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# BIOLOGY, MEDICINAL PROPERTIES, AND USES OF CERTAIN PLANTS DISTRIBUTED IN THE CITY OF JIZZAKH

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**Abstract:** Today, the demand for pharmaceuticals derived from herbal raw materials is steadily increasing. Currently, 40–45% of manufactured medicines are prepared from medicinal plant materials. Medicinal plants contain carbohydrates, organic acids, polysaccharides, starch, proteins, fats and fatty acids, essential oils, alkaloids, tannins, saponins, glycosides, bitter substances, phytoncides, microelements, vitamins, mineral salts, and other compounds. Due to the combined synergistic effect of these substances, plants possess therapeutic and healing properties.

**Keywords:** herbal raw materials, phytopreparations, allergic conditions, carbohydrates, organic acids, polysaccharides, starch, protein, fatty acids, essential oils, alkaloid, tannin, saponin, glycoside, bitter substances, phytoncides, microelements, vitamins, mineral salts.

Today, the demand for pharmaceuticals derived from herbal raw materials is steadily increasing. Indeed, to fully satisfy these demands, serious attention must be paid to the proper and rational utilization of plant resources.

Currently, 40–45% of manufactured medicines are prepared from medicinal plant raw materials. It is well known that phytopreparations derived from medicinal plant materials offer several advantages over synthetically (chemically) produced drugs. Phytopreparations exert a mild effect on the human body, rarely induce allergic reactions, and do not cause cumulative buildup of the drug within organs.

Medicinal plants contain carbohydrates, organic acids, polysaccharides, starch, proteins, fats and fatty acids, essential oils, alkaloids, tannins, saponins, glycosides, bitter substances, phytoncides, microelements, vitamins, mineral salts, and other active compounds. Due to the combined synergistic effect of these substances, plants possess therapeutic and healing properties.

**Dandelion - Taraxacum officinale Web. (Oduvanchik lekarstvenny)**

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- **Family:** Asteraceae (Compositae).
- **Characteristics:** A perennial herbaceous plant reaching a height of 10–30 cm. All leaves are arranged in a basal rosette, short-petioled, lanceolate, and pinnately lobed with runcinate margins. The flowering scape is hollow, cylindrical, and 15–30 cm long. The flowers are gathered into a single capitulum (flower head). The involucral bracts of the capitulum are arranged in two rows, and the flowers are ligulate. The corolla is golden yellow. The fruit is an achene with a pappus (parachute-like tuft). It blooms from May until the onset of cold frost.
- **Distribution:** It is found in all neighborhoods (mahallas) of Jizzakh city. It grows mainly along ditch banks, roadsides, in gardens, meadows, fields, and damp areas.
- **Chemical Composition:** The roots contain bitter glycosides such as taraxacin and taraxacerin, taraxerol, triterpene compounds, taraxasterol, inulin, rubber (caoutchouc), fixed oils, and other substances. The leaves and roots of the dandelion are harvested as raw materials. The roots are primarily collected in autumn.
- **Uses in Scientific Medicine:** In scientific medicine, dandelion products are used as an appetite stimulant and a digestive aid. In addition, it is recommended as a sedative, expectorant, and choleretic (bile-expelling) agent. Its dosage forms include decoctions and thick liquid extracts of the root. The underground parts of the plant contain essential oil, inulin, and small amounts of alkaloids and saponins. The crystalline part of the essential oil consists of a mixture of helenin, sesquiterpene lactones, alantolactone, isoalantolactone, and dihydroalantolactone. The essential oil also contains small amounts of alantol and proazulene. The leaves contain a bitter lactone substance—alantopicrin. The roots and rhizomes of the plant are harvested as raw medical materials.
- **Uses in Folk Medicine:** If a decoction of dandelion flowers is taken 1 tablespoon 3–4 times a day, it helps with insomnia, high blood pressure, abdominal bloating (flatulence), and expelling intestinal worms. Crushed dandelion root is boiled in 300 ml of water for 15 minutes and strained; this decoction can be used as a wash or compress to treat various skin rashes, eczema, and boils. Alternatively, crushed dandelion root can be infused in 250 ml of boiling water for 1 hour and strained; drinking this infusion 4 times a day, 30 minutes before meals, serves as an appetite stimulant and helps treat hemorrhoids, rheumatism, gout, and anemia.
- **Ethnobotany:** Dandelion sap is used to treat warts, acne, and other skin blemishes. Local populations also use all parts of the plant to prepare various dishes and salads.

**Wild Carrot - Daucus carota L. (Morkov dikaya)**

- **Family:** Apiaceae (Umbelliferae).
- **Characteristics:** A biennial herbaceous plant growing up to 1 m in height. In its first year, it forms basal leaves and a taproot; in its second year, it develops a stem. The stem grows erect, is hollow inside, and is branched in its upper part. The leaves are bi-pinnately dissected; the basal leaves and those on the lower part of the stem have long petioles, while the upper leaves are sessile, arranged alternately along the stem and branches. The small yellowish, white, or reddish flowers are arranged in a compound umbel inflorescence. The fruit is a schizocarp composed of two mericarps. It flowers in May–June, and the fruits ripen in July–August.
- **Distribution:** It grows along the banks of all internal canals and ditches of Jizzakh city, predominantly under shady trees.
- **Raw Material:** The fruits (seeds) and taproots are used as raw materials.
- **Chemical Composition:** The seeds contain essential oil, furochromones, flavonoids, fixed oils, and other compounds.

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• **Uses:** The population of Central Asia has widely used the fruit of the wild carrot as a diuretic agent. The essential oil extracted from wild carrot fruit has also been used to prepare astringent aromatic extracts. Furthermore, Daucarin, a pharmaceutical formulation obtained from wild carrot fruits, exhibits a spasmolytic (antispasmodic) effect. It yields excellent results in relieving anginal pains around the heart during periods of decreased coronary vessel activity (coronary insufficiency).

**Broadleaf Plantain - Plantago major L. (Podorozhnik bolshoy)**

• **Family:** Plantaginaceae.
• **Characteristics:** A stemless perennial herbaceous plant with a short rhizome. Its above-ground portion consists of basal rosette leaves and a flowering scape that reaches a height of 10–15 cm. The leaves have long, winged petioles, and are broadly ovate or broadly elliptic with entire margins. The leaves can be 6–21 cm long and 4–14 cm wide, featuring 3–7 arcuate main longitudinal veins. There may be one or several flowering scapes. Small, inconspicuous, 4-merous flowers are arranged in a dense spike-like inflorescence at the tip of the scape. The fruit is an ovate, many-seeded capsule (pyxidium). It flowers and its fruits ripen between June and September.
• **Distribution:** It grows ubiquitously across the Zaamin National Nature Park, along roadsides, stream and spring banks, in marshes, meadows, forest edges, and other wet habitats.
• **Raw Material:** The leaves or the entire above-ground part (herb) are harvested as raw materials. The leaves are typically collected throughout the summer after they are fully formed. The above-ground parts are usually mowed during the flowering period. Seeds are harvested when fully ripe.
• **Chemical Composition:** The leaves and above-ground parts contain essential oil, mucilage, saponins, the glycoside aucubin, vitamins C and K, carotene, flavonoids, organic acids, bitter principles, and tannins. The seeds contain fixed oils, saponins, mucilage, and other substances.
• **Uses in Scientific Medicine:** In conventional medicine, it is used as an antiseptic, anti-inflammatory, blood-purifying, expectorant, and laxative agent. According to pharmacological data, an infusion prepared from plantain leaves can be used to increase hemoglobin levels in the blood and to treat neurasthenia, atherosclerosis, and chronic cholecystitis. Medications derived from plantain are also prescribed to treat dysentery, dyspepsia, and gastric ulcers.
• **Uses in Folk Medicine:** Plantain preparations are utilized in treating whooping cough, tuberculosis, and nephritis. There are also reports on its viability as a sedative, an antihypertensive agent to lower blood pressure, and a remedy for insomnia.
  ○ Crushed dry plantain leaves are infused in 200 ml of water for 2 hours; 1 tablespoon of the strained infusion is taken 3–4 times a day as an expectorant, a remedy for whooping cough and bronchitis, and to normalize gastric function.
  ○ Drinking 100 ml of the leaf infusion 3 times a day helps treat laryngitis and pancreatitis.
  ○ Taking 1 tablespoon of plantain seed infusion 3 times a day before meals helps against constipation and inflammation of the gallbladder.
• **Ethnobotany:** A decoction of plantain seeds taken at 1 tablespoon (15 ml) 3–4 times a day has historically been recommended to treat female infertility and diabetes. Additionally, consuming 1 g of crushed plantain seeds 3 times a day provides relief for chronic diarrhea and intestinal inflammation.

**Ribwort Plantain - Plantago lanceolata L. (Podorozhnik lancetny)**

• **Family:** Plantaginaceae.

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- **Characteristics:** A perennial herbaceous plant growing to a height of 20–50 cm. The leaves are basal, long-petioled, lanceolate with entire margins, and taper into a lance-like point. The flowers are inconspicuous and form a dense, spike-like inflorescence. The fruits are oblong, 2-seeded capsules. The seeds are brown.
- **Distribution:** It grows in irrigated areas near the canals and ditches of Jizzakh city, beneath shady trees, and in relatively damp or watery soils.
- **Raw Material:** Matured, fully formed leaves are collected throughout the entire summer.
- **Chemical Composition:** This plant contains the glycoside aucubin, bitter compounds, tannins, and mucilage (the latter found in higher concentrations within the seeds).
- **Uses:** It possesses antiseptic, analgesic, hemostatic (blood-stopping), and expectorant properties. When dry leaves are crushed and prepared as an infusion, taking 1 tablespoon 20 minutes before meals serves as an expectorant (helpful in pleurisy) and aids in relieving gastric inflammation.

**Shepherd's Purse - Capsella bursa-pastoris L. (Pastushya sumka obyknovennaya)**

- **Family:** Brassicaceae (Cruciferae).
- **Characteristics:** An annual, erect, unbranched herbaceous plant reaching a height of 20–40 cm. The basal leaves are petioled, oblong-lanceolate, and variously pinnatifid or dentate. The stem leaves are smaller, lanceolate, entire, sessile, and arranged alternately. The flowers are small, whitish, 4-merous, and arranged in an elongating raceme. The fruit is an obtriangular, heart-shaped silicle (pouch-like pod). It blooms from April until autumn, and the fruits mature starting in June. The herbaceous above-ground portion of the plant is harvested during its flowering period.
- **Distribution:** It grows everywhere across Jizzakh city and is considered one of the most widely distributed wild plants.
- **Chemical Composition:** The raw materials of shepherd's purse contain the glycoside hyssopin, ascorbic acid, vitamin K1, organic acids, flavonoids, saponins, and tannins.
- **Uses in Scientific Medicine:** In scientific medicine, it is used as a vitamin-rich, hemostatic, and diuretic agent. Its primary dosage forms are infusions and liquid extracts.
- **Uses in Folk Medicine:** The herb is crushed, mixed with 500 ml of boiling water, and infused in a water bath for 15 minutes. Once cooled and strained, drinking 2–3 spoons of this infusion daily after meals can stop nosebleeds and uterine bleeding in women. Additionally, the infusion is used to treat gastric inflammation, hemorrhoids, and dysentery.
  - Fresh juice extracted from shepherd's purse herb can be diluted with boiled water (1:1) and taken at 1 tablespoon 3 times a day to treat diarrhea and nosebleeds. It is also applied as a compress to heal certain wounds and soothe painful areas.
  - It is recommended to add fresh shepherd's purse leaves to various appetizers and salads.

**Horse Sorrel - Rumex confertus Willd. (Schavel konskiy)**

- **Family:** Polygonaceae.
- **Characteristics:** A perennial herbaceous plant with an erect, jointed (noded) stem reaching a height of 50–80 cm (some individuals can grow up to 150 cm), branched in its upper portion. The basal rosette leaves are long-petioled, triangular-ovate with a deeply cordate (heart-shaped) base, an obtuse tip, and wavy margins. The upper stem leaves are sparser, ovate-lanceolate, short-petioled, and arranged alternately along the stem and branches. At the nodes where leaves emerge, there is a thin membranous sheath (ochrea) formed by fused stipules wrapping around the stem. The flowers are

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small and inconspicuous. The perianth is simple, and the 6-merous flowers are arranged in a paniculate inflorescence. The fruit is an ovate, triquetrous (three-sided), brown nutlet. It flowers in May–June, and the fruits ripen in July.

- **Distribution:** It grows as a weed among cultivated crops, under shady trees, and in all urban neighborhoods of Jizzakh city irrigated by canals and ditches. The roots are utilized as raw material.
- **Chemical Composition:** The roots contain anthracene derivatives, tannins, flavonoids, essential oil, resins, vitamin K, mucilage, and other compounds. The fruits contain anthracene derivatives, tannins, vitamin C, resins, and mucilage.
- **Uses:** The roots and rhizomes are used as an astringent (anti-diarrheal), hemostatic, or laxative agent depending on the dose. The fruits also possess anti-inflammatory properties that aid in treating gastrointestinal diseases.
  - If crushed horse sorrel root powder is consumed at a low dose of 0.25 g 3 times a day, it acts as an astringent (constipating agent); however, if taken at a higher dose of 0.5 g, it acts as a mild laxative.
  - In folk medicine, preparing a decoction from almost all parts of the plant (roots, above-ground parts, and fruits) is recommended for treating skin conditions—especially itchy rashes—and stomach elements.
  - Crushed horse sorrel root is boiled in 1 liter of water for 15 minutes, allowed to steep for 4 hours, and then strained. Taking 1 tablespoon 3–4 times a day before meals treats stomach disorders, particularly diarrheal conditions.
- **Ethnobotany:** Freshly crushed horse sorrel roots can be mixed with yogurt (qatiq) and applied topically to treat skin diseases. Applying freshly crushed leaves to purulent wounds accelerates their maturation and promotes faster healing.

**Common Chicory - Cichorium intybus L. (Tsikory obyknovennoy)**

- **Family:** Asteraceae (Compositae).
- **Characteristics:** A perennial herbaceous plant that ranges from 30 to 120 cm in height. It features a distinct taproot. The stem is branched, rough to the touch, and ribbed. The basal leaves are broadly lanceolate and deeply pinnatifid. The stem leaves are lanceolate and arranged alternately. The flower heads (capitula) are bright blue and composed entirely of ligulate florets. The fruit is an achene. This plant is widely distributed in Uzbekistan, typically growing in a scattered wild state. Both the roots and the herbaceous above-ground parts are harvested.
- **Chemical Composition:** The roots of chicory primarily accumulate inulin. Additionally, they contain the bitter glycoside intybin, proteins, organic acids, and other compounds.
- **Uses:** Drinking 100 ml of a decoction made from crushed chicory root 3 times a day before meals stimulates the appetite, activates gastric function, and generally improves metabolism. The decoction is also used topically to treat hemorrhoids, acne, and other skin diseases.
  - Alternatively, drinking 100 ml of an infusion made from the aerial herb 3–4 times a day before meals provides therapeutic relief for all the aforementioned conditions.
- **Ethnobotany:** An ointment prepared from the ashes of burned chicory herb is used to treat infantile diathesis. Infusions prepared from the herb are also added to therapeutic baths to treat various skin conditions.

**Conclusion:** Beyond providing food, clothing, and medicines for humans and animals, plants ensure clean air and safeguard the soil from water and wind erosion. For these vital reasons, we must protect and rationally utilize our green treasury.

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