varieties , which determined their special antioxidant capabilities <sup>[7]</sup> .

Scientists are generally quite often interested in the antioxidant capabilities of pears and products based on them (for example, chips), which indirectly indicates the high potential of this fruit in the fight against free radicals that provoke lipid oxidation that is dangerous for health, damage to membranes (at the cellular level) and vessel walls. .

## **Weight regulation**

The pear seems too sweet to be considered an effective weight loss aid with so many sugars. Meanwhile, fresh pear fruits have only 40-60 kcal (depending on the variety), and no more sugar than apples, which simply seem less sweet due to the acids they contain.

There is a popular 7 day diet that uses pears as one of the main ingredients. It is believed that with its help, without harm to health, you can “lose” up to 5 kg.

1-2 day:

- Breakfast: 250 ml of yogurt with rye bread, 2 pears.
- Lunch: boiled chicken breast (100 g), 3 tablespoons of boiled rice.
- Dinner: 2 pears.
- A cup of green tea without sugar before bed.

3-4 day:

- Breakfast: 2-3 rice cakes, 1 pear.
- Lunch: 50 grams of hard cheese with rye bread.
- Dinner: 2 pears.
- Before going to bed 150 g of cottage cheese.

5-7 day:

- Breakfast: 150 grams of boiled beef with 50 grams of buckwheat porridge.
- Lunch: salad of 2 pears and grated carrots.
- Dinner: 2 pears.
- Before going to bed, a salad of 2 eggs with vegetables, seasoned with olive oil.

Brazilian researchers in an experiment tried to evaluate how much a low-energy diet with the addition of pears helps women in their 30s-50s lose weight. In a practical study for 2.5 months, the diet of the three groups was added to the same number of calories servings of pear, apple and oatmeal cookies. Despite the equality of calories, fruit supplements helped to lose weight more effectively <sup>[8]</sup>.

### **In cooking**

On the dinner table, the pear goes well with a mass of foods that at first glance seem incompatible with sweet juicy fruit: cheeses, pork, beef, chicken, nuts and seasonings (spices), which are primarily associated with meat dishes.

- Pear and cheese. An old French proverb says: "Never has the Lord entered into a more perfect marriage than the union of a pear and cheese." Particularly harmonious are the combinations of dense meaty Bosc and mature cheddar, as well as Comice with brie cheese. Blue cheeses can outshine a tender pear, but sweet firme d' amber with "milky" undertones and an elusive musty aroma suits the pear very well. The description of the Spanish grazalema cheese ( Grazalema ) mentions "notes of ripe pears", which in itself indicates the compatibility of this goat cheese with pears. An excellent partner for a pear is the brine livaro Normandy cream cheese with its "smell", which captures strong spicy notes.
- Pear and pork. The culinary experts call pear and prosciutto , Italian salted ham, an ideal pair . They can be combined without additional ingredients, but they are often combined in salads, pizzas, panini (hot sandwiches). Unlike an apple, a pear goes better not with fatty meat, but with well-done small pieces.
- Pear and beef. With beef, pear fruits are combined in at least two popular Asian dishes. Yukhe is made from finely minced raw beef fillets that are marinated in spicy soy sauce and then served with nashi ( Asian pear ) slices. In bulgogi , before frying, thinly sliced beef is already marinated in grated pear, rice wine, sesame oil and lemon juice with spices.

The brand product for some cantons of Switzerland has become the so-called "pear honey", which is the juice of the pear " Tylers " strongly thickened to a viscous (honey) state. This variety entered the classic recipe because it was very common in the canton of Lucerne and was perfect for brewing. But for the manufacture of honey at home, you can replace this pear with a variety similar in characteristics. The main thing is that the concentrate is sweet and juicy, use still firm, not overripe fruits, which, nevertheless, have already begun to darken and fall off.

After squeezing the pear juice is filtered through a large sieve to separate large pieces of pulp, poured into a copper basin and sent to the basement for the night. During this time, coarse fibers ("noise") manage to rise to the surface, which must be collected, and put the juice cleared of "noise" in a basin

on fire for 6 hours, collecting foam before boiling. Such dark brown honey with milk in the middle of the last century during the war was replaced by coffee with milk.

But for lovers of such sweets and pear-flavored lollipops, there is one warning: the isoamyl acetate fruit ester present in sweets is called the “ bee attack pheromone ”, since it is with its help that insects transmit information about the threat and the need to defend themselves. Therefore, bees, catching the smell of pear sweets, can behave aggressively.

### **In cosmetology**

Pear fruit extract often appears as an ingredient in cosmetics in creams and serums of anti-aging series and products for the care of problem skin. There it helps to reduce the size of pores, normalizes the secretion of sebaceous glands, improves metabolic processes, enriches the skin with organic acids.

The ability of the ingredients contained in the pear to fight inflammatory processes is also used in home cosmetology.

- **Healing elixir.** The product is made from pear skin (50 g per liter of water). The skin is cut off from fresh fruits and boiled over a fire for about 30 minutes, after which it is still infused for about 2 hours. Before applying to sores and wounds, the mixture is filtered.
- **Rejuvenating mask.** The pear is peeled, and the pulp is crushed to a mushy state. One teaspoon of orange juice, honey and cream is added to this mass. After mixing, the composition is applied to the face for a quarter of an hour. The mask is washed off with warm tea leaves (usually green tea). To restore tone and open pores, you can additionally wipe the skin with an ice cube.
- **Purifying mask.** The pulp of one ripe pear is mixed with oatmeal. The amount of flour depends on the juiciness of the fruit. The main goal after stirring is to get a thick slurry. After a 15-minute hold on the face, the mask is washed off with cool water.

### **Dangerous properties of pears and contraindications**

The pear has several properties that, to varying degrees, make these fruits undesirable for inclusion in the diet. For example, it is forbidden to eat pear fruits in acute and chronic pancreatitis (inflammation of the pancreas). This is due to the presence in the pulp of even the most ripe fruits of sclereids - stony cells - dead tissues with lignified thick shells. Their walls are sometimes impregnated with lime, an indigestible form of wax ( cutin ), or silicon dioxide (silica).

Due to their rocky cells, an excess of pears is considered a "heavy" food, even for people with healthy gastrointestinal tracts. People suffering from exacerbations, all the more should refrain from diversifying their diet at the expense of these fruits. Moreover, the ban applies to baked fruits and mashed pear pulp - stony cells are still preserved there.

To aggravate the aggravating effect of a pear (if there are already health problems), its “neighborhood” in a plate with meat products can potentially also. In addition, it is not recommended to drink raw pear pulp with water so as not to provoke diarrhea, do not eat it on an empty stomach and / or immediately after eating.

The abundance of fiber in foods, as a rule, favorably affects the condition of the body. However, the abuse of foods containing a lot of indigestible fibers can provoke intense gas formation, accompanied by painful spasms.

The abundance of sugars in pear pulp is also attributed to the potentially dangerous properties of this fruit. However, it is not entirely correct to compare fruit sugars with sugars in sweets or cakes, since in a pear they are associated with dietary fiber and are absorbed less actively.

### **Selection and storage**

When buying pears in a store or on the market, you should focus on the appearance, smell and density of the fruit. There should be no external damage, dents and wormholes on the skin (worms are found from time to time in homemade pears, although less often than in apples). To assess the quality and ripeness, you need to lightly press on the fruit and smell it. Too hard pulp without aroma indicates that it is an unripe fruit. And excessive looseness may indicate the beginning of the process of decay. However, in the case of a pear, it is better to purchase unripe than overripe fruits.

Hard fruits ripen relatively easily, even if they are simply kept at room temperature for several days (they do not need to be washed first). But this process can be accelerated if you pack pears along with apples and / or bananas in one paper bag. "Neighbors", releasing ethylene (a gas, which is also called the "natural ripening hormone"), will share it with pears.

Soft ripe fruits at room temperature may, on the contrary, begin to rot. In order to slow down this process, fruits are placed in the refrigerator, extending their shelf life by 4-5 days. One more day can be won if the pear that has begun to darken is poured with lemon juice. But in general, pears are stored relatively poorly, and even low temperatures do not save these fruits from loss of quality.

China, which has long been considered the undisputed world leader in the production and export of pears, sponsors numerous studies of this product, aimed, among other things, at better preservation of value characteristics. So, a recent study conducted on frozen pears of one actively exported variety showed a qualitative loss of fruit flavor during prolonged freezing (hexylhexanoate disappeared completely, and the content of another 5 aromatic elements significantly decreased). The same study found an increase in saturated and a decrease in unsaturated fatty acids after prolonged freezing <sup>[9]</sup>.

Recently, the efforts of Chinese scientists have led to the discovery of another, more gentle and already chemical, way to extend the life of fruits taken from a tree. If the fruits are treated with 0.1 mM melatonin, then storage at a temperature of +4 °C simultaneously slows down the growth of microorganisms, and increases the overall antioxidant capacity of pears, and inhibits the loss of ascorbic acid <sup>[10]</sup>.

If it becomes necessary to keep pears at home for as long as possible (within several months), then you can resort to the following proven methods of experienced gardeners:

- Choose only autumn and winter varieties for bookmarking.
- Remove pears from the tree at the stage of technical maturity - still greenish, without waiting until they fall off on their own. When harvested by hand, it is possible to protect the fruits from mechanical shocks and keep the stalk intact.
- Store in well-ventilated dry rooms at a temperature of about 0-2 °C. If the humidity is very high (above 80-85%), a bucket of quicklime left in the storage (basement, cellar) will help get rid of it, as well as excess odors.
- Separate pears from other vegetables and fruits. But the pear fruits themselves should not be in close contact with each other. Therefore, they are placed in boxes or boxes with holes for ventilation, and each layer is sprinkled with sawdust or sand.
- From time to time sort through the folded fruits to reject spoiled pears.

Before putting fruits in boxes, they are often laid out directly on the floor for 0.5-1 week, covering the crop with newspapers. And then each fruit is wiped dry and sent to the box. Sometimes pears are stored on wooden racks, the bottom layer of which is raised from the floor by 15 cm or more. At the same time, they are laid out with their stalks up.

## Varieties and cultivation

The pear loves light and warmth. In shaded areas, the tree both grows and bears fruit poorly, so it is often planted in the southern, western or southwestern parts of the garden. The thermophilicity of the pear until recently presented certain problems for its cultivation in the northern regions, but the work of breeders who created hybrids resistant to low temperatures made it possible to grow this plant in Western Siberia, the Urals, and also in the cold northeastern part of China.

Unlike more unpretentious, cold-resistant plants, southern pears have a developed root system capable of penetrating into deep layers of the soil, which causes both large planting pits and the quality of unwetted soil.

To date, breeders have bred about 3,000 pear varieties. Some of them appeared as a side effect of other research activities. So, for example, the French gardener Louis Bosca, bred a variety named after him, by chance, just fighting weeds. There are 69 botanical species of this plant alone, although most cultivars represent only one of them - *Pyrus communis*. It also includes the following varieties, which made up the top 5 of our "pear" rating:

- "Bartlett". The pear was bred by the pious and generous English farmer Williams Bon Chretien, who spent the proceeds from the sale of seeds on charitable work and the construction of churches. But overseas, this variety is better known by the name of the merchant Bartlett. This variety is considered the sweetest and juiciest in the world. Since the 19th century, there was a rule of table etiquette, according to which this pear was served to the table only in sliced form, because it was almost impossible to bite off a whole fruit without staining yourself with juice. In restaurants, the Bartlett pear was always served with a large number of napkins. Over time, it was this variety that became the most popular in North America. The color of its fruits can vary from pale yellow to reddish, depending on the growing conditions. But since most Americans consider only yellow and green fruits to be true pears, the red varieties of the fruit are more common in restaurants, where the "exotic" color can be charged a higher price.
- Starcrimson. \_ Also very juicy, sweet and fragrant pear. There are fruits from bright red to dark crimson shades. The variety appeared back in the 50s of the last century, but has not yet received wide distribution, taking the place of an expensive delicacy on the market. It is usually ordered in limited quantities in order to sell for 10-15 dollars for one such organic fruit.
- Williams. \_ One of the most famous and popular varieties, the first mention of which dates back to the 1770th year. Then its name was a little different - "Williams Christ." But this pear was made famous by another person with the same surname - Richard Williams, who in 1816 presented it to the London Horticultural Organization. A few years later, the variety began to spread throughout Europe and the world, and not without reason: its sweet pulp melts in your mouth, and the taste is distinguished by a shade that is called "Williams-note".
- "Duchess". This word is translated from French as "duchess". In the world, "Duchess" has been known among gardeners since 1845, and in the territory of the post-Soviet space, the name of this variety flaunted on the label of a popular pear-flavored soda and was known to every child. For the sweet juicy pulp, "Duchess" is still in the top of the most popular honeycombs in the world today.
- Forelle. \_ Completes the rating, "in contrast", a very tough pear with firm flesh and low sugar content. It is used most often in low-calorie confectionery. And yet, the laws of some states still

prohibit the use of the fruits of this variety as projectiles for throwing. Local farmers call it the "combat grenade". "Forelle" has excellent ballistic characteristics: it flies far, and because of its hardness, it can cause serious damage when it hits.

It is difficult to list all the interesting pears. There are, for example, fruits without seeds inside. As a rule, this is the harvest of single-varietal pear plantations of those pears that are prone to seedless fruiting (for example, the Conference variety). In addition, even at the flowering stage, such trees are sprayed with fruit formation biostimulants, which ultimately makes it possible to grow a "shop" pear without a stone. The chemical stimulants involved at this stage completely and completely disappear by the time the fetus ripens.

## Literature

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## Pear - useful properties, composition and contraindications

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**Abstract.** The article discusses the main properties of the pear and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The chemical composition and nutritional value of the product are indicated, the use of pear in various

types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of pear on the human body under certain medical conditions and diseases are analyzed separately. Considered scientific basics diets With her application.