



**OBTAINING AND CLASSIFYING FOOD ADDITIVES BASED ON
PLANTS GROWING IN THE TERRITORY OF UZBEKISTAN (FOR
EXAMPLE, BERGENIA, FIELD ONONIS)**

Fergana State University

Commodity chemistry

Foundation Doctoral student

Tolipova Shakhlo Isomiddin kizi

Scientific supervisor: associate professor of chemical sciences, (PhD)

Mamatkulova Surayyo Abdusamatovna

Annotation: This article deals with the important facts about obtaining and classifying food additives based on plants growing in the territory of Uzbekistan (for example, bergenia, field ononis). On the other hand, information about special features of bergenia and its types were noted.

Key words: *endemic, domestic species, ornamental plants, medicinal herbs, wider spectrum, natureal state, Bergenia ciliata, Bergenia emeiensis, export-oriented.*

It is well-known the Flora of Central Asia is extremely rich, with about 9800 species of vascular plants. Uzbekistan, with over 4500 species, has a central position in the region, and is regarded as one of the main centers of medicinal plants diversity, in particular because of its high percentage of local endemism. About 600 species of medicinal plants have been documented in Uzbekistan for the treatment of numerous diseases, many of them endemic. These plants are still used for the medicinal traits in industrial scale as well as by local tabibs (local practitioner⁰). According to Nicolai Vavilov[1], Central Asia is one of the eight centers of origin and diversity of cultivated plants. Many domestic species originated from this region, including apples, dwarf wheat, lentils, and garlic. Many wild relatives of onion, apple, spinach, and almond, to name a few, still



grow there along with other wild relative species of crops. The region was and is still botanically extremely rich and has a lot of promising economic and ornamental plants that have not yet been explored or introduced into international horticulture. Central Asia includes five countries of the former Soviet Union: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

Since Uzbekistan's independence, the use of medicinal herbs in the treatment of various diseases has been significantly developed. This was facilitated by measures taken by the State in terms of popularizing the centuries-old experience of folk medicine, through the creation of the Academy of Folk Medicine of Uzbekistan, the Ibn Sina International Foundation (Avicenna), as well as the way out of the shadow of folk healers (tabibs), which in previous times was not welcome treatment by folk means. All this led to the further popularization of the traditional medicine and the local population began to use herbs more confidently. Often, herbal preparations have a wider spectrum of action compared to synthetic preparations, and, in view of their naturalness, are often more tolerable to the human body, due to less toxicity. Nowadays pharmacy chains and markets are selling medicinal plants in natureal state, as well as, extracts and tinctures, especially of popular species like *Ziziphora pedicellata*, *Origanum tyttanthum*, *Matricaria chamomilla*, *Achillea millefolium*, among others[2].

Bergenia /bər'geniə/ (elephant-eared saxifrage, elephant's ears) is a genus of ten species of flowering plants in the family Saxifragaceae, native to central Asia, from Afghanistan to China and the Himalayan region. They are clump-forming, rhizomatous, evergreen perennials with a spirally arranged rosette of leaves 6–35 cm long and 4–15 cm broad, and pink flowers produced in a cyme[2]. The leaves are large, leathery, ovate or cordate, and often have wavy or saw-toothed edges. For most of the year, the leaves have a glossy green colour, but in cooler climates, they turn red or bronze in the fall. The flowers grow on a stem



similar in colour to a rhubarb stalk and most varieties have cone-shaped flowers in varying shades of pink. These can range from almost white to ruby red and purple. The common names for *Bergenia* are pigsqueak (due to the sound produced when two leaves are rubbed together), elephant's ears (due to the shape of the leaves) and large rockfoil. *Bergenia* is closely related to *Mukdenia*, *Oresitrophe*, *Astilboides* and *Rodgersia*. The creator of the taxonomic genus name, Conrad Moench, honoured the German botanist and physician Karl August von Bergen by coining the name *Bergenia* in 1794. 10 species are accepted.

- *Bergenia ciliata* (Haw.) Sternb. – western Himalayas to southwestern Nepal. Has cultivar *Bergenia ciliata* 'Superba'.
- *Bergenia crassifolia* (L.) Fritsch (syn. *Bergenia cordifolia*) – Kazakhstan and western Siberia to Mongolia, the Russian Far East, and Korea. The most widely grown garden plant, especially the cultivar *Bergenia cordifolia* 'Purpurea.' The species epithet *crassifolia* means thick-leaved, and *cordifolia* means cordate (heart-shaped) leaf (although the leaves may also be described as spoon-shaped). It grows to about 30 cm tall. The leaves are winter hardy and change color in the range of rust brown to brown-red. Other cultivars are *Bergenia cordifolia* 'Winterglut', *Bergenia cordifolia* 'Senior', and *Bergenia crassifolia* 'Autumn Red'.
- *Bergenia emeiensis* C.Y.Wu ex J.T.Pan – central Sichuan province of south-central China. *Bergenia hissarica* Boriss. – west Hisiar in Uzbekistan.
- *Bergenia pacumbis* (Buch.-Ham. ex D.Don) C.Y.Wu & J.T.Pan (synonym *Bergenia ligulata* Engl.) – eastern Afghanistan to the Himalayas, Myanmar, and south-central China (western Yunnan).
- *Bergenia purpurascens* (Hook.f. & Thomson) Engl. – central Himalayas to Myanmar and south-central China (southwestern Sichuan and northern Yunnan). 30 – 40 cm tall with carmine-red flowers. Leaves are oval-shaped.



Bergenia purpurascens var. *delavayi* is ca. 50 cm tall with small leaves and rosy red flowers.

- *Bergenia scopulosa* T.P.Wang – southern Shaanxi Province of central China.
- *Bergenia stracheyi* (Hook.f. & Thomson) Engl. – eastern Afghanistan to Tajikistan, southwestern Tibet, and Nepal. Has cultivars *Bergenia stracheyi* 'Alba' and *Bergenia stracheyi* 'Afghanica'.
- *Bergenia tianquanensis* J.T.Pan – central Sichuan Province in China.
- *Bergenia ugamica* V.N.Pavlov – eastern Uzbekistan.

Bergenia are hardy plants that can grow in climates with extreme temperature ranges from about -35°F (-37°C) to 115°F (46°C). They prefer sun but will grow in shady areas as well. Plants can grow to about 24 in (61 cm) tall and 24 in (61 cm) wide. They do well in most soils, but moist, humus-rich soil is preferable. Exposure and dry soils tend to stunt growth, but can enhance the winter leaf colours. In areas with cold, strong winter winds, protection from the wind may be required[3]. They are propagated by division or rooted rhizome sections. *Bergenia* 'Bressingham White'- *Bergenia crassifolia*, *Bergenia cordifolia*, and various hybrids are often grown in gardens, with several cultivars selected.

For the most used plants in folk medicine and export-oriented species (*Ungernia victoris*, *Ferula foetida*, *Helichrysum maracandicum*, *Capparis spinosa*, *Ephedra equisetina*, *Glycyrrhiza glabra*), we assessed the current state of natural populations in the regions of the Republic of Uzbekistan. Like in many regions worldwide, the population of Uzbekistan is facing the spread of cardiovascular and gastrointestinal diseases. For treatment of these diseases, people are frequently using the aerial parts of the *Hypericum scabrum*, *Leonurus turkestanicus* and *Adonis turkestanica*.

To sum up it should be noted that Uzbekistan is known throughout the world for its rich history of herbal plants and their use in traditional medicine. Uzbekistan significantly surpasses other regions of the world in terms of the



endemism and species richness found in this country. These plants are a source for biologically active compounds that are used in pharmacological tests, with a high probability of new drug discovery. Pharmacological studies have confirmed that plant extracts and individual compounds have various biological activities such as hepatoprotective, dermatological, antimicrobial, antiviral, anti-ulcer, antioxidant, neuroprotective, and antiinflammatory properties. In the present review, an attempt was made to provide an up-to-date report on the diversity of medicinal plants widely used in Uzbekistan and their pharmacological properties.

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