

ACTIVE PRINCIPLES PRODUCTION OF SOME SORTS AND POPULATIONS OF *MELISSA OFFICINALIS* L.

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Abstract: in this paper we tried to determine the volatile oil and polyphenolic content of 11 populations (germania, germania o, germania 1, germania 2, germania 3, populația de cluj, timișoara, polonia, cehia, franța melissa 349) and 2 sorts of *melissa officinalis* l. species (lemona și citronella). cultivars and populations of *melissa officinalis* l. had a different content of volatile oil and polyphenolic compound. for 3 populations (populația de cluj, timișoara and citronella) there was also conducted a research regarding the quality of polyphenolic acid. the results indicate the presence of other polyphenolic compounds such as galic acid, protocatecuic acid, cafeic acid and p-cumaric acid, beside the rosmarinic acid in different proportions.

Introduction

From ancient times man discovered the healing properties of the plants. Medicinal plants or cure plants represented one of the most important activities of mankind. Searching for the things necessary to live man observed that several plants used on wounds had a calming effect and rushed the healing process, and others if consumed they cured several diseases.

The leaves of *Melissa officinalis* L. (*Lamiaceae*), also known as lemon balm, are used in traditional medicine for the symptomatic treatment of gastrointestinal disturbances, as adjuvant therapy for the pain associated with functional dyspepsia, for the symptomatic treatment of neurotonic disorders (minor sleeplessness).

The aim of this paper was to study the content of essential oil and phenolic acid derivatives, depending on the variety of *M. officinalis*, in order to evaluate the quality of natural products. We have also identified by HPLC analysis the most important polyphenolic compounds from some varieties of *Melissa officinalis* L.

Material and methods

The experimental research regarding several cultivars and population of *Melissa officinalis* L., took place in the experimental field in Pâglișa, Dăbâca, Cluj County.

The soil the experiments were placed on, in Pâglișa, Dăbâca is a alluvial soil type, belongs to the protisol class (OSPA, Cluj-Napoca). The experimental plot is situated on Lona stream, fact that determined in time the formation of deep layers.

The volatile oil and polyphenolic content was determined for 11 populations (Germania, Germania O, Germania 1, Germania 2, Germania 3, Populația de Cluj, Timișoara, Polonia, Cehia, Franța Melissa 349) and 2 sorts of *Melissa officinalis* L. species (Lemon and Citronella).

The volatile oil content was determined by the Cluj Napoca "Iuliu Hatieganu" University of Medicine and Pharmacy and the polyphenolic compound was determined by the University of Agricultural Sciences and Veterinary Medicine from Cluj Napoca.

Results and discussions

Results upon the volatile oil content are presented in figure 1.

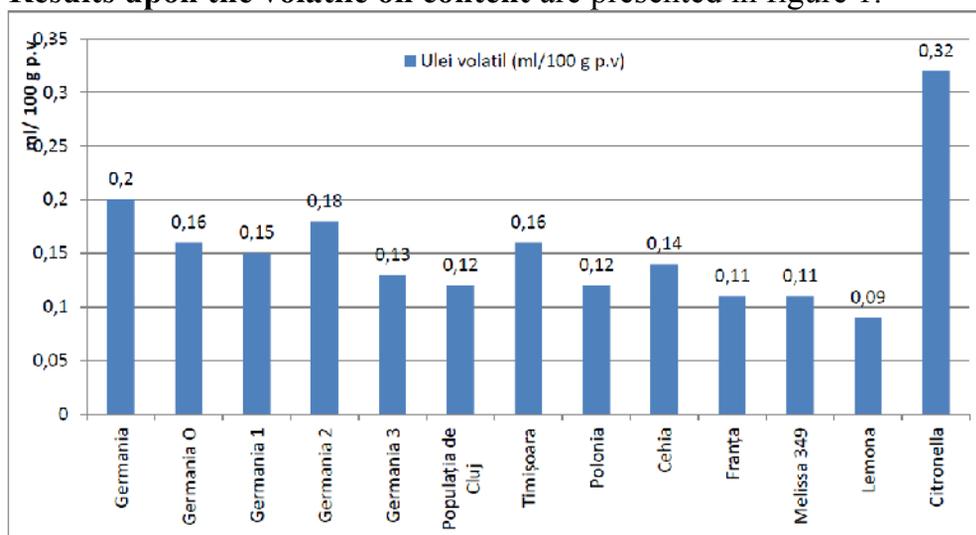


Figure 1 The content of volatile oil at cultivars and population of *Melissa officinalis L.*, Pâglișa, Cluj County, 2007

Cultivars and populations of *Melissa officinalis L.* had a different content of volatile oil.

The content of volatile oil was situated between 0,09 ml/100mg pv at Lemona cultivar and 0,32 ml/100 mg pv at Citronella cultivar. The rest of the population had a content in volatile oil between 0,11 ml/100mg pv and 0,2 ml/100 mg pv.

The sample analyzed contain volatile oil in the limits indicated by the scientific literature (0,1-0,4ml/100mg vegetal product).

In figure 2 it is presented the content of poliphenolic content in the case of cultivars and populations of *Melissa officinalis L.* taken into study.

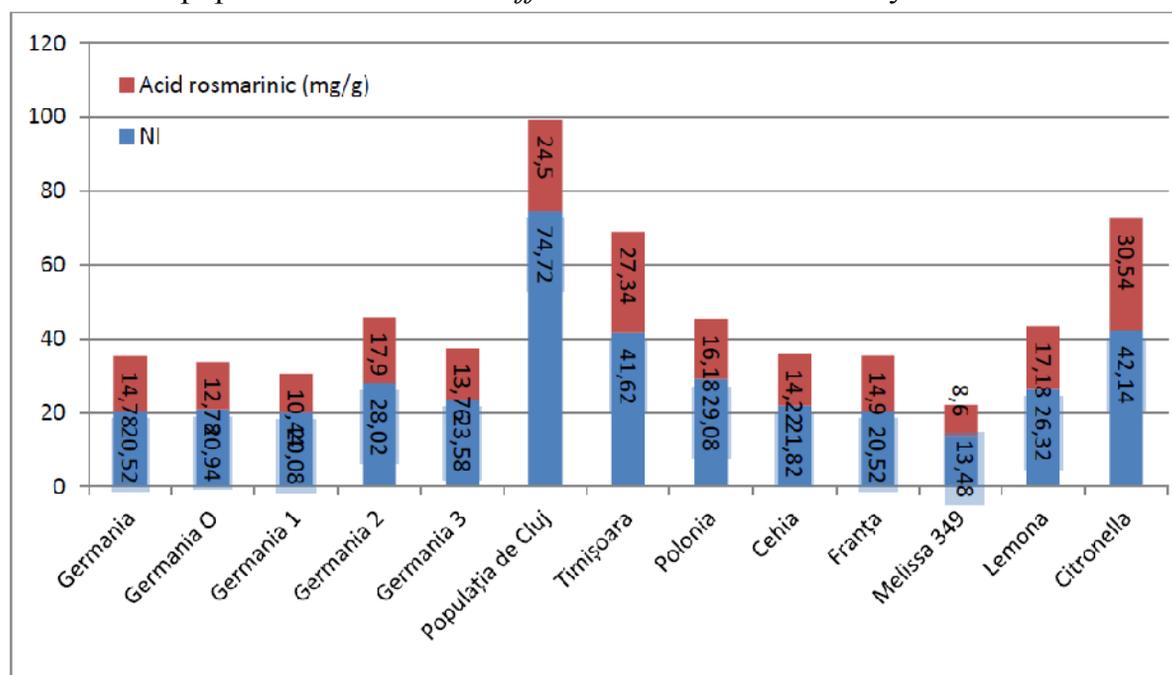


Figure 2. Content of poliphenolic compounds (mg/g) in the case of cultivars and populations of *Melissa officinalis L.* taken into study

The content of polyphenolic is different depending on the cultivar and population. So the smallest quantity for the polyphenolic compounds can be observed at Melissa 349 (22,08 mg/g) and the biggest quantity can be observed at Populația De Cluj (99,22 mg/g).

The content of rosmarinic acid differs. The richest populations are: Populația De Cluj (24,5 mg/g), Timișoara (27,34 mg/g) and Citronella cultivar (30,54 mg/g). Rosmarinic acid can be seen in all the samples analyzed. It represents on average 30% of the total phenol acids acizilor fenolici. At these populations there were made also analyses regarding the composition of phenolic compounds using extraction in ethanol 45%. The results obtained are presented in figure 3.

In addition to rosmarinic acid were also identified four phenolic acids (gallic acid, protocatechuic acid, caffeic acid and p-coumaric acid). Gallic acid is found in the samples analyzed between 0.30 mg / g (Citronella) and 0.72 mg / g (Population of Cluj). Protocatechuic acid in the analyzed samples is within the range 0.02 mg / g (Citronella) and 0.26 mg / g (Population of Cluj). The high content of caffeic acid is found at Cluj Population (1.62 mg / g), followed by Population Timisoara (1.22 mg / g) and Citronella (1.14). Citronella variety is the richest in p-coumaric acid (1.30 mg / g), followed by Cluj Population (0.70 mg / g). The lower content in this acid it has been found at Timisoara Population (0.52 mg / g). Following analyzes have appeared a number of eight polyphenolic compounds (NI) that were not identified due to lack of calibration kit HPLC apparatus.

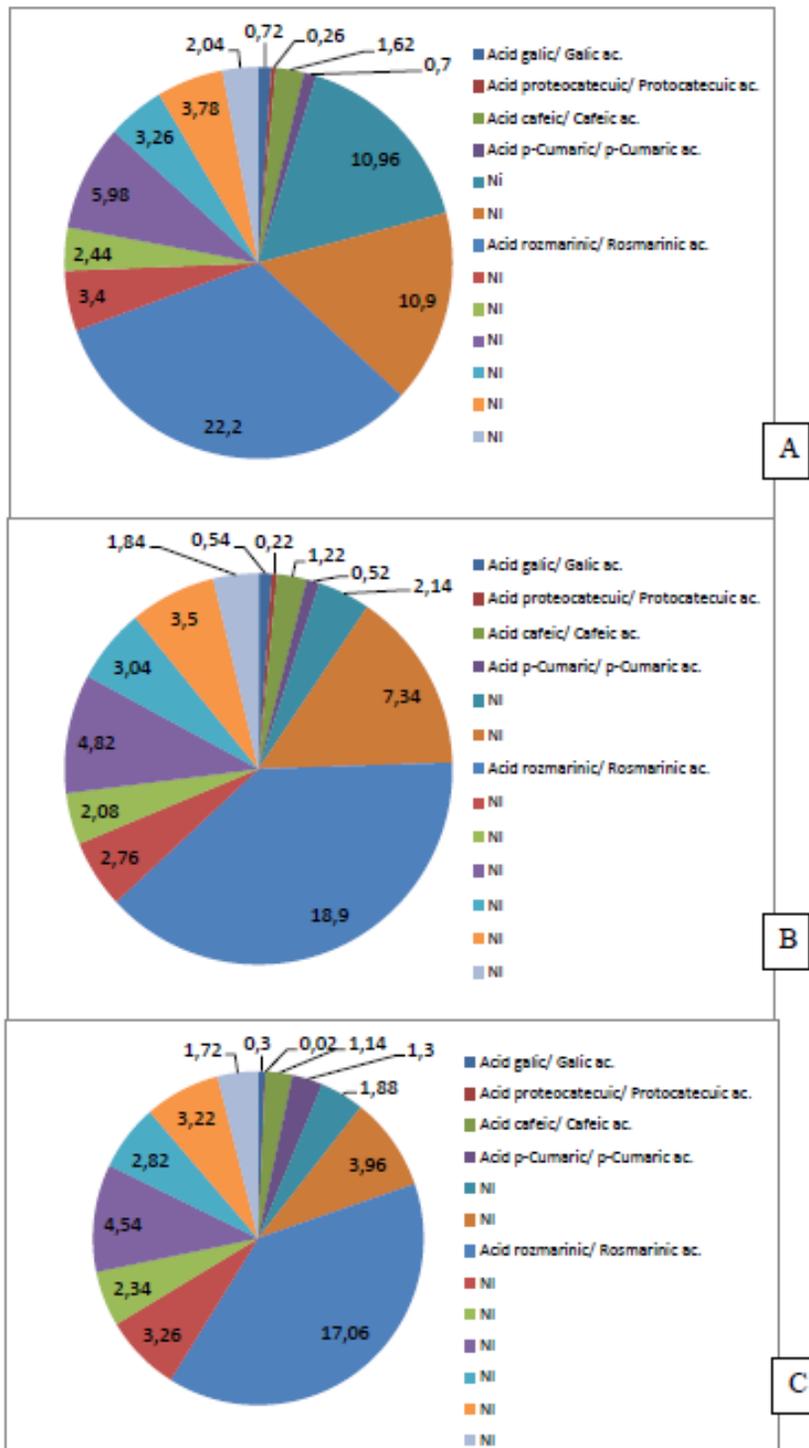


Figure 3. Identification of the phenolic acids insamples
 A-Populația De Cluj; B- Timișoara; C- Citronella

Conclusions

- The highest content of volatile oil was registered in the case of Citronella cultivar. The samples analyzed contain volatile oil in the limits indicated in the scientific literature (0,1-0,4ml/100mg vegetal product). Populația de Cluj had a medium production of volatile oil.

- The lowest content in polyphenol compounds is different depending on cultivar and population, the smallest quantity of polyphenol compounds can be observed in the case of Melissa 349 population and a higher quantity was determined at Populația De Cluj. The content of rosmarinic acid also differs. The richest populations are: Populația De Cluj, Timișoara and Citronella cultivar. Rosmarinic acid is observed in all the samples analyzed. It represents on average 30% of the total of phenolic acids.
- Besides rosmarinic acid there were also identified other 4 phenolic acids (galic protocatecuic, cafeic and p- cumaric acid). Citronella cultivar is richer in p-Cumaric acid content, followed by Populația De Cluj.

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