

Characteristics of the Almond (*Amygdalus L.*)

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Abstract

With each passing year, information about the medicinal properties of medicinal plants is expanding. The deeper our knowledge becomes about the healing properties of medicinal plants, the more stringent and critical we are about their indications and contraindications. Despite significant achievements in modern pharmacology and phytotherapy, the chemico-pharmacological properties of many fruits, vegetables, and edible plants remain unstudied. Therefore, in some cases, the characterization of their healing properties is based solely on the experience of ancient physicians.

Keywords: amygdalin, tannin, pericarpin, aldehyde, humus, acid, kidneys.

Belonging to the Rosaceae family, the almond is a small tree or shrub that reaches a height of 6-10 meters. Its leaves are simple, lanceolate, serrated, and arranged alternately along the branches. The flowers can be white or pale pink, and they are solitary or in pairs. The fruit resembles a drupe with a bony endocarp. There are two types of almonds. They can be distinguished by the hardness of their endocarp. One type has a hard, woody endocarp (as in bitter almonds), while the other has a soft, easily breakable endocarp (as in sweet almonds). The pericarp is green and remains attached to the fruit even after it has fallen. The seeds are similar to drupes, with one side slightly pointed. The seed coat is bright brown with a smooth surface. The endosperm is white, and it can be either sweet or bitter. Almonds blossom in March to April and bear fruit in August. They are found in the entire Central Asian region, the Caucasus, the entire area of the Ancient Middle Eastern Sea up to the western coast of the Caspian Sea, Western China, Australia, California, South America, and other countries. In Uzbekistan and Tajikistan, the Buxoro almond is considered the most widespread among woody plants, primarily growing on the sunny side of slopes. In Central Asia, almond trees typically bloom from February to April, and the fruits ripen from July to August.

Chemical Composition: Sweet almond seeds contain glycerides of oleic acid (83%) and linoleic acid (16%), as well as over 20% of proteins, 2.97% sucrose, 3.1-3.8% pentose, and numerous other valuable substances, forming about 45-62% of the total weight. Additionally, bitter almonds contain about 3.4% amygdalin. After the action of emulsin enzyme, it is split into glucose, benzaldehyde, and prussic acid.

Common Uses: Almond oil is widely used in perfumery, pharmaceuticals, and the food industry. Before use, almond oil is purified from amygdalin and hydrocyanic acid through a special refining process. The bitter almond seeds are consumed either raw or roasted. In the processed form, they are added to various jams and confections.

In folk medicine, various parts of the almond tree, including the leaves, flowers, seeds, and bark, are utilized for their healing properties. Almond oil is known for its emollient, softening, antiseptic, and anti-inflammatory properties.

In modern medicine, sweet or bitter almond oil is applied externally in the form of liniments, ointments, creams, and emulsions. It finds wide application in cosmetics for its emollient, softening, antiseptic, and toning effects.

In traditional medicine, various parts of the almond tree, including the bitter and sweet almond seeds, almond oil, flowers, and bark, are used. For internal use, almond oil is administered in doses of 0.5-2.0 grams as a treatment for mild forms of gastritis, colitis, and bronchitis.

The following scheme is used for treating jaundice (Botkin's disease) with sweet almond seeds:

1. For a period of one day, five pieces of crushed sweet almond seeds are prescribed to be taken three times a day. Each subsequent day, the dose of the seeds is increased by five, with patients taking almost 70 seeds in four to five days. Following this period, the daily dose of seeds is set at 15 and maintained until the end of the treatment course. In a heated form, sweet almond oil is used two times a day for treating earache. As a local remedy for softening and emollient purposes, it is applied.

Preparations are made from crushed and milled almond seeds, which are then used as emollient and cosmetic products.

In ancient medicine, sweet and bitter almond seeds were used along with the bark, almond oil, and almond shell ash. They were primarily recommended as stimulants, tonics, antipyretics, emollients, cosmetics, and antidotes (in the works of Abu Mansur from the 10th century, Muhammad Zakariya Razi from the 10th century, Avicenna from the 10th-11th centuries, and others).

According to Avicenna's descriptions, almonds of all kinds cleanse and open up the bile ducts in the liver, spleen, and kidneys. However, sweet almonds, in comparison to bitter ones, are considered to be milder. Consuming almonds with their newly peeled skin helps cleanse the intestines. The combination of almond oil with honey helps cleanse the kidneys and dissolve stones, as well as soften the stools. Almonds strengthen vision. When combined with honey, almond paste assists in healing wounds and is beneficial for coughs, asthma, and pleurisy. Taking five crushed bitter almonds in a dosage of 5 doses of a spirituous drink helps alleviate a hiccough condition. Infusions made from crushed bitter almonds and milkweed are used as drops for the eyes, washes, and compresses for skin diseases. Almond oil prepared with the bark and leaves of the tree is applied for dandruff, head lice, and other skin disorders. Muhammad Husayn Sheroziy suggests that almonds cleanse internal organs, improve vision, soften the skin and nails, strengthen the gums, and provide relief for toothaches and urinary disorders. Almond paste is recommended for treating wounds, especially in cases of ruptures.

In modern medicine, almond oil obtained through cold pressing is widely used as a softening agent and as a base for various liniments, ointments, creams, and emulsions. Almond oil is extensively used in cosmetics as a softening, emollient, antiseptic, and anti-inflammatory agent. The emulsion of sweet almond paste reduces the secretion of gastric juice and is effective for gastritis, gastric ulcers, and duodenal ulcers. For pain relief and soothing purposes, 10-15 crushed sweet almonds are recommended to be taken orally.

Here are some applications of almonds:

1. Adding crushed bitter almonds to a face mask is effective for treating various skin conditions.
2. Applying a mixture of honey and crushed almonds is effective for healing wounds.
3. Using a mixture of vinegar and crushed almonds is considered a remedy for certain skin diseases.

4. Combining almond shell ash with almond oil and applying it to the head after shaving can be beneficial for hair growth.
5. Applying the emulsion of sweet almond paste to the skin can lead to softening and beautifying effects.
6. Mixing sweet almond paste or oil with water and applying it to the skin produces a milky emulsion. When consumed, this emulsion acts as a demulcent for the throat and respiratory tract.

Safety precautions: After consuming bitter almonds, under the influence of emulsin enzyme, toxic substances such as hydrocyanic acid and benzaldehyde are produced. Inhaling is compromised, and enzyme activity is accelerated. Even in large doses, death occurs within a few minutes after inhaling, starting with convulsions, followed by suffocation (asphyxia) and loss of consciousness. Body temperature drops rapidly. Especially, sweet almond kernels or pits, whether from apricots, peaches, plums, or cherries, should be handled with caution.

Guidelines for providing assistance in poisoning: When poisoned with bitter almond kernels, before seeking medical attention, it is necessary to wash out the stomach with a potassium permanganate solution (1:1000). For forced vomiting, 0.5-1.0 liters of a potassium permanganate solution are administered orally or through a gastric tube, followed by mechanical removal of the vomitus. This procedure is repeated several times. In cases of severe poisoning with bitter almond kernels, if qualified medical assistance is not available, it may be impossible to save the patient's life.

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