

FAMILY LAMIACEAE: MAIN VALORISABLE MEDICINAL AND AROMATIC SPECIES IN THE ANINEI MOUNTAINS (CARAS-SEVERIN COUNTY, ROMANIA)

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Abstract: The Anina Mountains are situated along the western prolongation of the Semenic Mountains between the Barzava Valley at the north and the Nera Valley at the south, the Bozovici Hills, the Poneasca Valley and the superior course of the Barzava at the east, the Oravita Hills and the Lupac depression at the west. Objectives taken into account refer to the identification of medicinal and aromatic herbs and quantitative assessment of the main medicinal species identified in the area. Species identification was done using *Flora României vol I-XIII (1952-1976)*, *Flora României - Ciocârlan V. (2009)* și a *Florae Europaea*. Species identification was done using *Flora României*; the species are named after Ciocârlan (2000) and *Flora Europaea* (electronic edition). For the quantitative assessment we used the methodology of economic mapping of medicinal plants in the spontaneous flora indicated by Alexan *et al.* (1983), and Bojor (1991). This work has benefited from a grant awarded by the Romanian Ministry of Education, Research, Youth and Sport, through the National Council for Scientific Research in Higher Education (PN II IDEI no. 1077/2009, project code ID-865). Title: „Identifying medicinal and aromatic plants in the Aninei Mountains with a view to valorisation”. Project Manager: Assoc. Prof. PhD Imbrea Ilinca

Key words: medicinal and aromatic plants, spontanous flora, quantitative assessment, Aninei Mountain, Family Lamiaceae

INTRODUCTION

Romania has a geographical location particularly favorable from the point of view of the climate and of the relief, which favored the development of a large number of grassy species (over 3,600). Among them, 870 species are considered medicinal, but only 200 species have been studied from a pharmacological point of view, only 100 species are used as self-medication, and only 50 are cultivated. (ALEXAN *et al.*, 1983) The Aninei Mountain, is situated in an area with favorable climatic conditions for a large number of plants also sheds a considerable number of medicinal and aromatic herb species that make the area even more valuable. The studies carried out in the mentioned area, point out the outstanding floristic biodiversity expresses the position as a place of interference of the current of postglacial floristic migration from southern refuges towards the centre and east of Europe. (MOCIOI I. 2002)

The Family *Lamiaceae* groups herbaceous species that are rarely shrubs with tetra-ridged stems and simple leaves, not stipelate and opposedly set. The flowers are bisexual, rarely unisexual, zygomorphous, of the type 5, and in inflorescences. The tubulous corolla is usually bilabiate. The androecium is bicarpellar and the ovary is divided into 4 lodges all of which contain an ovule. The fruit is a tetra-nut. The family contains about 4,000 species spread all over the world, most frequently in Mediterranean area. Biochemically, they are characterised by the content of volatile oils, which makes many species to be sued as medicinal and aromatic plants. (CIOCĂRLAN V. 2009, *Flora României* vol. VIII, 1961)

MATERIAL AND METHODS

Research concerning the present study was carried out between 2009 and 2010 in the northern and central regions of the Aninei Mountains. To do so, we went in the field at different times of the year. The field study was preceded by a biographical study in which we established the list of medicinal plants in the area. The list was done based both on data in literature and on our own observations made starting with 2002 on the flora and vegetation in the area, including protected areas, and was supplied to all the members of the research project to be studied before going in the field.

On the field we have calculated average density per m² for all medicinal species we came across and that can be recommended for harvesting. Results of quantitative estimates are expressed in kg of dry matter. For a highest accuracy of data recorded in most species analysed, we have established average amounts of dry matter through our own weighing. Results of quantitative estimates are expressed in kg of dry matter. We used the methodology of economic mapping of medicinal plants in the spontaneous flora indicated by ALEXAN *et al.* (1983), and BOJOR (1991).

Results of the study were expressed taking into account the laws of environmental protection and the necessity of recovering area potential. Assessing amounts was done on dry raw matter subjected to valorisation from the basin and expressed in kg of dry substance.

RESULTS AND DISCUSSIONS

The researches carried out in the area under study emphasized the presence 30 species included in the *Lamiaceae* Family.

Therapeutic properties of the species are noted using the speciality literature. (PÂRVU C., 2000, MUNTEAN *et al.*, 2007, CONSTANTINESCU *et al.*, 1986)

In the paper we present these species in an alphabetic order of their scientific name mentioning for each of them the common name in use and the main therapeutic effects.

The main medicinal and aromatic herbs identified in the field are:

Acinos arvensis (Lam.) Dandy – anti-rheumatic.

Ajuga genevensis L. – astringent, healing.

Ajuga reptans L.– anti-diarrheic, anti-septic, anti-spastic, anti-hemorrhagic.

Ballota nigra L. – tonic, anti-spasmodic, vermifuge, healing.

Calamintha officinalis Moench. – stimulating, anti-spasmodic, sudorific, emenagogue, vulnerary.

Glechoma hederacea L.–anti-diarrheic, anti-inflammatory, healing, vermifuge.

Lamium album L. - diuretic, depurative, anti-diarrheic, anti-inflammatory.

Lamium purpureum L.–anti-epilepsy, anti-rheumatic, hemo-static, emollient.

Leonorus cardiaca L. – sedative, anti-spastic.

Lycopus europaeus L. – stomachic, anti-cough.

Marrubium vulgare L.–stomachic, febrifuge, colagogue, expectorant, choleric.

Melittis melissophyllum L. – healing, anti-spastic, diuretic.

Mentha aquatica L. – carminative, tachycardia, aromatic.

Mentha longifolia (L.) Nath. – carminative, aromatic.

Mentha pulegium L. – carminative, expectorant.

Nepeta cataria L. - stomachic, expectorant, anti-septic.

Origanum vulgare L. - anti-septic, expectorant, anti-inflammatory, emollient.

Prunella grandiflora (L.) Scholler– anti-inflammatory, anti-cough, vulnerary.

Prunella vulgaris L. – anti-hemorrhoidal, cicatrizating, hemo-static.

Salvia glutinosa L. – astringent, expectorant, anti-sudorific, bacterio-static.

Salvia sclarea L. – anti-spastic, anti-catarrhal, anti-inflammatory, anti-septic, carminativ, choleric, anti-convulsive, emenagogue, sedative.

Salvia verticillata L. – anti-inflammatory, anti-septic, carminativ.

Salvia pratensis L. – anti-spastic, anti-septic, carminativ, choleric, sedative.

Stachys germanica L. – anti-cough, emollient.

Stachys officinalis (L.) Trevis – cold, anti-diarrheic, healing.

Teucrium chamaedrys L. – tonic-bitter, febrifuge, stomachic, colagogue, anti-helminthic.

Teucrium montanum L. – treatment of the wart.

Thymus glabrescens Willd. – anti-spastic, anti-septic, expectorant.

Thymus pannonicus All. – anti-spastic, anti-septic, expectorant.

Thymus pulegioides L. – anti-spastic, anti-septic, expectorant.

Though the Family *Lamiaceae* is well represented numerically (number of species in the area), harvesting and valorising the plants is justifiable only for abundant-dominant and highly frequent species. Thus, the main species that can be used are as follows: *Salvia pratensis*, *Stachys officinalis*, *Thymus glabrescens*, *Thymus pannonicus*, *Thymus pulegioides* and *Teucrium chamaedrys*.

Sage (*Salvia pratensis*) is spread all over the grasslands in the analysed area but it is more abundant and more frequent in the northern area. The total amounts that can be harvested from the analysed areas while observing the laws of nature protection are *Salvia pratensis* – folium (16,362 kg) and *Salvia pratensis* – flos (7,437 kg).

Purple betony or wood betony or bishop's wort (*Stachys officinalis*) is present mainly on central grasslands that we recommend for harvesting. It is also present in the northern area but with lower frequency, which results in smaller amounts. The total harvestable amount in the analysed area is 1,957 kg.

Teucrium chamaedrys is a plant used in popular tradition. The species is prohibited for trade in Romania and in other countries (such as Italy, France), being associated with the appearance of some hepato-toxicity cases. (RSDER *et al.*, 2007, ÖZEL *et al.*, 2006). In the U.S.A., the species is used to aromatise alcoholic drinks. Latest research confirm the antimicrobial and antioxidating properties of its phenolic compounds (GURSOY & TEPE 2009). In the area, it is present in considerable amounts: this is why we took into account its mapping. Total amount of raw dry matter to be assessed is: herba – 31148 kg.

Taxonomic interpretation of the species belonging to the genus *Thymus* is very difficult because of the high variability of the populations, with extremely varied morphological features. Its chemical composition is also very different depending on environmental factors and on genetic variability. Due to its high variability, the vegetal product harvested and traded under the name *Serpylli herba* in Romania represents, in fact, a mixture of several species of the genus: *Th. serpyllum*, *Th. pannonicus*, *Th. glabrescens*, *Th. austriacus*, *Th. dacicus*, *Th. pulegioides*, *Th. callieri*, *Th. zygoides*, *Th. pullcherimus*, *Th. marginatus*, *Th. comosus* (CIULEI *et al.*, 1993). In the area the most frequent species are: *Th. glabrescens*, *Th. pannonicus*, *Th. pulegioides*. Total amount of raw dry matter to be assessed from *Thymus* sp. is: herba – 9226 kg.

Among the species from the *Lamiaceae* Family, most are species used in folk tradition and whose chemical composition is little studied.

Of the medicinal species present in the area, the largest share is that of species used in popular tradition, except for the white deadnettle (*Lamium album*) recommended in the treatment of the urogenital apparatus, motherwort (*Leonurus cardiaca*) used in the treatment of heart conditions, oregano (*Origanum vulgare*) and the *Thymus* species recommended in the treatment of respiratory diseases.

CONCLUSIONS

Results of the present study and final results of the project will be supplied to the natives of the area who are directly interested in obtaining sure incomes with minimal production costs. Though the harvestable amounts are not large compared to cultivated ones, we need to point out that the yields are ecological, not treated chemically and harvested from non-polluted areas, i.e. with a double sale price. Over seeding valuable species and rational valorisation (without exhausting spontaneous resources) could ensure constant yields. Promoting agritourism based on the harvesting of spontaneous flora harvesting could be a true success given the most favourable geographical setting of the area.

The great number of medicinal and flavour species in this category of folk tradition proves that it is necessary to broaden research in the area. Thus, certain medicinal species over-exploited nowadays can be successfully replaced with species less known and therefore less used but with similar phyto-therapeutic effects. A lot of species used by tradition are not studied or are very little studied from a bio-chemical point of view, which means that they could have other uses as well. This is why one should not neglect the importance of this category of medicinal and flavour plants, as they could become important raw material sources of a vegetal origin.

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