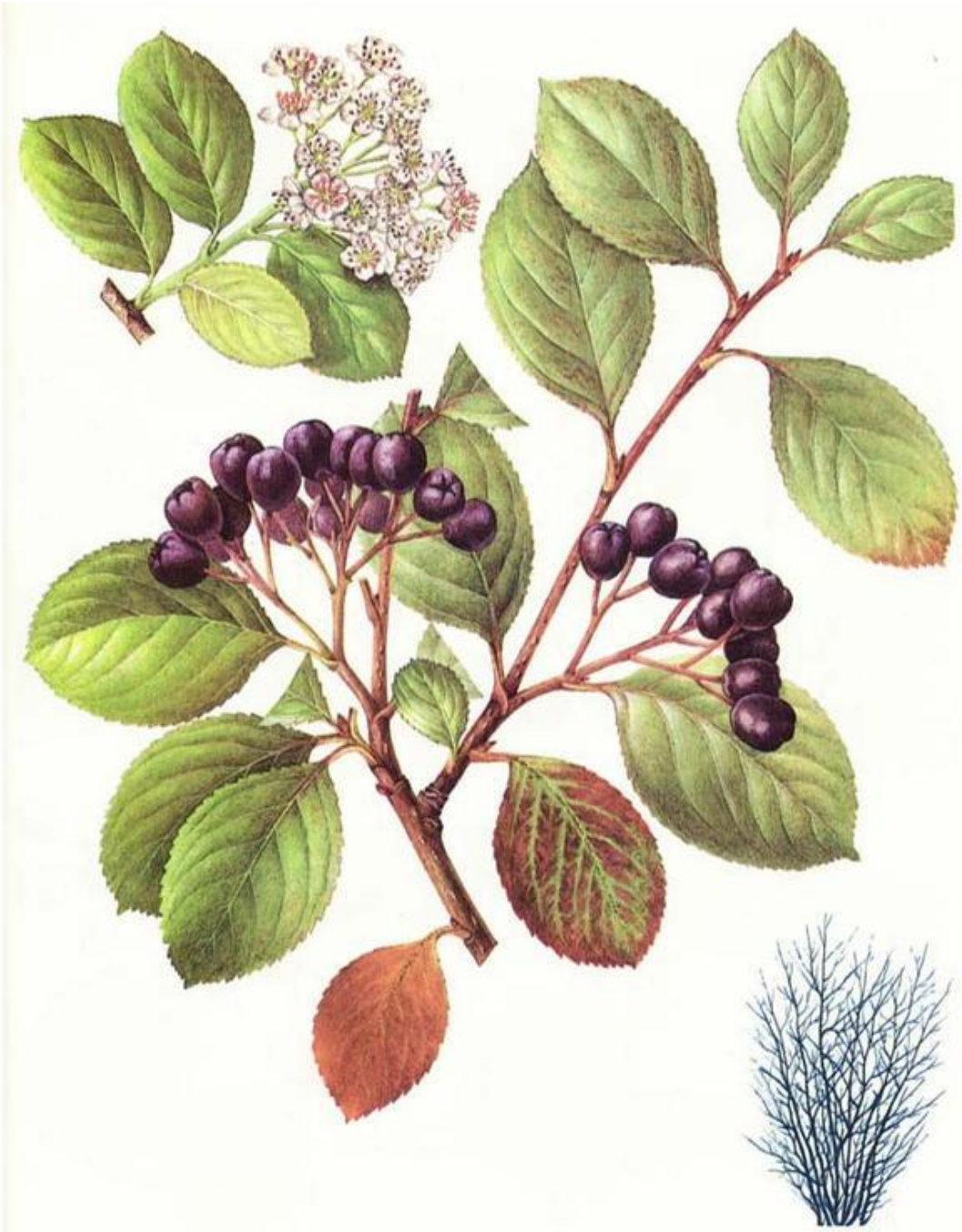
Medicinal plants and raw materials containing flavonoids.

Black chokeberry fresh fruits - Aroniae melanocarpae recens fructus
Black chokeberry dried fruits - Aroniae melanocarpae sicco fructus

Black chokeberry - *Aronia melanocarpa* (Michx.) Ell.
Family – *Rosaceae*



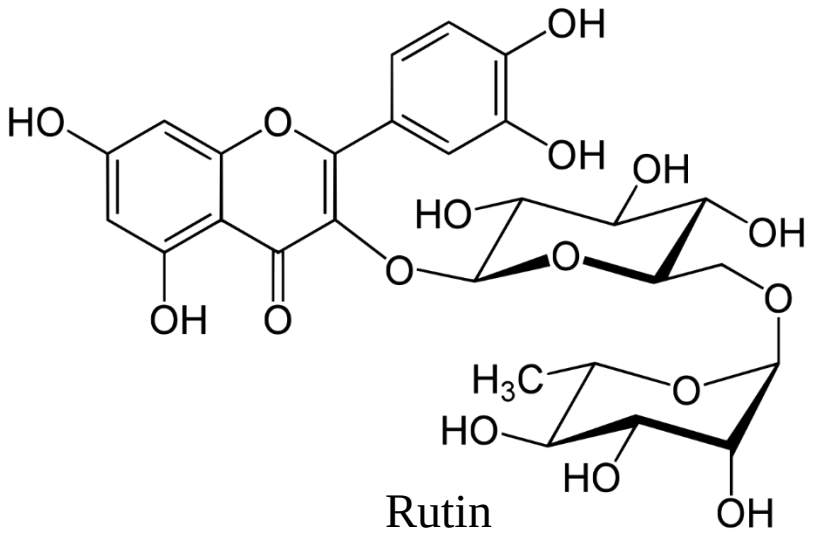
Itis a deciduous, cultivated shrub up to 2.5 metres tall. The shoots are numerous with simple entire leaves, broadly elliptic, with serrated margin, green, turning red in autumn. Flowers are white or pink, gathered in shield-shaped inflorescences.

The fruit is black in colour, with a bluish plaque.

This plant has been introduced and is cultivated in Europe.

Harvest ripe fruits in September to the first half of October. Individual fruits or fruit shields are plucked by hand or cut with pruning shears. The harvested fruits are put into baskets or crates and transported to the place of processing.

Chemical composition. Aronia fruits contain P-vitamin complex consisting of flavonoids (rutin, quercitrin, hesperidin, quercetin), catechins, anthocyanins, as well as a significant amount of ascorbic acid (up to 110 mg%), tannins, organic acids, carotenoids, trace elements (salts of molybdenum, manganese, copper, boron), up to 10% of sugars (glucose, fructose, sucrose).



Rutin

The quality of raw material is regulated by Russian Pharmacopoeia XIV, according to which in whole fresh raw material the sum of anthocyanins in terms of cyanidin -3-O-glucoside should be not less than 4%, in dry raw material - not less than 3%.

Pharmacological action. Raw material is used as a multivitamin, capillary-strengthening agent with hypotensive, tonic, styptic properties.

Uses. Fresh fruit and juice are used in hypo- and avitaminosis P, as well as for the treatment of hypertension I and II degree. After squeezing the juice, the fruit cake is used to prepare tablets used as a P-vitamin remedy. Preparations are contraindicated in patients with increased blood clotting, peptic ulcer and duodenal ulcer and hyperacidic state of the stomach. In the food industry, black mountain ash fruits are used to make jams, jams, syrups, marmalade, drinks, and as a natural colouring agent (anthocyanins).

Cornflower flowers - Centaureae cyani flores

Cornflower - *Centaurea cyanus* L.
Family - Asteraceae

Centaurea cyanus is an annual plant growing to 40–90 cm tall, with grey-green branched stems. The leaves are lanceolate and 1–4 cm long. The flowers are most commonly an intense blue colour and arranged in flowerheads (capitula) of 1.5–3 cm diameter, with a ring of a few large, spreading ray florets surrounding a central cluster of disc florets. The blue pigment is protocyanin, which in roses is red. Fruits are approx. 3.5 mm long with 2–3 mm long pappus bristles. It flowers all summer.

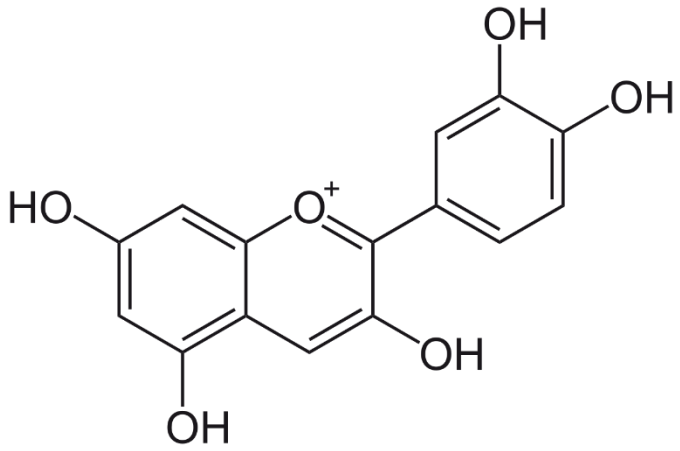
Centaurea cyanus is native to temperate Europe, but is widely naturalized outside its native range.
Several cultivars of Centaurea cyanus with varying pastel colours, including pink and purple, have been selected for ornamental purposes.

The flowers are collected in full bloom by plucking the marginal and partially median tubular flowers, the peduncle with the wrapper is discarded. To avoid change (loss) of blue colouring, the flowers are dried in a sun-protected place, under sheds or in attics with good ventilation. After drying, flowers that have lost their natural colour, as well as organic and mineral impurities, are removed from the raw material.

External features. The raw material consists of a mixture of marginal and median flowers. The marginal flowers are asexual, funnel-shaped, up to 2 cm long, corolla-shaped, irregular, with 5 - 8 deeply incised lanceolate lobes of the bend. Middles are ovoid, tubular, about 1 cm long, five-toothed along the margin, stamens with fused anthers. The colour of the marginal flowers is blue, that of the median flowers is blue-purple. The odour is faint. The flavour is slightly spicy.

In warehouses and pharmacies, the raw material is stored in a dry, ventilated room, protected from light. When stored in the sun or in a damp place, the flowers take a reddish colour or turn white. Shelf life 2 years.

Chemical composition. The main active substances of the flowers are anthocyanins - diglucosides of cyanidin and pelargonin - and flavonoids represented by derivatives of apigenin, luteolin, quercetin and kaempferol. In addition, there are coumarins (cichorin), tannins, and some essential oil.



Cyanidin

The quality of raw materials is regulated by the requirements of the Russian Pharmacopoeia XIV. Quality control provides determination of the content in the whole raw material of the sum of anthocyanins in terms of cyanidin - 3,5-diglycoside. It should be at least 0.60%.

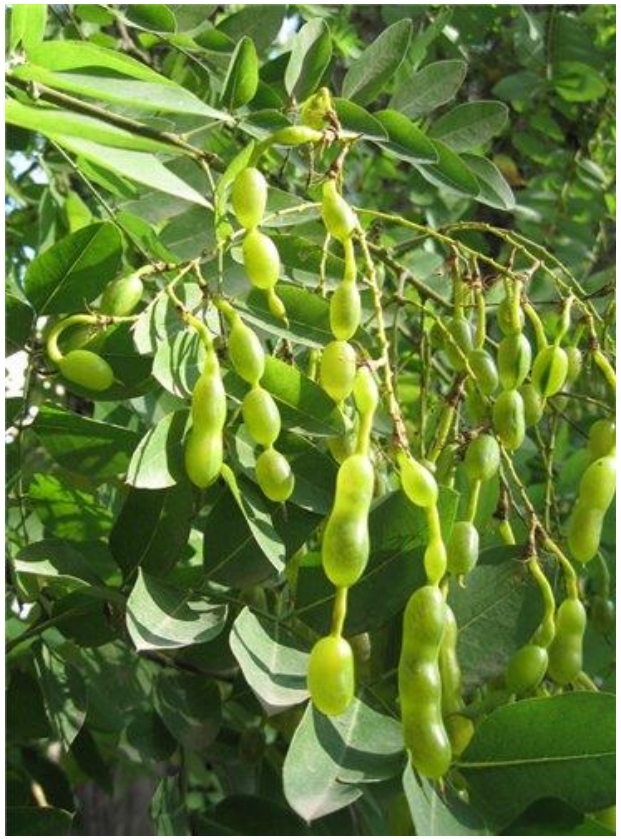
Pharmacological action. Diuretic agent.

Uses. Infusions of medicinal plant materials are used in complex therapy for chronic inflammatory diseases of the kidneys and urinary tract, edema associated with diseases of the kidneys and cardiovascular system. From cornflower flowers are prepared 10% water infusion, which is used as a mild diuretic in kidney and bladder diseases. They also have a choleretic effect, improve digestive function.

Sophora japonica buds - Sophorae japonicae alabastra
Sophora japonica fruits - Sophorae japonicae fructus

Japanese pagoda tree - *Sophora japonica* L.
Family – *Fabaceae*

It is a tall deciduous tree in the pea or legume (Fabaceae or Leguminosae) family that can reach 25 m (82 ft) in height. The tree does not begin flowering until it is 30 to 40 years old, after which inflorescences (flowering panicles) of creamy white flowers, about 1 cm long, appear as clusters at the ends of branches. The tree has a pendulous (hanging down loosely) crown with a somewhat cylindrical shape.



Leaves alternate, pinnately compound, 15-30 long, 7-17 leaflets, leaflets entire, ovate-lance-ovate, 2.5-5 cm long, green and lustrous above and glaucous beneath; the petiole (rachis) is swollen at the base and encloses the bud. Flowers pea-like, 1-1.5 cm long, ivory white, in large clusters, 15-30 cm long, appear in July-August (if it flowers). Fruit a pod, 8-15 cm long, bright green, glabrous (without hairs), changing finally to yellow-brown, 1-6 seeded, often constricted between seeds.

The buds are harvested in dry weather when large buds are forming, some of which (usually at the base of the inflorescence) have already begun to bloom. The inflorescences are cut with pruning shears or carefully broken off at the base, using a ladder for this purpose. Fruits are harvested unripe when they are 9 to 10 cm long and 10 to 12 mm thick. Pericarp at the time of harvesting raw material should be light green, fleshy and juicy, seeds - large, hardened, beginning to darken. After collection, blackened and immature fruits, foreign parts of the plant are taken away. Collected inflorescences with buds dried in attics with good ventilation or in dryers at a temperature of 40 - 45 ° C. During drying, the raw material is stirred, with a mass shattering of buds. The dried raw material is cleaned from the sprigs of inflorescences and extraneous impurities and packed in bags. Fruits are dried in well-ventilated rooms or in dryers at temperatures up to 25-30°C.

External characteristics of the buds. The raw material consists of oblong-ovate buds, 3 to 7 mm long and 1.5 to 3 mm wide. The calyx is bell-shaped with 5 short blunt or slightly pointed teeth, yellowish-green in colour, pubescent (magnifying glass!). Corolla pale yellow, as large as the calyx or slightly protruding above it. The odour is weak.

External characteristics of fruit - beans are unopened, flattened-cylindrical, clear-shaped, up to 10 cm long and 0.5 - 1 cm wide, greenish-brown with a clearly visible yellowish suture. Seeds are dark brown or almost black, most of them underdeveloped. There is no odour. The flavour is bitter.

Chemical composition. The main active substances of buds and fruits are flavonoids, rutin predominates. The content of rutin varies widely. More of it is contained in buds (up to 20%). In addition to rutin, the fruits also contain kaempferol-3-sophoroside and genistein-3-sophoroside. Related substances of the fruit include polysaccharides and saponins, for which immunomodulatory properties have been identified.

The quality of raw materials is determined by the content of rutin, which should be at least 16%.

Pharmacological action - angioprotective and capillary-strengthening (buds) and bactericidal, wound-healing (fruit).

Uses. Buds of Sophora japonica are used to obtain rutin. Rutin has P-vitamin activity (reduces permeability and fragility of capillaries, protects against haemorrhage and improves the absorption of vitamin C. Rutin is administered simultaneously with hypotensive agents to dilate blood vessels. Rutin is prescribed simultaneously with hypotensive agents that dilate blood vessels. From the buds are also obtained quercetin, which in the form of tablets is used for the same purpose as rutin. On the basis of rutin produce a number of combined vitamin preparations, including ascorutin, prophylactin (rutin + ascorbic acid), heptavit, undevit, complimivit, etc., and others. Sophora fruit is used as a tincture, which has a wound-healing effect and is used in the form of lotions and irrigations for purulent wounds, eczema, trophic ulcers and burns.

Motherwort herb – Leonuri herba

Common motherwort - *Leonurus cardiaca*
Quinquelobate motherwort - *Leonurus quinquelobatus* Gilib.
Family - *Lamiaceae*

Leonurus cardiaca has a squarish stem which is clad in short hairs and is often purplish, especially near the nodes. The opposite leaves have serrated margins and are palmately lobed with long petioles; basal leaves are wedge shaped with three points while the upper leaves have three to five. They are slightly hairy above and greyish beneath. Flowers appear in leaf axils on the upper part of the plant and have three-lobed bracts. The calyx of each flower is bell-shaped and has five lobes. The corolla is irregular, 8 to 12 mm (0.3 to 0.5 in) long, fused, long-tubed with two lips. The upper lip is convex and covered with white hairs and the lower lip is three-lobed and downward-curving and spotted with red. The flowers are pink to lilac in colour often with furry lower lips. There are four protruding stamens, two short and two longer, and the fruit is a four-chambered schizocarp. The plant grows to about 60 to 100 cm (24 to 39 in) in height and blooms in mid to late summer.

Motherwort is probably native to the southeastern part of Europe and central Asia where it has been cultivated since ancient times. Its natural habitat is beside roadsides, in vacant fields, waste ground, rubbish dumps and other disturbed areas. This plant prefers well drained soil and a partly shady location. Introduced to North America as a bee foraging plant and to attract bumble bees, this perennial herb is now considered invasive.

Hand-harvested grass consists of flowering tops with a stem up to 40 cm long, up to 0.5 cm thick. Mechanised harvesting grass consists of pieces of stems, leaves and inflorescences. The stem is often split, up to 20 cm long, up to 0.5 cm thick.

Chemical composition. Motherwort herb contains flavonoid glycosides - rutin, quinqueloside, quercitrin, hyperoside, quercimeritrin; tannins (up to 2%), saponins, traces of essential oil.

There are iridoids, among which dominate harpagid, haliridoside, acetyl harpagid causing sedative effect and bitter properties of preparations. When wetting herb powder with 1% alcoholic solution of aluminium chloride and shining it in UV light, all tissues fluoresce bright golden-yellow (flavonoids).

According to Russian Pharmacopiea XIV in whole, ground raw material, powder: the sum of flavonoids in terms of rutin should be at least 0.2%; extractive substances extracted with 70% alcohol - not less than 15%.

Pharmacological action. Sedative.

Uses. Currently, it is used to obtain infusion and tincture, which are used as a sedative, instead of valerian preparations and together with them, with increased nervous excitability, cardiovascular neuroses and the initial stages of hypertension. Included in the collection sedative number 3. Motherwort herb is also included in the collection of M.N.Zdrenko.

Ginkgo leaves – Ginkqo biloba folia

Ginkgo – *Ginkqo biloba* L.
Family *Ginkqoaceae*

Ginkgos are large trees, normally reaching a height of 20–35 m (66–115 ft), with some specimens in China being over 50 m (165 ft). The tree has an angular crown and long, somewhat erratic branches, and is usually deep-rooted and resistant to wind and snow damage. Young trees are often tall and slender, and sparsely branched; the crown becomes broader as the tree ages. A combination of resistance to disease, insect-resistant wood, and the ability to form aerial roots and sprouts makes ginkgos durable, with some specimens claimed to be more than 2,500 years old.

The leaves are unique among seed plants, being fan-shaped with veins radiating out into the leaf blade, sometimes bifurcating (splitting), but never anastomosing to form a network. Two veins enter the leaf blade at the base and fork repeatedly in two; this is known as dichotomous venation. The leaves are usually 5–10 cm (2–4 in), but sometimes up to 15 cm (6 in) long.

External features of the raw material. Leaves are fan-shaped or broadly wedge-shaped, leathery, with dichotomous veining. The petiole is thin, elastic, 10 cm long. The leaf apex has a V-shaped notch cutting the leaf laminae into two symmetrical halves. Light green, yellowish green or yellow in colour. The odour is characteristic. The flavour is specific, sour, slightly astringent with a bitter aftertaste.

The chemical composition of the leaves is unique, as it includes more than 40 ingredients, the main ones being flavonoids (up to10%) and diterpene lactones. Flavonoids are represented by kaempferol, quercetin (flavonols), luteolin (flavone) and their acyglycosides, catechin, procyanidin, biflavonoids (amentoflavone, ginkgetin, isoginkgetin). Among the diterpene lactones, ginkgolides A,B,C are dominant.

Ginkgo leaves also contain the sesquiterpene bilobalide A. In addition, the leaves contain proanthocyanidins and organic acids (benzoic acid and its derivatives), which contribute to the solubility and bioavailability of ginkgo extract, as well as waxes, steroids, sugars.

Pharmacological action. Angioprotective, improving cerebral blood circulation.

Uses. Leaf extract improves cerebral blood circulation, increases the resistance of brain cells to hypoxia. Ginkgo leaf preparations ("Ginkgo tincture", "Bilobil", "Tanakan", "Ginkor", "Ginkor-forte", etc.) are indicated for disorders of cerebral circulation and accompanying symptoms. Such as dizziness, disorientation in space, headaches, tinnitus.

Hawthorn flowers - Crataegi flores
Hawthorn fruits - Crataegi fructus

Collected at the beginning of flowering and dried inflorescences or collected in the phase of full ripening and dried fruits of wild and cultivated shrubs or small trees are used as medicinal plant material.

Crataequs sanquinea
C. laevigata (*C.oxyacantha*)
C. dahurica
C.monogyna;
C. pentagyna;
C. curvisepala Lindm.
And some others.

Family *Rosaceae*

Crataequs sanquinea

C. laevigata (*C.oxyacantha*)


5 6 7 8 9 10 11 11 12 13 14 15 16 17 18 19 20

Chemical composition. Flowers and fruits contain flavonoid glycosides, quercetin derivatives - hyperoside (main component) and quercitrin, as well as acetylvitexin, vitexin, pinnatifidin. Other phenolic compounds include caffeic and chlorogenic acids, tannins. The presence of triterpene compounds (ursolic and oleanolic acids), amines (choline, acetylcholine), carotenoids, alcohol - sorbitol is also characteristic.

According to Russian Pharmacopiea XIV the content of hyperoside in flowers should be (not less than 0.5%) and the sum of flavonoids (in terms of hyperoside) in fruits not less than 0.04%.

Pharmacological action. Cardiotonic agent with hypocholesterolemic properties.

Usage. Preparations of hawthorn (tincture of flowers, tincture and liquid extract (from the fruit) are used as a cardiotonic agent in functional disorders of cardiac activity, heart failure, after severe diseases and in the initial forms of hypertension, insomnia in cardiac patients. Liquid extract is also included in the complex preparation "Cardiovalen". It has been experimentally proven that the liquid extract reduces blood cholesterol levels.

three-part beggarticks herb - Bidentis tripartitae herba
three-part beggarticks - *Bidens tripartira* L.
Family *Asteraceae*

It is a common and widespread species of flowering plant, commonly known as **three-lobe beggarticks**, **three-part beggarticks**, **leafy-bracted beggarticks** or **trifid bur-marigold**.

Bidens tripartita is an annual species with rigid stems and fibrous roots.

Leaves are 2 to 4 inches long, ¾ to 1½ inches wide, opposite, simple, narrow to broad lance-elliptic, usually toothed, sometimes untoothed, pointed at the tip, stalkess or tapering at the base to a (more or less) winged stalk. Occasionally a lower leaf may have one to a few lobes towards the base. Stems are erect and branched, green or yellow in color. Both stems and leaves usually smooth but may be finely hairy.

Flower heads are discoid and lacking ray flowers. 1 to 3 stalked flower heads at the end of branching stems and arising from leaf axils. The flower center is broad, ½ to ¾ inch across, made up of tiny dull light yellow disk flowers with 4 or 5 lobes. Ray flowers (petals) are uncommon, though 1 to 5 rays, often short and stubby, may be observed. Inner bracts are relatively inconspicuous.

Fruits are achenes. Seeds are 1/3 to ½ inch long, usually with 3 barbed awns, the middle awn shorter than the side awns.

Bidens tripartita is native to much of Eurasia, North Africa, and North America, with naturalized populations in Australia and on some Pacific Islands.

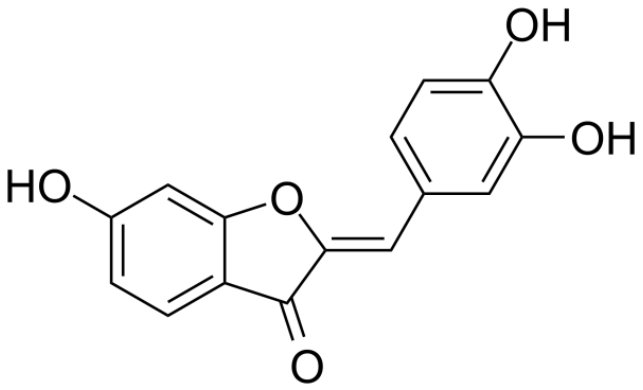
Widespread almost throughout the European part of the Russian Federation (except the Far North), as well as in Transcaucasia, Siberia, Central Asia (except Turkmenistan), southern Far East.Asia (except Turkmenistan), and in the south of the Far East.It grows mainly along the damp banks of rivers, streams, pondsand other water bodies, on damp meadows, marshes, in ditches and as a weed in vegetable gardens and irrigated areas.vegetable gardens and irrigated fields. In Ukraine, it is found in alder forests andthinned forests, as well as in thickets of mesophilous shrubs. Oftenforms continuous thickets.

Harvesting is carried out during the budding and flowering phases by cutting offthe leafy tops and lateral branches up to 15 cm long, andindividual leaves. This is done manually or with a sickle or knife.In plantations, succession is harvested by silage harvestersharvesters with chopping of the entire above-ground part and removal of thick stems.stems.

For drying, the herb is spread in a thin layer on tarpaulins or racks and turned daily.racks and turned daily. When drying in artificialdryers, the herb can be heated up to 35-40°C.

Chemical composition.

Medicinal plant raw materials contain flavonoids (more than 10components), among which the most characteristic are sulfuretin (auron) and butein (chalcone). A lot of carotenoids in the herb (up to 50-70mg%), ascorbic acid (60-70 mg%), there are also coumarins,polysaccharides, tannins, trace elements (manganese, etc.).



sulfuretin

Pharmacological action. Herb of medicinal plant - anti-inflammatory (antiseptic) agent, possessingantihistamine, diuretic properties.

Used in the form of infusion for therapeutic baths for various diathesis,especially in children's practice (anti-allergic effect).Used also in colds as diaphoretic anddiuretic, including together with bearberry leaves and kidneybirch - in chronic kidney disease, especially in urolithiasis.disease.
Included in the collection "Elekasol" and collection Zdrenko.

immortelle sandy flowers - Helichrysi arenarii flores
immortelle sandy - *Helichrysum arenarium* (L.)
Family *Asteraceae*

As a perennial plant, it grows to be an average of 0.3 m tall.
The leaves are flat, the lower ones being elliptical in shape, while the upper ones are linear. They are wooly on both sides.
The flower heads are arranged in loosely, a cross between umbel and panicle. They are 3 to 4 mm wide of bright golden yellow florets.
It is found in Eastern France to Sweden as well as on the mountains of Uzbekistan on sandy grasslands, and heathland. It is also widely spread on the Dalmatian coast in Croatia where locals regularly pick and sell it throughout the summer (local Mediterranean climate permitting even as late as September and October).

Chemical composition. The inflorescences contain flavonoids (6.5%):Flavanone naringenin and its 5-O-glycoside (salipurposide), and 7-O-glycoside(prunin); flavone apigenin and its 5-O-glycoside, and the flavonol kaempferolin the form of a 3-diglucoside.

Among the predominant flavonoids, chalcone is knownisosalipurposide.The sand immortelle also contains a number of related substances, such as polysaccharides (polysaccharides).substances - polysaccharides (prolonging and enhancing the choleretic effect),coumarin scopoletin, essential oil (0.04%), phylloquinones, tannins, tannins, vitamin K.

The inflorescences are harvested at the beginning of flowering, before the lateral flowers heads open. If harvested later, the opening of the flowers heads causes the flowers to fall off.

Cut off the inflorescence with a knifeor scissors inflorescences with flower stalks up to 1 cm long and put looselyin bags or baskets. Transport to the drying area as soon as possible. Storage in containers for more than 3 - 4 hours leads to spoilage of raw materials. On the samearray can be collected up to 3 - 4 times as the plant blooms. Repeated collection - after 5 - 7 days.

When dried in warm rooms and attics, the baskets quickly disintegrate, resulting in the production of non-standard raw materials.resulting in irregular raw materials. Dryers can be dried attemperatures not exceeding 40°C.

External features.

They are single globular or several flower heads on short woolly-hairy pedicels up to 1 cm long, 7 - 9 mm in diameter. Characteristic diagnostic featuresare lemon-yellow-coloured, concave, dry, filmy, shiny; flowers are tubular, unisexual, with a tuft, yellow or orange colour. The odour is weak, pleasant. The taste is spicy-bitter.

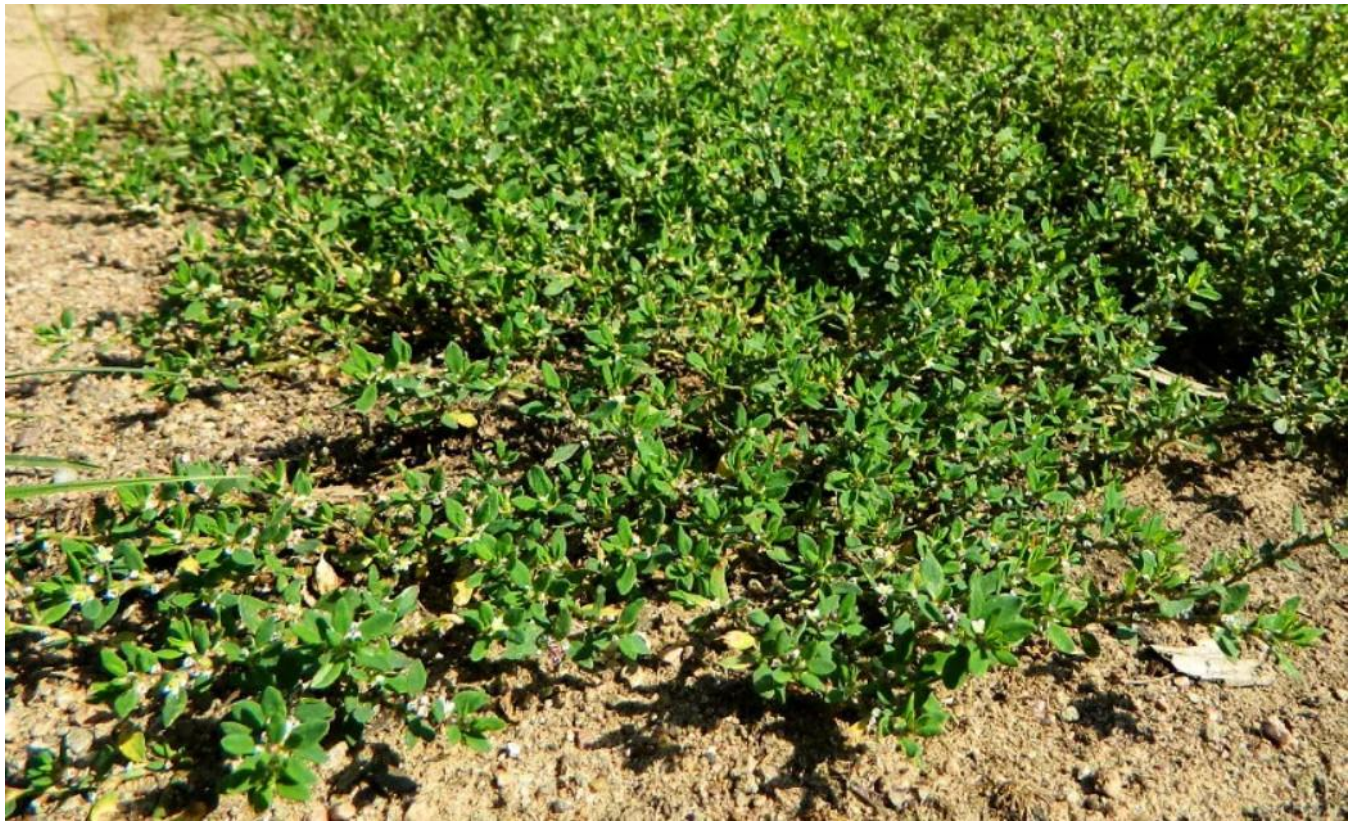
Raw materials are used to obtain infusion, dry extract, preparation"Flamin" (sum of flavonoids). Preparations are used as a **choleretic** agent for diseases of the liver, gallbladder and biliary tract. Flowers are included in choleretic collections, Zdrenko collection.

common knotgrass herb - Polygoni avicularis herba
common knotgrass - Polygonum aviculare L.
Family *Polygonaceae*

It is also called **prostrate knotweed**, **birdweed**, **pigweed** and **lowgrass**.

Common knotgrass is an annual herb with a semi-erect stem that may grow from 10 to 40 cm (4 to 16 in) high. The leaves are hairless and short-stalked. They are longish-elliptical with short stalks and rounded bases; the upper ones are few and are linear and stalkless. The stipules are fused into a stem-enclosing, translucent sheath known as an ochrea that is membranous and silvery. The flowers are regular, green with white or pink margins. Each has five perianth segments, overlapping at the base, five to eight stamens and three fused carpels. The fruit is a dark brown, three-edged nut.

It is widespread across many countries in temperate regions, apparently native to Eurasia Occurs as a weed almost all over the country. Particularly widespread in the middle belt of the European part and in the south of Western Siberia.
It grows along roads, paths, ditches, in heavily beaten down grazing pastures, in fields and vegetable gardens, in wastelands.



Chemical composition. In the herb of knotgrass contains flavonoids(flavonol derivatives) (up to3%), among which predominate glycosides of quercetin glycosides - avicularin, quercitrin and hyperoside. Accompanying substances include tannins (1.8-4.8%), ascorbic acid, vitamin K (in smaller quantities compared to kidney grass and water pepper), phenolic acid, phenol carboxylic acids, silicic acid compounds (about 4.5 %).

Harvest medicinal raw material during flowering, in dry weather. When collectingits herb is cut with a knife or sickle, and in dense stands mow the upper parts of the plants up to 40 cm long with scythe.

Dry in well ventilated attics, under sheds or in the open air in the shade, spread out in the drying, spread in a thin layer. During the herb 1 - 2turn times. When drying in dryers with artificial heating temperature should not exceed 40-50 ° C.

Infusion of the herb is used as a haemostatic agentin gynaecological practice.

Infusion and other preparations of knotgrass recommended also as a diuretic and anti-inflammatorymeans in the treatment of kidney disease and urolithiasis to loosening of urinary stones and facilitating their excretion. Extract of bitterrootis a part of the preparation "Fitolizin“.

water pepper herb - Polygoni hydropiperis herba
water pepper - Polygonum hydropiper L.
Family *Polygonaceae*

Water pepper is an annual herb with an erect stem growing to a height of 20 to 70 cm. The leaves are alternate and almost stalkless. The leaf blades are narrowly ovate and have entire margins fringed by very short hairs. They are tapering with a blunt apex. Each leaf base has stipules which are fused into a stem-enclosing sheath that is loose and fringed at the upper end. The inflorescence is a nodding spike. The perianth of each tiny flower consists of four or five segments, united near its green base and white or pink at the edges. There are six stamens, three fused carpels and three styles. The fruit is a dark brown oval, flattened nut.

Each leaf base has stipules which are fused into a stem-enclosing sheath that is loose and fringed at the upper end.

A widespread species, Persicaria hydropiper is found in Australia, New Zealand, temperate Asia, Europe and North America. The plant grows in damp places and shallow water. Cultivated varieties are eaten in East Asia for their pungent flavor.

Chemical composition.

The herb contains flavonoids (up to 2.5%) - rutin, quercitrin, hyperoside, kaempferol; methylated flavonols -isoramnetin and rhamnazine, contained in the form of esters with potassium bisulphate and called "persicarines".

Vitamin K, which is responsible for its styptic effect. In addition, tannins (3.8%), some essential oil, organic acids, ascorbic acid, many trace elements.

Harvesting.
Foliage flowering parts of the plant cut with a sickleor knife at a height of 4 - 5 cm from the surface of the soil, leaving the roughlower parts of the stems.

Dry the herb under sheds or in dryers, spreading a thin layer (3 - 5 cm) on cloth or paper, turning often so that the raw material does not blacken. It is better to dry in dryers with artificial heating at a temperature of 40 - 50°C.

The infusion and liquid extract of the herb of water pepper herb is used as a haemostatic agent for uterine and haemorrhoidsas a haemostatic agent for uterine and haemorrhoidal bleedinghaemorrhages. Preparations from raw materials of this plant also have analgesic, diuretic effect.

spotted lady's thumb herb - Polygoni persicariae herba
spotted lady's thumb – Polygonum persicaria L.
Family *Polygonaceae*

It is an annual herb up to 1 metre tall, with an erect, rather floppy stem with swollen joints. The leaves are alternate and almost stalkless. The leaf blades often have a brown or black spot in the centre and are narrowly ovate and have entire margins. Each leaf base has stipules which are fused into a stem-enclosing sheath that is loose and fringed with long hairs at the upper end. The inflorescence is a dense spike. The perianth of each tiny pink flower consists of four or five lobes, fused near the base. There are six stamens, two fused carpels and two styles. The fruit is a shiny black, three-edged achene.

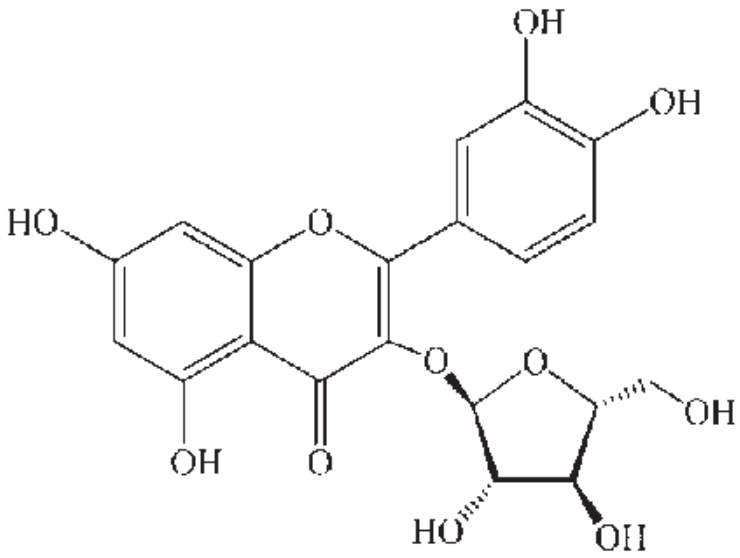

Andrey Zharkikh

It is widespread across Eurasia from Iceland south to Portugal and east to Japan.

Has a disjunct Eurasian areal. Its main area is in European part of the Russia and the Caucasus. In Central Siberia and in the Far East rarely in isolated areas.

Grows on damplowland meadows, along the banks of water bodies, swampy places, along damp forest roads, sometimes in settlements, sometimes in crops, more often on homestead plots. Widespread weed.

Chemical composition. The leading group of biologically active substances are flavonoids (up to3%), represented by glycosides of quercetin glycosides: hyperoside, quercitrin, avicularin and isoquercitrin. Tannins (1.5 per cent), vitamin K (the raw material has a rather high content), ascorbic acid (1.5 per cent), pectinous substances (about 5%).



Avicularin

The herb is harvested in the flowering phase by cutting off the blooming cladtops up to 40 cm long without rough lower parts.
Collected herb should be cleaned of soil, impurities, yellowed, affected by pests and diseases parts of the plant.
Drying in attics under iron roofs or under sheds, spread a thin layer on paper or cloth and turning frequently.
Preferably drying should be carried out in dryers with artificial heating at a temperature not exceeding 40-50C.

Infusion of the herb is used as a styptic agent foruterine and haemorrhoidal bleeding and as a mildlaxative for atonic constipation.

Violet herb - Violae herba
Viola tricolor L.
Viola arvensis Murr.
Famely *Violaceae*

Viola tricolor is a small plant of creeping and ramping habit, reaching at most 15 cm in height, with flowers about 1.5 centimetres in diameter. It grows in short grassland on farms and wasteland, chiefly on acid or neutral soils. It is usually found in partial shade. Its root is of the rhizome type with fine rootlets. The stem (acoli stem: which remains flush with the soil and from which leave the leaves and the flowering stalk) is hairless, sometimes downy and is branched. The plant has no leaf rosette at the base, unlike some other violets, such as Viola hirta. Leaves are, on the contrary, alternate. They are stalked at limbus oval, oblong or lanceolate and more or less serrated margins. The stipules are often quite developed, at least those of the upper leaves. These stipules are palm-lined or palmatised.

The flowers are solitary and lateral, hoisted on long peduncles. They appear on aerial stems with more or less long internodes. The sepals are never larger than the corolla. It is 10 to 25 mm long. This corolla can be purple, blue, yellow or white. It can most often be two-tone, yellow and purple. The tricolor shape, yellow, white and purple, is the most sought after.

It is an herbaceous annual plant with serrated leaves, and usually flowers with white all over, except the bottom petal (Although there are actually flowers with a tinge of purple at the top) and dehiscent capsules. It reproduces by seed. It grows 20 centimeters tall.

Chemical composition.
The above-ground part contains flavonoids among the of which rutin dominates. Besides it, violanthin, orientin,vitexin, etc. There are saponins, mucilages, affecting the expectorant effect, anthocyanins, salicylic acid methyl ester, carotenoids, ascorbic acid.

The raw material is an expectorant with diuretic properties.
Violet herb is an object of mandatory pharmacy assortment.
Whole and crushed raw materials are available.
Infusion of the herb is used as an expectorant for bronchitis. It is included in chest and diuretic collections.