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SPECII NOI DIN GENUL *ARTEMISIA* L. INTRODUSE ȘI CERCETATE ÎN GRĂDINA BOTANICĂ

NEW SPECIES OF THE GENUS *ARTEMISIA* L. RESEARCHED IN THE BOTANICAL GARDEN

Maricica Colțun, dr., conf.cerc., Grădina Botanică Națională (Institut)
„Alexandru Ciubotaru”

Maricica Colțun, PhD., associated prof., “Alexandru Ciubotaru”
National Botanical Garden (Institute)
ORCID: 0000-0001-8470-3616, mcoltun@mail.ru

Rezumat. *Lucrarea prezintă rezultatele unui studiu, privind aspectele de introducere, particularitățile bioimorfologice și ecologice de dezvoltare, cantitatea și calitatea uleiului volatil la unele specii mai puțin cunoscute din genul Artemisia L: Artemisia dracunculul L., Artemisia stelleriana Besser, Artemisia abrotannum L., cercetate în Grădina Botanică Națională ca plante aromatice, medicinale și condimentare. Rezultatele obținute deschid noi perspective de valorificare și utilizare în domeniul aromaterapiei, parfumeriei, fitoterapiei și gastronomiei.*

Cuvinte cheie: *planta aromatică, introducere, ulei volatil, substanțe active, utilizare.*

Abstract. *The article presents the results of a study on the aspects of introduction, biomorphological and ecological peculiarities of development, the quantity and quality of essential oil in some lesser-known species of the genus Artemisia L: Artemisia dracunculul L., Artemisia stelleriana Besser, Artemisia abrotannum L., researched in the National Botanical Garden as aromatic, medicinal and spicy plants. The obtained results open up new possibilities for using them in aromatherapy, perfumery, phytotherapy and gastronomy.*

Keywords: *aromatic plant, introduction, essential oil, active substances, use.*

Introduction

One of the research directions of each botanical garden is the introduction of new species of plants from other geographical regions that are valuable from a scientific and economic point of view. The mobilization and identification of new promising species completes the assortment of cultivated ones, an advantage being the pedoclimatic conditions that are favourable for the development and accumulation of biologically active substances. The genus *Artemisia* L. includes about 400 plant species of particular importance, possessing numerous therapeutic properties due to the presence of essential oils and various chemical compounds. There are 9 species of *Artemisia* in the spontaneous flora of the Republic of Moldova. In the collection of aromatic plants of the Plant Resources Laboratory, the following species are present: *Artemisia absinthium* L., *Artemisia balchanorum* Krasch., *Artemisia lavandulifolia* DC., *Artemisia abrotannum* L., *Artemisia stelleriana* Besser, *Artemisia dracunculul* L.

Materials and Methods

The research was conducted over the period 2019-2022, the experiments being carried out in the collection of aromatic plants of the “Plant Resources” Laboratory. The plants were grown in an open field with southern exposure, under ecologically balanced conditions, on a general agrotechnical background. The phenological observations were carried out on 25 model plants, during the entire

growing season, according to the method described by I.N. Beidemann [5]. The essential oil content, obtained from the aerial parts of the plants, harvested in the flowering stage, was determined by the method of steam distillation [6].

Results and Discussions

Artemisia abrotanum L. (southernwood) is a perennial, aromatic sub-shrub, with erect, branched paniculate stems. The shoots are not branched, grow in a vertical position and connect almost entirely to the crown. The leaves are grey, pubescent. The flowers are grouped in small, grey anthodia, found in racemes in the axil of long, yellow bracts. The fruits are achenes. The species is native to Asia Minor, Middle East. It prefers to grow near water, on floodplain meadows, in birch forests, near human settlements, along roads. Under the studied conditions, the plant reaches a height of 0.5-1 m. The fragrance of the plant achieves its full potential only if the plant grows in a sunny and warm place. It cannot be propagated generatively, but only vegetatively – by rooted cuttings and division. The woody stems are cut in spring to preserve the decorative appearance. It prefers alkaline soils, does not tolerate at all acidic and swampy soils. It tolerates low temperatures well, as well as high ones. It reacts favourably to a climate rich in precipitation. It is a light-loving species. Under the climatic conditions of our country, perennial plants start the growing season at the beginning of April. Plant growth and development is intensive until the budding stage, which occurs at the end of June. The first flowers bloom in early July. The content of essential oil was determined in the full flowering stage, and it varied between 1.1 and 1.3%, in inflorescences: 1.4-1.6%. The basic compounds of the essential oil are: polyphenols, flavonoids, hydroxylamine derivatives, phenolic acids, natural antioxidants, bioactive compounds. The essential oil has a slight analgesic effect on the human body, it is used in the cosmetic industry, in the manufacture of hygiene products and it is an important ingredient in the manufacture of perfumes [3].

Artemisia stelleriana Besser (Beach wormwood) is an herbaceous, perennial plant that has a creeping rhizome in the soil. The branched stems are densely covered with pubescent silver-grey leaves with deeply divided rounded lobes. It grows up to 20-25 cm tall and spreads 45 to 60 cm wide, covering the soil like a beautiful carpet. Although this plant does not have showy flowers, it is prized for its contrasting foliage, which can create an interesting texture and design. The marginal flowers are pastel-coloured; the corolla is hollow, tubular-conical. The fruits are small achenes. Under natural conditions, it occurs in the Far East, Norway, Japan, Alaska. It prefers river banks and sea coasts with sandy gravel. In the Botanical Garden, it has been researched as an aromatic, spicy and medicinal plant since 2020, having been received by International Seed Exchange from Germany. The plants are perennial, start growing in mid-April. At the end of May, the budding stage is recorded, in the middle of June, the flowering stage begins. In July-August, the full flowering stage of the plants occurs. The essential oil content is 0.6-1.0% and is represented by monoterpenoids and sesquiterpenoids, 1,8-cineole, germacrene D, vulgarone B, davanone B, artedouglasia oxides A, C, D. It possesses carminative, hemostatic, sedative, tonic and choloretic properties. The beautiful leaves of a silver shade and interesting texture make this plant a very bright and spectacular decoration of any garden. It is also recommended to be added in the production of alcoholic beverages [4].

Artemisia dracunculus L. (Tarragon, estragon) is a semi-woody, perennial plant, native to Siberia and Mongolia, where it grows spontaneously on riverbanks. Tarragon has thin, branched roots, reaching in the soil a depth of 30-40 cm. The aerial stems are richly branched, foliated, 50-100 cm tall. The leaves are linear-lanceolate, glabrous, alternate and fragrant. The flowers are clustered

in nutant calathidia, which in turn, form racemes at the top of the main stems and branches. The fruits are small achenes without pappus. The plants start growing at the beginning of April, the budding stage is recorded at the beginning of June, the full flowering stage – between July 25 and September 10. The entire aerial part is harvested at most at 10 cm below the last branch. More often the tops of branches are used. The product has strong and pleasant fragrance and a spicy taste. Tarragon loses its fragrance while drying. The biologically active substance is the essential oil, which constitutes 0.6-1.1%. The basic components are: methyl chavicol, rich in estragole, tannins, flavonosides, bitter substances, vitamin B1 and C, carotene, rutin, resins, organic acids and carbohydrates. The polyphenolic compounds contained by this plant help lower blood sugar levels [2]. The phytotherapeutic preparations based on tarragon have anti-inflammatory, disinfectant, antiviral, antibacterial, carminative, stomachic and diuretic actions. The very aromatic leaves, with a slightly bitter taste, similar to anise, are used in gastronomy. It is used in the cosmetic industry, being added to the composition of various skin-care products, particularly face and hair masks. Tarragon has rejuvenating, hydrating, softening, toning and antibacterial action on the skin [1].

Conclusions:

The pedoclimatic conditions of the Republic of Moldova are favourable for the growth and development of new species of plants from the genus *Artemisia* L. Under such conditions, these plants are able to fully complete the ontogenetic cycle. The maximum content of essential oil in all species is found in the full flowering stage. The species *Artemisia abrotanum* L. is richer in essential oil (1.1-1.3 %). The species of the genus *Artemisia* L. introduced under the conditions of our country are of interest as aromatic, medicinal, spicy and ornamental plants.

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