

THE PART OF BOTANICAL GARDEN FOR MEDICINAL PLANTS OF THE UNIVERSITY OF MEDICINE IN WROCŁAW IN THE BIODIVERSITY PRESERVATION OF MEDICINAL FLORA OF POLAND

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SUMMARY

This paper presents the results of many years' activity of Botanical Garden for Medicinal Plants concerning the protection of Polish medicinal flora. The main tasks dealt with this work are: the collection of protected and threatened taxa of Polish flora, the investigation into the method of protected and threatened medicinal species cultivation and the resources of medicinal raw materials of wild medicinal plants.

INTRODUCTION

The biodiversity conservation is one of the leading tasks of all botanical gardens, especially respecting threatened and protected plants. This problem refers also medicinal herbs. A lot of species of this group are published on Polish Red Data Book of Plants or on the list of protected plants, e.g. the Polish list of partially protected vascular plants contains only the plants employed in traditional and folk medicine.

Many reasons account for the decrease of natural localities of medicinal plants, the most important of which are: the unreasonable exploitation of herbs from natural localities and the destruction of habitats. This mainly refers to the species of very narrow ecological ranges and represented by small populations.

The tasks performed by Botanical Garden for Medicinal Plants in the range of medicinal plants conservation are the following:

1. The collection of protected and threatened taxa of Polish flora
2. The investigation into the method of protected and threatened medicinal species cultivation
3. The resources of medicinal raw materials of wild medicinal plants

RESULTS

The collection of Botanical Garden for Medicinal Plants numbers about 1500 taxa from different climatic regions of the world (temperate, mediterranean, tropical, subtropical, oriental). In most cases they are species used in phytotherapy or future for medicine. In the midst of cultivated plants there is also not a little group of rare, protected and threatened species. With respect to the Polish medicinal flora this group counts 33 species. The list of this group, the category of threat, protection form and origin from natural localities are presented in table 1. The list of threatened species and the categories of threat were prepared on the basis of "Polish Red Data Book of Plants" (Każmierczakowa, Zarzycki 2001). The protected plants were distinguished by Decree of Minister of Environment of 11 September 2001. Two of the rarest components of our flora: *Rhododendron luteum* Sweet and *Dictamnus albus* L. are shown in the figures 1–2. They are little used in western herbalism nowadays, only as specialist remedies – *Rhododendron luteum* as *cardiacum*, *Dictamnus albus* as *antisepticum*, *digestivum*, *spasmolyticum* and *diureticum* (Broda, Mowszowicz 1979).

At present the investigations into the cultivation method of some protected species are being conducted. This specially refers to the plants which are difficult in the cultivation: *Arnica montana* L. (Fig. 3) and *Cimicifuga europaea* Schipcz.

The flowers, roots and herb of *Arnica montana* have a great worth in phytotherapy. They are used as *antiphlogisticum*, *adstringens*, *antisepticum* and *stimulans*. The observations of biology of this species allowed taking

Table 1. Protected and threatened medicinal plants of Poland in collection of Botanical Garden for Medicinal Plants in Wrocław

Name of taxon	Totally protection	Partially protection	Category of threat in Poland	Origin from natural localities
<i>Adonis vernalis</i> L.	+			Pińczów
<i>Angelica archangelica</i> L. <i>ssp. archangelica</i>	+			Wrocław Popowice
<i>Aquilegia vulgaris</i> L.	+			
<i>Arnica montana</i> L.	+			
<i>Artemisia pontica</i> L.			CR	
<i>Asarum europaeum</i> L.		+		
<i>Atropa belladonna</i> L.	+			
<i>Carlina acaulis</i> L.	+			
<i>Centaureum erythraea</i> Rafn.		+		
<i>Cimicifuga europaea</i> Schipcz.	+			
<i>Colchicum autumnale</i> L.	+			
<i>Convallaria majalis</i> L.		+		
<i>Crocus vernus</i> (L.) Hill	+			Górzyniec Izerskie Mts.
<i>Daphne mezereum</i> L.	+			
<i>Dictamnus albus</i> L.			CR	
<i>Digitalis purpurea</i> L.		+		
<i>Fritillaria meleagris</i> L.	+		CR	
<i>Galium odoratum</i> (L.) Scop.		+		
<i>Hedera helix</i> L.	+			
<i>Hierochloë odorata</i> (L.) P. Beauv.		+		Jurcz – Odra valley, near Legnica
<i>Hipophaë rhamnoides</i> L.	+			
<i>Lonicera periclymenum</i> L.	+			Jaroslavec-Baltic Coast
<i>Menyanthes trifoliata</i> L.		+		Kwidzyn
<i>Ononis spinosa</i> L.		+		
<i>Primula elatior</i> (L.) Hill		+		
<i>Primula veris</i> L.		+		
<i>Rhamnus frangula</i> L.		+		
<i>Rhododendron luteum</i> Sweet			CR	
<i>Succisella inflexa</i> (Kluk) Beck			VU	
<i>Taxus baccata</i> L.		+	VU	
<i>Veratrum lobelianum</i> Bernh.	+			
<i>Viburnum opulus</i> L.		+		
<i>Vinca minor</i> L.	+			

Legend: CR – critically endangered species in Poland, VU – vulnerable species in Poland



Fig.1. *Rhododendron luteum* Sweet – critically endangered species in Poland (CR).



Fig. 2. *Dictamnus albus* L. – critically endangered species in Poland (CR).



Fig. 3. *Arnica montana* L. – legal protected species in Poland, difficult in cultivation.

advantage of mycorrhiza occurrence in the elaboration of an effective cultivation method.

The roots of *Cimicifuga europaea* contains chemical structures similar to estrogens, rare in the word of plants. This is why the natural localities of this species could be endangered in the future. In North America this problem concerns the wild populations of *Cimicifuga racemosa* (L.)Nutt. Until now the raw material has been received from natural habitats and in the last years this species has become one of the most endangered plants in the USA.

In the range of raw material resources estimation the method has been worked out on the basis of analytic and synthetic features of phytosociological records. Dependence of weight of fresh and air-dried raw material upon particular quantity grades in the Braun-Blanquet scale has been fixed for each of the species under investigation. Basing on these relations, the resources of several protected species have been worked out, e.g. *Rhamnus frangula* L., *Ledum palustre* L., *Asarum europaeum* L.,

Primula elatior (L.)Hill., *P. veris* L., *Galium odoratum* (L.)Scop., *Convallaria majalis* L., *Helichrysum arenarium* (L.)Moench. (Jezierska-Domaradzka 2000, Jezierska-Domaradzka et al. 2001).

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