



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 4, April 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com



To Study the Chemical Composition of the Inula Helenium Plant

Rasulova Ma'muraxon Obidjonqizi, Ismoilov Mo'minjon Yusupovich

Assistant, Department of Chemistry, Fergana State University, Uzbekistan

Associate Professor, Department of Chemistry, Fergana State University, Candidate of Technical Sciences, Uzbekistan

ANNOTATION: The article focuses on the plant Inulahelenium and its chemical composition. Stages of growth and useful properties of this plant. The stages of growing inulahelenium and preparation of medicinal plants from it are given.

KEYWORDS: Inulahelenium, medicinal, chemical, plant, geochemical, vitamins.

I.RELEVANCE OF THE TOPIC

The Southern Urals are famous for their unique combination of different geological, natural phytocenotic conditions and anthropogenically disturbed areas. The diversity of environmental conditions is due to the presence of man-made geochemical anomalies associated with copper-zinc and iron ore deposits in the region, which contribute to the high level of development of ferrous and nonferrous metallurgy. Natural and man-made factors, when stacked on top of each other, form regions with excess copper, zinc, iron, manganese, nickel, and lead. However, the Southern Urals region is famous for its abundance of medicinal herbs. In the composition of medicinal herbs, the heavy metals (HM) listed above are given priority control. Botanical description of Elecampane: A perennial plant of the family Asteraceae (Compositae), 1-2 m tall, has a thick fleshy rhizome and many long roots. Stems erect, angular, branched at the top. The leaves are twisted, alternate, not toothed, dark green at the top, hard-smooth, below - gray-green, soft-tomentose, elongated-elliptical in shape, narrowed in the form of a stalk, stem - oblong-ovate, lower - petiolate, upper cushion, half-stalk ... The flowers are golden yellow, collected in many large baskets, located on the cones of branches and lesions. Fruit - tetrahedral, oblong, brown achene. It flowers in July-August and bears fruit in August. Elecampane Distribution and Habitats Elecampane is high and tall and occurs throughout Ukraine. It grows on the shores of lakes and ponds, in river valleys, streams, wet meadows, on the edges of forests, among bushes. Rare in the southern part of Ukraine, except in the north of Odessa and Donetsk regions, where it is possible to collect up to 0.5–1 tons of dry rhizomes with roots. It is mountainous in the Crimea and is rare in mountainous areas, harvesting is not advisable. Due to the drying of wetlands, the development of inconvenient lands, raw material reserves are depleted every year. Elecampane can and should be included in high culture. The medicinal raw material of elecampane is the roots and rhizomes collected in autumn (after the aerial part is destroyed) or early spring (before regrowth). Excavated roots are cleaned from the ground, washed with water and cut into pieces with a length of 10–20 cm and a width of 2–3 cm. In 2–3 days the raw material is dried in the open air, then it is dried in a well-ventilated room and preferably in dryers at a temperature not exceeding 40 °. The finished raw material consists of longitudinally cut rhizomes and roots from 2 to 20 cm in length and 0.5–3 cm in thickness. The smell of elecampane is strong, fragrant, the taste is bitter. In fractures, the roots and rhizomes are weakly granular, brown shiny spots (vessels filled with essential oil). Outside, the roots and rhizomes are gray-brown, in broken places they are yellowish-gray. Crushed raw material - pieces of rhizomes and roots of various shapes, passing through a sieve with holes with a diameter of 7 mm. The moisture content of the dried raw material should not exceed 13%; total ash - not more than 10%; elecampane stems and other parts, loose roots and rhizomes bases - not more than 5%; rhizomes and roots darkened at break - no more than 5%; root fragments less than 2 cm in length - not more than 5%; organic impurities - not more than 0.5%; mineral mixture - not more than 1%. The biological stock of raw elecampane in Ukraine is of little importance. This plant is updated very slowly. It is necessary to follow the rules of collection of medicinal rhizomes and roots. It is absolutely unacceptable to dig them up before the seeds ripen and disintegrate. In addition, nutrients accumulate in the roots only until autumn. For reproduction should go to the native plants (2–3 well-developed plants) for reproduction - to the natural plantations every 10 m² during the harvest. Chemical composition of elecampane: Elecampane contains organic acids, bitters, saponins, vitamin E, gums,

resins, mucus, traces of alkaloids, up to 30% essential oil and up to 44% polysaccharides in the rhizomes and roots are high: inulin, pseudoinulin and inulitsin. The crystalline part of the oil, called gelenin, is a mixture of sexviterpene lactones. In addition, the essential oil contains alantol, proazulene.

Pharmacological properties of elecampane: Elecampane drugs reduce the secretion of bronchial glands, improve expectoration of sputum, have anti-inflammatory and bactericidal effect, reduce intestinal peristalsis and secretory activity, promote bile formation and its secretion in the duodenum. stimulates separation, normalizes the overall metabolism. They increase urination and sweating, have antimicrobial and anthelmintic properties. The second is due to the presence in it of alantolactones, which in biological action are close to santonin. High use of elecampane in medicine, Dosage forms of elecampane are used in internal and acute chronic bronchitis, especially with excessive sputum production, chronic enterocolitis, colitis, functional diarrhea; on the outside - with acute and chronic pharyngitis, gingivitis, periodontal disease, difficult to heal wounds. Elecampane is used mainly as a tincture, to a lesser extent - as an infusion. The crushed raw material (20 g) is poured into 200 ml of water, heated in a boiling water bath for 30 minutes, cooled for 10 minutes, filtered and the boiled water is added to the original volume. Take one tablespoon 3 times a day. It is also used for gargling (in acute and chronic pharyngitis). Two tablespoons of crushed raw material is poured into two cups of water, boiled, evaporated to 1/3 of its original volume and filtered. Used for rinsing the mouth with gums, stomatitis, steam.

Rhizomes and roots contain inulin (up to 44%) and other polysaccharides, bitter substances, essential oil (up to 4.5%), saponins, resins, gum, mucus, small amounts of alkaloids and helenium. Essential oil contains alantolactone (proazulene, helenin), resins, slime, dihydroalantolactone, Fridelin, stigmastern, phytomelan, pectins, wax, gum, vitamin E. Essential oil (up to 3%), ascorbic acid, vitamin E. grass; flavonoids, vitamins (ascorbic acid, tocopherol), bitter substances, tannins (9.3%), lactones, fumaric, acetic, propionic acids were found in the leaves; the seeds contain more than 20% fatty oil. The rhizomes and roots of *I. helenium* L. contain up to 4.3% essential oil, which in Germany is called alanth after the plant. At room temperature the essential oil is a crystalline mass - helenine; At a temperature of 30–45 ° C - brown liquid. Fat is poorly soluble in organic solvents, water. The crystalline part of the oil consists of a mixture of sesquiterpenelactones:).

It also contains 27.6% α -pinene, 1.1% mirsen, 2.2% α -terpine, 2.0% limonene, 1.5% linalool, 12.1% camphor, 2.4% α -terpineol, alantol ($C_{15}H_{23}O_2$), inulin ($C_6H_{10}O_5$) n (quantitative and qualitative) content - 19.80-43.58%) (Oleinikov et al., 2008), pseudoinulin, inulinin, proazulene, organic acids (acetic, benzoic, polyene, cinnamon, myristic, palmitic, amber, tartaric), resins, tannins, P-sitosterol, stigmastern, polar and triterpenesaponins, bitterness, acetylene compounds, coumarins (xanthotoxin, isopimpenillin, isoberxapten), mucus, quinine, quercinacetin alkaloids, glucose, rhamnoz, mannitol, mannitol, galactose, ketosugar, aglycones of the tetra- and pentacyclitriterpene series (Matasova et al., 1999), chymic acid 8.35% (Bharati, 2009) ... Korzhom AP et al (2011) found that the total amount of acidic polysaccharides in the polysaccharide complex was 55.6% from the rhizomes that were the roots. Found in the root: ash - 6.23%; macronutrients (mg / g): K - 14.50; Ca - 7.40; Mg - 1.90; Fe - 0.50; trace elements (mkg / g): Mn - 0.11; Co - 0.11; Cr - 0.04; Al 0.40; C - 0.38; Bb - 0.27; V - 0.15; Se - 10; Ni - 0.14; Pb - 0.05; I 0.13; B - 14.40. Mo, Ba. (Acetate containing $S_{19}N_{26}O_5$), vitamins C and E, carotene, tannins (9.32%), lactones (1.19%), fumaric, acetic, propionic, ascorbic acids. The seeds contain 22.3% fat.

Tall Elecampane is a perennial herbaceous, polycarpic rhizome plant, up to 160 cm in height in nature, and 200 cm and higher in culture. There are 10 or more thick, fleshy, multi-directional emerging roots from a vertical, multi-headed, thick, fleshy rhizome up to 20 cm long. Stems erect, curly, short, hairy with dense white feathers, short branched at the top. In the first year of vegetation, the plant forms a strong rosette of large, elongated ovary or elliptical petiolate leaves, up to 35–40 cm in length and 10–15 cm in width. Poorly developed annual rosette plants remain rosettes in the second year. The rosette leaves die before winter, and in the spring of the following year the basal, petiolate, elliptical, or long-ovate leaves grow again, their leaves reaching 50 cm in length and 20 cm in width. In some well-developed annual plants, the stems grow in 2 years, in most cases in 3 years. The leaves are alternate, oblong-ovate, 10-30 cm long. The lower leaves of the stem are larger, short petiolate; the upper part is much smaller, seated, covering the base with a cordate base. Flowers are collected in flower beds - the basket is located at the top of the main stem and on the lateral branches. The heads of the main stem reach 6-8 cm in diameter, the lateral branches are smaller. At the top of the main stem and lateral branches, the baskets form loose racemes or shields. In the axils of the upper leaves are formed another 1–2 small baskets. Basket foils consist of many tile leaves; inner part dull, widened upwards, outer part short, ovoid, gray tomentose. Golden-yellow wreath and white-haired tuft-shaped calyx flowers. Marginal flowers ligature, 3.2-3.7 cm long; 6-7 mm long corolla tube, one-third shorter than the apex; 2.6-3.0 cm long, 1.0-1.5 cm long



toothed ligaments. The middle flowers are tubular with five teeth, 1.2 cm long, slightly longer than or equal to the tops. Stamens 5: anthers attached to a tube. A pistil with a long, slender column and two stigmas. The fruit is a tetrahedral achene, 4-5 mm long, twice the size of the handle. The mass of 1000 seeds is 1.0-1.5 g. It blooms in July - September, the fruits do not ripen at the same time - in August - October. In scientific medicine, rhizomes with elecampane roots are used. The tall Elecampane is a separable species that occupies the part of Europe from Karelia to the Urals in Russia, covering forests, forest-steppe and steppe zones, as well as the mountainous regions of the North Caucasus and Asia. Lesser southern regions of Western Siberia. The spread of elecampane in the western part of Russia continues in the territory of neighboring and other European countries. In Asia, elecampane is found in Kazakhstan, Central Asia, Turkey, Iran, Afghanistan and western China. In the wild, it is found in pine forests, deciduous forests, forest edges, shade and mountain meadows. Often in wet areas where groundwater flows, on the shores of lakes, rivers, mountain streams. In the chernozem belt, elecampane elevations are often found in river floods, mainly in lime-rich soils. In the north of the C zone boundary, wild elecampane is rare. Sometimes tall elecampane is grown in gardens.

II. CONCLUSION

From the article it can be concluded that in folk medicine elecampane is used as a wound treatment, expectorant, hemostatic, mellitus, hemorrhoids; in the form of an ointment on the outside - for eczema, itchy dermatoses, purulent wounds, furunculosis. In medicine - with colds, lung diseases; In European countries - infusion of the aerial part and tincture of the roots - used in cancer, whooping cough, pulmonary tuberculosis, diseases of the gastrointestinal tract, gynecological diseases, esophageal diseases. They have many useful features.

REFERENCES

- 1.S. Mustafaev, O \ Ahmedov. Botany. - T: "Uzbekistan".
- 2.A.S. TVxtaev, G. S. Tursunbaeva. Fundamentals of Botany. - T : 2001.
3. www.Ziyonet.uz
4. www.yandex.ru



INNO SPACE
SJIF Scientific Journal Impact Factor

**Impact Factor:
7.512**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details