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RESEARCH AND CONSERVATION OF WILD MEDICINAL PLANT RESOURCES IN THE BOTANICAL GARDEN (REPUBLIC OF MOLDOVA)

Sustainable use of medicinal and aromatic plants (MAPs) can be achieved by promoting the cultivation of wild plants in suitable environments. Nowadays, this aspect takes on special importance because it allows to use wild useful plants in a more rational manner and to enrich the cultivated flora with new valuable species. Cultivation of MAPs, especially those with high economic value is also the process of creating new dimensions in the field of agriculture, acquiring various methods of assessing the spontaneous flora for industrial utilization. In this context research programs on MAPs conducted by Botanical gardens are of great importance not only for improvement of their cultivation process, but also for the conservation and restoring their genetic recourses in natural habitats [1].

In order to safeguard gene pool of autochthonous MAPs, in the last decade 114 species

belonging to 43 families and 99 genera were added to the Collection of Medicinal Plants from Botanical Garden (Institute).

Studies for new plant species acclimatization were carried out in the Experimental subdivision of the collection. The genetic resource mobilization of MAPs was achieved by collecting seeds and plant material from the spontaneous flora during the years 2007-2017. Phenologic observations and biometric measurements were performed annually during the entire vegetation period according to widely used methodological guidelines [2, 3]. Nomenclature used is in line with the contemporary floristic works [4-7].

The most frequent genera are: *Salvia* L., *Astragalus* L., *Phlomis* L., *Thymus* L., *Convolvulus* L., *Digitalis* L., *Althaea* L., *Adonis* L., *Plantago* L. In the collection grow a good number of spontaneous MAPs used, both in traditional and modern medicine in the treatment of various diseases of the human body:

- medicinal plants used to treat cardiovascular diseases (*Astragalus dasyanthus* Pall., *Digitalis lanata* Ehrh., *Adonis vernalis* L., *Convallaria majalis* L., *Vinca minor* L., *Leonurus cardiaca* L.); plants with haemorrhagic effect (*Hypericum perforatum* L., *Achillea millefolium* L., *Potentilla recta* L.)

- plants with expectorant, antiasmatic and emollient effects, used to treat respiratory ailments (*Pulmonaria officinalis* L., *Inula helenium* L., *Viola tricolor* L., *Primula veris* L., *Marrubium vulgare* L., *Saponaria officinalis* L.);

- plants used to treat digestive diseases (*Matricaria chamomilla* L., *Althaea officinalis* L., *Mentha longifolia* L., *Chelidonium majus* L. (viermifuge);

- plants used in the treatment of urinary disorders (*Ononis spinosa* L., *Lamium album* L., *Potentilla anserina* L., *Solidago virgaurea* L., *Agrimonia eupatoria* L., *Epilobium parviflorum* Schreb., *Primula veris* L.);

- plants used in the treatment of liver and biliary diseases (*Helychrisum arenarium* (Roth.) G. Don, *Taraxacum officinale* Web., *Cichorium intybus* L.)

- plants used in skin disorders (*Arctium lappa* L., *Symphytum officinale* L., *Hippophae rhamnoides* L., *Hypericum perforatum* L., *Chelidonium majus* L.);

The toxic plants: *Scopolia carniolica* L., *Digitalis lanata* L., *Asarum europaeum* L., *Bryonia alba* L. occupy an outermost position in the collection and are accompanied by informative labels. The number of spontaneous medicinal shrubs in the collection is in continuous growth: *Viburnum opulus* L., *Crataegus monogyna* Jacq., *Hippophae rhamnoides* L., *Berberis vulgaris* L.

From a total number of native medicinal species cultivated in the collection 32 have different status of rarity, 15 of them are included in the 3rd edition of the Red Book of Republic of Moldova [8]. Some studied rare and endangered medicinal species (*Herniaria glabra* L., *Convolvulus lineatus* L., *Digitalis lanata* Ehrh., *Hepatica nobilis* Mill., *Scopolia carniolica* Jack, *Nepeta parviflora* Bieb.) in culture conditions undergo a complete ontogenetic cycle, which demonstrates high adaptive potential and *ex-situ* conservation perspective.

The entire gene pool of spontaneous MAPs cultivated in the collection serves primarily as a basis for introduction and breeding research to improve assortment of medicinal plants used in the national economy. Growing plants under controlled conditions allows undertaking a complex research, which helps to highlight their multiple features, which then become useful in their introduction into the culture. The research regarding plant biology features, ontogenetic cycle, growth and development during the vegetative period in new

conditions, etc. is very important. Thus, in recent years the research on biomorphological and ontogenetic peculiarities of the species of the genera: *Origanum* L., *Ajuga* L., *Salvia* L., *Teucrium* L., *Phlomis* L., *Lamium* L., *Nepeta* L. and *Thymus* L. have been conducted. Good adaptation showed *Ajuga reptans* L., *Salvia nemorosa* L., *S. verticillata* L., *S. pratensis* L., *Phlomis pungens* Willd., *Ph. tuberosa* L., *Lamium album* L., *Teucrium chamaedrys* L., *T. polium* L., *Nepeta cataria* L., *N. pannonica* L., *Thymus marshallianus* Willd., etc. Some spontaneous species (*Epilobium parviflorum* Schreb., *Solidago virgaurea* L., *Pimpinella saxifraga* L.) were identified as difficult species for cultivation.

The research regarding chemical composition and biological activity of some economically important MAPs growing in the collection, in order to increase their practical use in national economy are also one of the main goals of this study.

In the context of the optimal growth characteristics and phytochemical profile promising results were obtained for *Teucrium polium* L., *T. chamaedrys* L., *Ajuga reptans* L., *A. genevensis* L., *Thymus marshallianus* Willd., *Nepeta cataria* L., *N. parviflora* Bieb., *Lamium album* L. [9-12].

The study suggests that *conservation-by-cultivation* is an effective way for protecting genetic resources of spontaneous medicinal plants. The good indicators of growth and development of native MAPs under *ex situ* conditions are also very encouraging, demonstrating their suitability for cultivation on a large scale.

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