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COMMON PEONY – AS A PROMISING SOURCE OF RAW MATERIALS FOR THE CREATION OF MEDICINES

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Summary. *At present, herbal medicines occupy a significant part of both the national market and the leading markets of the world. According to experts, about 25% of medicines used in medical practice around the world are obtained directly from medicinal plant material. One of the most promising medicinal plants that can serve as a raw material for the production of new drugs is the common peony (Paeonia officinalis L.).*
The article presents the results of the analysis of literary and electronic sources of information on the distribution, chemical composition, pharmacological properties of medicinal peony, as well as the use of medicinal raw materials in medicine.

Introduction. Herbal medicines make up a significant part of the modern arsenal of pharmacotherapeutic agents, and their popularity is steadily increasing worldwide. In the pharmaceutical markets of developed countries, the share of

herbal medicines is 50% in Germany and France, and up to 25% in the United States. Herbal medicines are also widely used in Ukraine, but a large number of herbal medicines are imported from other countries, and the Ukrainian industry for their manufacture is still under development.

The search for plants with a sufficient raw material base that can complement the nomenclature of official species, rational and integrated use of raw materials, and the creation of new domestic medicines based on them are among the main tasks of modern pharmacy.

Cultivated plants, in particular ornamental species that have long been used in folk medicine, are promising in this regard. Among them, the common peony (Paeonia officinalis L.), which is used to treat many diseases, attracts attention.

The aim of the study was to summarize the literature and electronic sources of information on the distribution, chemical composition, pharmacological properties and use of common peony in medicine.

Materials and methods. The objects of the study were literary and electronic sources of information on the range, chemical composition, pharmacological properties of the common peony and its use in both folk and official medicine. Methods of generalization, logistics and statistics were used.

Results and discussion. Common peony (Paeonia officinalis L.) belongs to the family Peoniaceae, which includes only one genus of peony (Paeonia) and unites about 40 species. According to one theory, the name of the genus comes from the name of the physician Peon, a disciple of the god Asclepius, who became famous during the Trojan War, and according to another - from the Greek word "paionis" - healing [16, 18].

Some peony species are deciduous shrubs, but most are rhizome herbs. Bushy peonies are common in East Asia (China, Japan). These are deciduous shrubs up to 2 m high with a lignified, sparsely branched stem.

Herbaceous peonies grow in the Mediterranean, Europe, temperate and subtropical regions of Asia, western North America, the Caucasus, and the Crimea [16, 9, 21, 18].

Peony (Paeonia L.) is a genus of perennial herbaceous plants or deciduous shrubs.

According to the system of L.M. Kemularia-Natadze, this genus includes 32 species, according to other sources from 33 to 45 species of peonies [16, 10, 21].

The peony genus is divided into five sections, namely:

1. Section Moutan DC.
2. Section Flavonia Kem.-Nath.
3. Section Onaepia Lindley
4. Section Paeonia DC.
5. Section Sternia Kem.-Nath.

Common peony (Paeonia officinalis L.) is a perennial herb with several stems up to 1 m high. The rhizome is large with thickened, cone-shaped roots.

Buds with few, tile-like scales. Leaves are unpaired or ternate, with wide or narrow segments, dark green, rarely bluish, yellow, brown, reddish or dark purple in autumn.

Flowers up to 15-20 cm in diameter, solitary, with calyx and corolla. The calyx remains, more or less leathery, consists of 5 dark green or reddish sepals. Petals are 5, rarely more, large, much larger than sepals, broad, white, pink, red, yellow, sometimes with dark spots at the base. Stamens are numerous, columns - 1-8, which are located on a fleshy disk.

The fruit is a complex, star-shaped, multi-leafed plant. Each leaflet opens along a suture and has several seeds attached to the edge of the abdominal suture. Seeds are large, round or oval, black or black-brown, shiny [12, 1, 8, 13, 11].

His homeland is Southern Europe. It grows in France, Switzerland, and Italy.

An ornamental plant. Propagated by seeds and vegetatively. Common peony is widespread in Siberia, found in the European part of the CIS, where it reaches the southeast of the Kola Peninsula and the northern part of the Kanin Peninsula. Its range extends to Kazakhstan and Central Asia; it climbs to the mountains of the Dzungar-Tarbagatai system, the Tien Shan and some places in the Pamir-Altai. It grows in sparse coniferous and deciduous forests, in tall grass meadows, in glades and forest clearings, in birch forests. The plant does not tolerate excessive moisture, is winter-hardy, and can grow in the shade [1, 13].

Common peony has several garden forms.

White variable common peony (Paeonia officinalis L. f. alba mutabilis) up to 60 cm tall. The flowers are white and pink.

White double common peony (Paeonia officinalis L. f. alba plena) up to 60 cm tall. The flowers are white with a pinkish tinge.

The red double common peony (Paeonia officinalis L. f. rubra plena) is up to 70 cm tall. The flowers are cherry-red.

Pink double common peony (Paeonia officinalis L. f. rosea plena) up to 70 cm tall. The flowers are pink [13].

Rhizomes with roots of common peony contain C14-33n-alkanes, butyrospermol, cycloarthenol, lupeol, 24-methylene cycloarthenol, cholesterol, campesterol, sitosterol, octanoic, decanoic, lauric, myristic, myristoleic, palmitic, palmitoleic, stearic, oleic and linolenic acids. It also contains aspartic, benzoic, salicylic acids, flavonoids, polysaccharides, peoniflorin, peonine, peonol, protoanemonin, tannic acid, triterpenoids, essential oil, alkaloids [1, 5].

The presence of monoterpenoids, namely β-citronellol (22.24%) and eucalyptol (6.22%), was found in the essential oil from the flowers of peony officinalis, while β-caryophyllene (13.36%), dihydro-trans-farnesol (11.31%), and trans-farnesol (7.41%) dominated among the sesquiterpenoids [3].

The history of the use of plants of the genus peony dates back 2000 years in China and 500 years in Europe [9]. The treatise of Pliny the Elder mentioned the common peony as a plant with healing properties [16].

The rhizomes and roots of the common peony are used in Chinese medicine as a painkiller, anticonvulsant, and anti-inflammatory agent [1, 23]. They are also used to treat retinal hemorrhages, infectious hepatitis, cancer, diabetes, gynecological and gastric diseases, nephritis, and hypertension [1, 20].

A decoction of the rhizomes is used for menstrual disorders, spastic colitis, gastric ulcers, gastritis with reduced secretion, to improve appetite, as a lactic, sedative, expectorant, diuretic [1, 7, 17, 4].

In Tibetan medicine, a decoction of rhizomes is used to treat patients with tuberculosis, colds, bronchitis, and pneumonia.

A decoction of rhizomes is widely used in homeopathy and Ayurveda as an antispasmodic, anti-inflammatory, tonic, tonic, tonic, diaphoretic, hemostatic, diuretic and disinfectant for liver diseases, lung diseases, peptic ulcer and gastric tumor, dysentery, dysmenorrhea, polyarthritis, gout, hypertension, encephalitis [22, 25, 14, 15, 19, 24].

The roots of the common peony have abortifacient activity [4].

The tincture of rhizomes exhibits sedative properties, but less pronounced than the unusual peony [1].

Alcohol extract of rhizomes is used to treat posthemorrhagic anemia.

The root powder is a part of a wound healing ointment recommended for bone fractures.

The Ukrainian pharmaceutical market only has a drug made from the herb and rhizomes with roots of the unusual Ukrainian peony, called peony tincture, and a variety of dietary supplements, both domestic and foreign, containing the unusual peony and the common peony.

Peony tincture - is used for functional disorders of the central nervous system (neurocirculatory dystonia of the hypertensive type, neurotic conditions). In addition, peony tincture has antispasmodic and anticonvulsant properties, and has the ability to increase stomach acidity.

The raw materials of common peony are included in such dietary supplements as Bupleurum Plus, BP-C, B.P.C. manufactured by NSP (Natures Sunshine Products), USA [2].

Bupleurum Plus capsules. This dietary supplement contains ginseng roots, ginger, licorice, angelica, Chinese licorice rhizome, peony roots, pinelia, Chinese cinnamon, tinder fungus, hellebore, bitter orange, and atractylodes.

The dietary supplement "Buplerum Plus" has anti-inflammatory, anti-allergic, analgesic effects, improves liver function and digestion. It neutralizes inflammation in case of allergic reactions, prevents histamine synthesis.

This dietary supplement stimulates protein synthesis, increases glycogen content in the liver, and promotes calcium metabolism [2].

Dietary supplement BP-C "B.P.C.". The composition of this product includes angelica, reishi, dereza, peony, licorice, dogwood, turmeric, sage, peppercorn, alisma, astragalus, atractylodes, cancer cervix, privet, furrowhead, rehmannia, papyrus, ginseng. This dietary supplement supports the functioning of the cardiovascular system, regulates blood pressure, normalizes the nervous system, and stimulates the immune system [2].

"Neurosan. Manufactured by Danica Biola, Ukraine. The composition of this dietary supplement includes peony, cyanosis, lemon balm, hops, glycine. The product is used for neuroses, insomnia, feelings of fear, emotional and intellectual stress, hypertension, and menopausal syndrome [6].

Herbal tea "Evening". Produced by Novoe Vremya, Ukraine. Ingredients: oregano herb, calendula flowers, nettle leaves, linden flowers, lemon balm herb, unusual peony roots, motherwort herb, black currant leaves, chicory roots.

Tea reduces irritability, fatigue, normalizes sleep, improves cerebral circulation, normalizes blood pressure, reduces inflammation, normalizes blood sugar and cholesterol levels, improves the endocrine system, and boosts immunity [6].

Conclusion. The experience of the widespread use of common peony in folk medicine for the treatment of various diseases confirms the relevance and expediency of its in-depth study. Taking into account the fact that this type of peony is widely used as an ornamental plant, the available raw materials and a wide range of pharmacological effects, the common peony can be considered a valuable and promising plant material for the creation of new effective domestic herbal remedies.

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