Arctium lappa L., *Arctium tomentosum* Mill. - ASTERACEAE

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***Arctium lappa* L.**
Synonyms: *Arctium chaorum* Klokov; *Arctium lappa* subsp. *majus* Arènes; *Arctium leiospermum* Juz. & Ye. V. Serg.; *Arctium majus* (Gaertn.) Benth.; *Lappa major* Gaertn.; *Lappa vulgaris* Hill.

***Arctium tomentosum* Mill.**
Synonyms: *Arctium lappa* var. *tomentosum* (Mill.) A.Gray; *Arctium leptophyllum* Klokov; *Arctium minus* f. *tomentosum* (Mill.) Moldenke; *Lappa tomentosa* (Mill.) Lam.

Local Names

Arctium lappa: **Russian**: Лопух (lopuch) (Grossheim 1952; Ketskhoveli et al. 1971–2011; Makashvili 1991; Sokolov 1993). Лопух большой (Lopukh Bolshoiy); **Uzbek**: Karikyz; **Kazakh**: Жавяпраг (Javyzprag) (Sakhobiddinov 1948); **Tadjik:** Мушхор (Mushkhor) (Dadabaeva 1996); **English**: Burdock

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***Arctium tomentosum*: Russian**: Лопух паутинистый (Lopukh pautinistiy); **Uzbek**: Karikyz; **Kazakh**: Жавяпраг (Javyzprag) (Sakhobiddinov 1948); **Tadjik:** Мушхор (Mushkhor) (Dadabaeva 1996); **English**: Woolly burdock

Botany and Ecology

Arctium lappa: Biennial. Plants 60–150 cm tall, reaching up to 3 m. Root branched, fleshy, thick, fusiform, up to 60 cm long. Stem erect, strong, longitudinally sulcate, often reddish; branches numerous, erect, spreading, covered with papilliform hairs mixed with glandular hairs, but mostly arachnoid-hairy. Leaves petiolate, broadly cordate-ovate, sparsely crenate toothed or entire, green and sparsely pubescent above, finely gray tomentose beneath with scattered yellowish glandular hairs; basal leaves up to 50 cm long, on ridged, tumid, more than 30 cm long petioles; cauline leaves abruptly reduced, uppermost somewhat cordate at base. Capitula borne sparsely in corymbose-racemose inflorescence, sometimes on peduncles up to 10 cm or longer, and almost at same height at tips of branches, globose, large, 13–20 mm wide excluding cusp, with cusps 20–35 mm long. Involucral bracts glabrous or weakly arachnoid-hairy; lower bracts lanceolate, carinate, 1–1.5 mm wide, weakly ciliate-toothed along margin, narrowed into linear-lanceolate, erect spiny tip; middle bracts appressed-pubescent; inner lanceolate, green, sometimes purple, pubescent, gradually narrowed into weak apical hook as long as or longer than floret. Corolla purple-red, abruptly narrowed into 5–6 mm long tube, limb 4–5 mm with 1.5–2 mm long lobes; apical appendage of anthers 0.2 mm long, narrow and pointed, basal appendages 0.75 mm long, simple or bifid. Achenes 6–6.5 mm long, 2.5–2.75 mm wide, narrow-obovate, with narrow areole, pappus attachment surrounded by four to six tubercles; achenes longitudinally ribbed, transversely rugose near upper and, to lesser extent, at lower end, grayish to brown, with zig-zag dark brown to almost black pattern; pappus 3–3.5 mm long. Flowering August–September. Ural, Caucasus, garbage dumps, near inhabited areas, along roads and fences, banks of rivers and rivulets, rarely in cultivated fields (Shishkin and Boborov 1962) (Figs. 1, 2, 3, and 4).

Fig. 1 *Arctium lappa* (Asteraceae) Abandoned vacant lots, Tashkent, Uzbekistan. (Photo O.K. Khojimatov)

Fig. 2 *Arctium lappa* (Asteraceae) Abandoned vacant lots, Tashkent, Uzbekistan. (Photo Z.S.Bagirova)

Fig. 3 *Arctium lappa* (Asteraceae) Abandoned vacant lots, Tashkent, Uzbekistan. (Photo O.K. Khojimatov)

Fig. 4 *Arctium lappa* (Asteraceae) Abandoned vacant lots, Tashkent, Uzbekistan. (Photo O.K. Khojimatov)

Arctium tomentosum: Biennial. Plants 60–150 cm high. Root fleshy, thick, fusiform, brown. Stems erect, strong, longitudinally sulcate, green or reddish; branches numerous, erect, spreading, less often (in shady places) slightly arcuate, covered, like stems with papilliform hairs mixed with glandular and arachnoid-hairy

pubescence. Leaves petiolate, ovate, with cordate to broadly cordate base, entire or sparsely toothed, obtuse, distinctly mucronate, green and glabrous or slightly appressed-pubescent above, densely grayish or whitish arachnoid-hairy tomentose beneath with sessile golden glandular hairs; upper leaves short-petiolate, ovate or ovate-oblong, petioles of basal leaves solid, tomentose, often reddish to brown. Common inflorescence corymbose. Capitula almost corymbose, numerous, globose, slightly narrowed at apex, excluding cusp 11–18 mm and with cusp 1 8–30 mm wide, 1 3–20 cm long, readily disintegrating on maturity, densely arachnoid-hairy pubescent or occasionally glabrous. Middle involucral bracts densely puberulent on outer side, sometimes mixed with glandular hairs, ciliate-toothed; outermost involucral bracts short, with fine sharply recurved, hooked cusp; outer involucral bracts lanceolate, carinate, broader at base, 1.25–1.5 mm wide, narrowed into linear-lanceolate, horizontally divergent hooked cusp; innermost involucral bracts purple, broadened at base up to 2.75 mm, linearlanceolate, somewhat obtuse or sinuate, with small prominent but not hooked cusp; all involucral bracts often purple. Corolla much longer than inner involucral bracts, reddish-purple, sparsely yellowish glandular hairy, campanulate, broadened upward; tube 4.5–6 mm long, broader at base. Limb 4–4.5 mm with 2–2.5 mm long lobes. Apical appendages of anthers more or less sharply narrowed, 0.2 mm long. Basal appendages 0.6 mm long, simple or bifid. Achenes 5–6 mm long, turbinate, with obtusely truncate upper end and narrow areole of pappus attachment, ribbed, transversely rugose, grayish to brown, brownish or with dark zig-zag spots against lighter background; pappus 2.5–3 mm long. Flowering July–September. Among debris, kitchen gardens, along road, near walls and fences. A widely distributed weed (Boborov and Shishkin 1998) (Figs. 5 and 6).

Fig. 5 *Arctium tomentosum* (Asteraceae) Tashkent Botanical Garden, Tashkent, Uzbekistan. (Photo A. Gaziev)

Fig. 6 *Arctium tomentosum* (Asteraceae) Tashkent Botanical Garden, Tashkent, Uzbekistan. (Photo A. Gaziev)

Local Medicinal Uses

Arctium lappa: Root decoction sometimes used as diuretic (Grossheim 1952; Sokolov 1993). The flowers have antibiotic properties, the leaves are used as anti-inflammatory, especially for arthritis, as well as anti-biotc (Batsatsashvili et al. 2017a, b, c, d, e, f, g, h; Bussmann et al. 2018; Bussmann 2017). Infusion of its roots on the almond or olive oil is known as bulb oil and used externally to strengthen hair. In folk copper zine, the root of a burdock called the bulb root is recommended inside for rheumatism and gout, as diuretic and sweating agent, as well as externally for skin diseases - eczema, eels and furunculoses. The *Arctium tomentosum* is used for inflammation of the mucous membrane of the cavity mouth, throat, upper respiratory tract and gastrointestinal path. Also, bladder is used in urogenital disease organs, with stones in the liver, with trophic ulcers, tapeworms. Leaf juice is used to treat skin cancer. With skin itching, hair loss, a decoction from the roots is used. Fresh leaves of the burp with the leaves of the mother and stepmother are applied to the chest with mastitis. Leaves boiled in milk are applied to wounds, headwinds, furunculus. In skin cancer, a decoction of inflorescences and roots insisted on vodka. Decoction of roots is used in hemorrhoids, skin tuberculosis, joint tumors, in venereal diseases, warts, malaria.

Arctium tomentosum: Included in the Russian pharmacopoeia, included in the homeopathic pharmacopoeia, the application is similar to that of *A. lappa*. A decoction is used for diseases of the genitourinary organs, pulmonary tuberculosis, diabetes mellitus, chronic constipation, hemorrhoids, ascites, gout, asthenia, skin diseases; externally -for rheumatism, arthritis, to strengthen the hair. The ointment used for wound healing. The infusion has diuretic properties. Essential oils exhibit antibacterial activity. Leaves for tumors, rheumatism, erysipelas, headache, wound healing. Leaves, inflorescences possess antiprotozoal properties (Sokolov 1993).

Folk Recipes

For preparation of decoction 20 g fruits are poured with a glass of boiling water, brought to a boil, infused before cooling and is taken in a tablespoon 3–4 times a day. To prepare an ointment from the root of the burp, 1 parts of the decoction is taken root, thickened to half and mixed with 1 part of animal fat.

Local Food Uses

Arctium lappa: Young roots are used for food raw or boiled in salted water and further prepared with butter and vinegar. When boiled with sour milk, sorrel, vinegar, etc. inulin in finely chopped roots transforms into the sugar (laevulose). Thus, the roots can be used to make sweet puree. Dried and finely ground roots are used to make flour; 30% of burdock root flour can be added to wheat or rye flour to bake bread. Roots can be used to make coffee-like drink. Young shoots and leaves are used for food as salad or are put into borsch (Grossheim 1952). The leaves are used in small amounts in Phkhali (herb pie), together with lots of other species. The stems can be pickled (Batsatsashvili et al. 2017a, b, c, d, e, f, g, h; Bussmann et al. 2018; Bussmann 2017).

Arctium tomentosum: Edible as a vegetable, chicory surrogate. Edible in salads and soups (Sokolov 1993).

Local Handicraft and Other Uses

Arctium lappa: Good melliferous plants producing nectar and pollen (Grossheim 1952; Sokolov 1993).

Arctium tomentosum: In Siberia the juice is used for the treatment of wounds in animals. Camel feed (Sokolov 1993).

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