ORIGINAL PAPER

THE MEDICINAL IMPORTANCE OF WILD PLANTS FROM THE SURROUNDINGS OF ULIEȘ VILLAGE, MUREȘ COUNTY

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Abstract: The village of Ulieș belongs to Râciu Commune. It is located in the south-eastern part of the Transylvanian Plain (N46°41'30" E24°23'56") in a hilly region crossed by wide valleys. It is situated at 24 km distance from Tîrgu Mureș, in the contact area of Mădăraș Hills and Comlod Hills, on the middle stream of the Comlod River (or Lechința) and its tributaries. The paper aims were the study of the flora from the surroundings of Ulieș Village, the investigation of possible medicinal use of the encountered plants species, and the preservation of plant diversity from the area. Fieldworks were conducted in 2014-2017. A total of 415 vascular plant taxa belonging to 76 families were identified. From these, 185 species are medicinal plants with certain content of active principles. Plants containing tannins (13.51%) were in higher percentage followed by those with essential oils (12.97%), saponins (10.81%), alkaloids (8.10%), flavonoids (7.56%), coumarins (7.02%), mucilages (5.94%), iridoids (5.40%), phenolic glycosides (3.78%), anthraquinone derivatives and cardiotonic glycosides (3.24), organic acids, vitamins and provitamins (3.78%), bitter principles (2.70), bitter-aromatic principles (2.16%), etc.

Keywords: spontaneous flora, medicinal plants, active principles, remedies for human diseases, Mureș County.

1. Introduction

Ulieș Village (**Fig. 1A, B**) was attested since 1321 under the name "Wlues, Wleus, Ulves". The relief is characterized by marl, marly shales, clays and sands, conglomerates and volcanic tuffs. Altitude reaches 350-450 m. The low hills and plateaus belong to the temperate continental climate (Șoneriu and Mac, 1973; Conțiu and Conțiu, 2010). The average annual temperature is 9°C and the average annual rainfall is between 550 and 650 mm. In the last years a decrease in the volume of rainfall can be observed. The hydrographic network density is low (0.3-0.5 km/km^2). Ulieș Village is crossed by the right tributary of Comlod, named Ulieș River, with the following rivulets: Izvor, Cetegău, Techeniș and Valea Hegmenilor. The main identified soil classes are: cernisols, luvisols, protisols, hidrisols and antrisols. In the meadows and terraces aluviosols can be found which are rich in nutrients and are favorable to crops (corn, sugar beet, vegetables, potatoes, etc.) (Conțiu, 2010; Florea and Munteanu 2012).

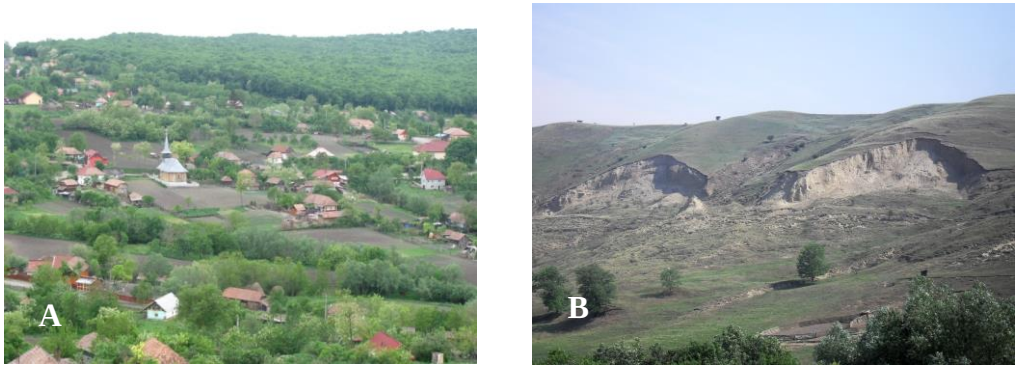

Fig. 1. Ulieș Village and surroundings: **A.** general view; **B.** Glimee-type landslides (original)

Although many researches were carried out on the flora and vegetation of Mureș County, there are still unstudied white spots on the counties map. The present paper aims were: (1) the study of the flora from the surroundings of Ulieş Village; (2) the investigation of possible medicinal use of the encountered plants species; (3) the preservation of the floristic diversity from the area. This region once was rich in heyfields with great plant diversity, but in present it is affected by the spread of invasive plants mainly resulting from the uncultivated agricultural lands.

2. Materials and Methods

The identification of the taxa was made according to the classical techniques and procedures from the literature. For this the specialized works of "Flora Europaea" (1964-1980) were consulted. The nomenclature of the taxa complies with the rules of the "International Code of Botanical Nomenclature" (Code de Melbourne, 2012) and the book of Sârbu et al. (2013). In the inventory of plant species, the adopted classification system was updated according to the most recent publications (Oroian, 2011; Cristea, 2014). The medicinal plants were grouped according to the dominant active principles for which they are used in traditional medicine and phytotherapy, adopting the grouping of plants after Eşianu and Laczkó-Zöld (2016) as well as the most recent specialized publications (Istudor, 1998, 2001, 2005; Stănescu et al., 2002, 2004). The identification and classification of the protected plants were made on the basis of the specialty literature (Dihoru and Dihoru 1993-1994; Oltean et al., 1994; Bilz et al., 2011; Mihăilescu et al., 2015).

3. Results and discussions

The study area once was covered with wide forests. Also the banks of the streams and the steep hills (with clay, marl and many landslides) were covered with shrubs and the sunny slopes facing south with steppe vegetation (**Fig. 2A**) (Borza, 1929, 1931, 1936; Doniță et al., 1992). The meadows which today are characteristic features of the Transylvanian Plain have gradually evolved as forests were cleared to obtain place for agricultural lands (**Fig. 2B**). These productive farmlands now are abandoned by the aging villagers and weeds are spreading on the uncultivated lands (**Fig. 2C, D**). The edges of the cereal fields are often full of the vivid colors of forking larkspur (*Consolida regalis*) (**Fig. 2E**), common poppy (*Papaver rhoeas*) and cornflower (*Centaurea cyanus*) (**Fig. 2F**).

In this study 415 vascular plant taxa belonging to 76 families were identified (see in **Table 1** of the Supplementary Material). Pteridophytes (2 species) and Gimnosperms (1 species) are very poorly represented in the territory.

Most of the taxa belong to Angiosperms from the classes of Dicotyledoneae (342 taxa) and Monocotyledoneae (69 taxa). The families

with the most numerous species are: Asteraceae (53 species from 36 genera), Lamiaceae (39 species from 21 genera), Fabaceae (33 species from 15 genera), Poaceae (28 species from 22 genera), Rosaceae (20 species from 12 genera) Ranunculaceae (19 species from 11 genera), Apiaceae and Scrophulariaceae (each with 16 species from 14 and 9 genera, respectively), Brassicaceae and Liliaceae (each with 12 species from 12 and 11 genera, respectively), Caryophyllaceae and Polygonaceae (each with 10 species from 7 and 3 genera, respectively), etc. The analysis of the species number revealed that vascular plant diversity is higher in open land than in forests and shrubs. In forests there are more vernal and annual species, and also geophytes (G). The genera with the most numerous species in the territory are: *Trifolium* (with 9 species), *Veronica* (with 7 species), *Galium*, *Salvia* (each with 6 species), *Campanula*, *Linum*, *Potentilla*, *Rumex* and *Stachys* (each with 5 species), *Ajuga*, *Artemisia*, *Astragalus*, *Centaurea*, *Euphorbia*, *Medicago*, *Ranunculus*, *Viola* (each with 4 species), the remaining genera having one, two or three species.

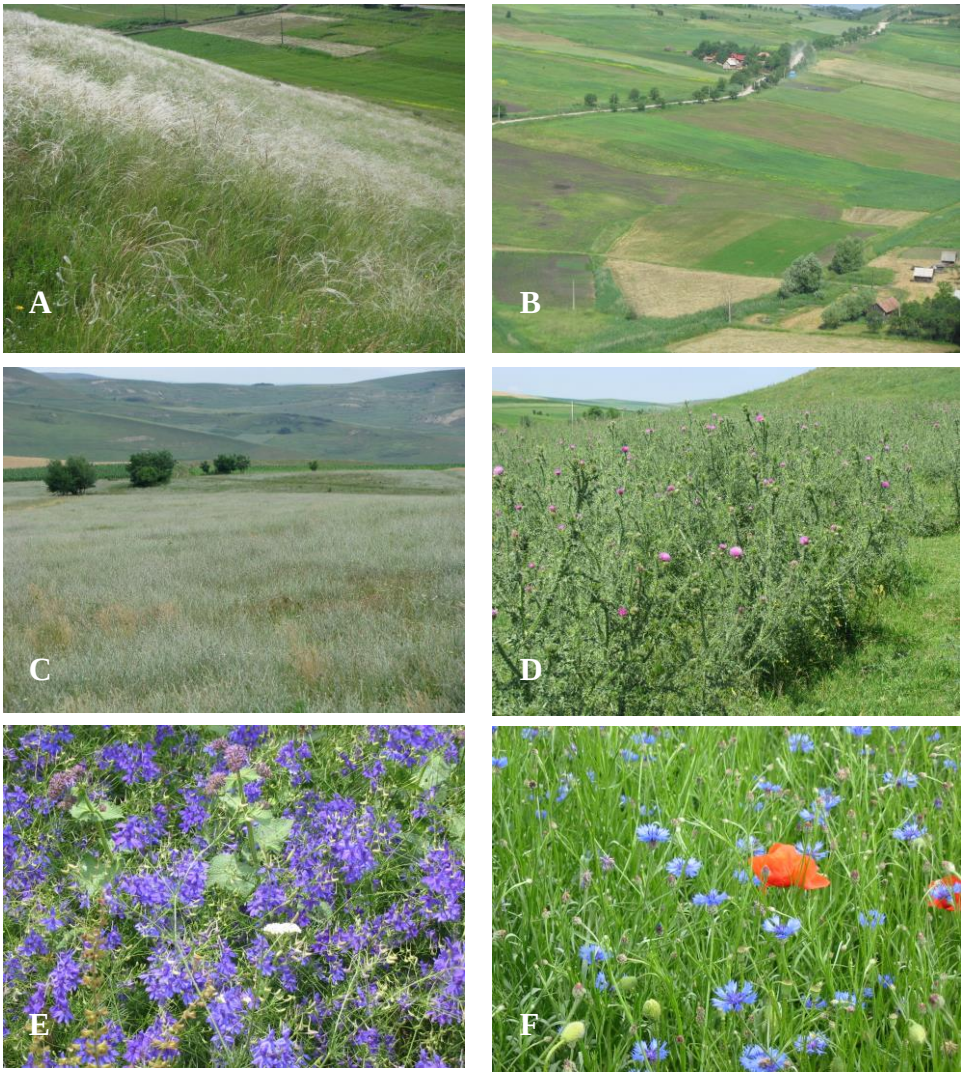

Fig. 2. The surroundings of Ulieș Village: **A.** Steppe vegetation; **B.** Agricultural lands; **C.** *Xeranthemum annuum*; **D.** Abandoned pasture; **E.** *Consolida regalis*; **F.** *Papaver rhoeas* (original)

In the ecological study the species peculiarities were analyzed in respect to abiotic factors such as: edaphic humidity (U), soil reaction (R), air temperature (T), light intensity (L), soil nitrogen content (N) (**Fig. 3**) (Oroian et al., 2014, 2018; Nagy 2018). The spectrum of ecological categories based on edaphic humidity shows that most of the species prefer dry and moderately moist soils (65.84%, $U_3+U_4+U_5$). The spectrum of ecological categories based on temperature presents that plants of plains and hilly areas are in high number (51.59%, $T_5+T_6+T_7$). The euriterm species are present in a proportion of 46.92% (T_x). Regarding the soil reaction slightly acid-neutrophylous (35.96 %, R_7) and euryionic (53.44 %, R_x) species are in higher proportions. The analysis of the bioforms (**Fig. 4**) is an important element in flora characterization, as they represent adaptation strategies of the Cormophytes to the succession of seasons. The high percentage of hemicryptophytes (51.70%, H) indicates the temperate climate and it is related to the large areas occupied by meadows and the presence of the herbaceous layer in the forests. Therophytes (23.79%, T) indicate a more or less arid climate. Their distribution is strongly conditioned by anthropo-zoogenic influences and the existence of territories where the plant cover is discontinuous, occupied by annual plants. Phanerophytes (10.44%, Ph) and geophytes (9.47%, G) are specific to forests and are less present in meadows. The spectrum of geoelements (**Fig. 5**) provides information about the genetic pool richness of the phytocoenosis. The Euro-Asian (Eua) element represents the highest percentage (46.75%), followed by the European (26.51%, Eur), Circumboreal (6.27%, Circumbor), Ponto-Pannonian (6.27%, Pont-Pann), Mediterranean (1.69%, Med) and Carpathian (1.20%, Carp) elements, etc.

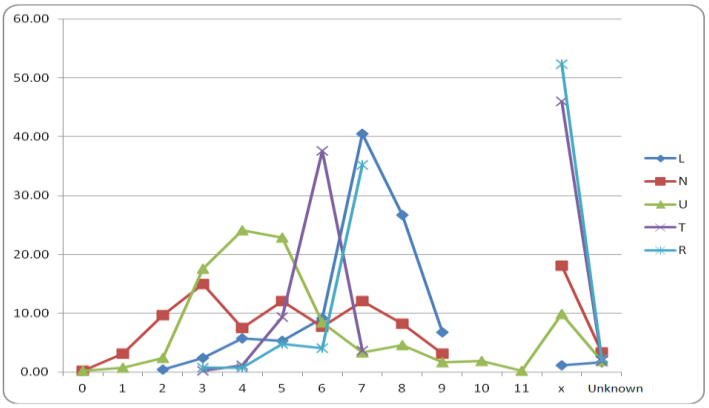

Fig. 3. The ecological categories spectrum of flora from the surroundings of Ulieș Village

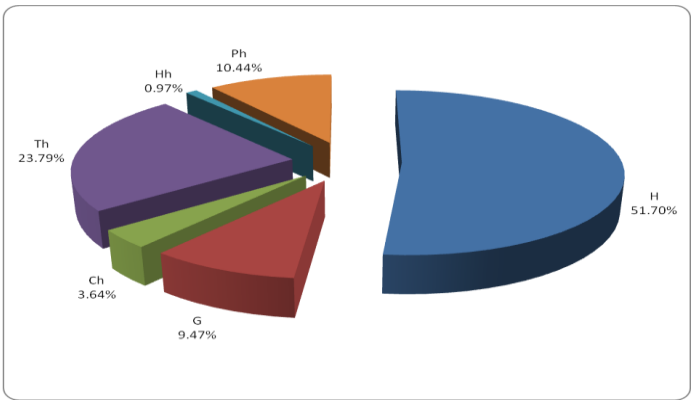

Fig. 4. The bioforms spectrum of flora from the surroundings of Ulieș Village

The Cosmopolitan element is also well represented (7.23%). Most of the medicinal plants have Eurasian, European, Ponto-Pannonian and Circumboreal origins. The higher number of diploids (**Fig. 6**) reveals the long-standing presence of flora, while the poliploids provide resistance to the unfavorable ecological conditions. From the reported taxa, 185 species are medicinal plants with certain content of active principles. The medicinal plants were grouped according to Eşianu and Laczkó-Zöld (2016), Eşianu and Şefănescu (2016) and also on the base of the most recent specialized publications (Rácz et al., 2012; Yberrt and Delesalle, 2013, Domokos et al., 2018). Plants containing tannins (13.51%) were in higher percentage followed by those with essential oils (12.97%), saponins (10.81%), alkaloids (8.10%), flavonoids (7.56%), coumarins (7.02%), mucilages (5.94%), iridoids (5.40%), phenolic glycosides (3.78%), anthraquinone derivatives and cardiotonic glycosides (3.24%), organic acids, vitamins and provitamins (3.78%), bitter principles (2.70%), bitter-aromatic principles (2.16%), etc. (**Fig. 7**). The most commonly used species in traditional medicine and phytotherapy are presented in **Table 2**. Most of the medicinal plants are used in digestive (53 sp.), respiratory (27 sp.), skin (23 sp.), locomotor (17 sp.), genitourinary (19 sp.) and cardiovascular (8 sp. each) disorders. A total of 40 species have monographs in the Romanian Pharmacopoeia (1994) and in the European Pharmacopoeia (2018).

During the study 10 taxa with special scientific value and rare species (in Romania and Europe) were identified. Some of them are considered also medicinal plants.

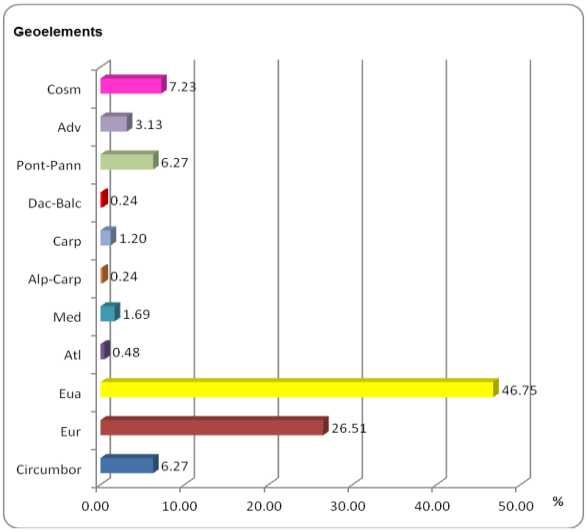

Fig. 5. The geoelements spectrum of flora from the surroundings of Ulieș Village

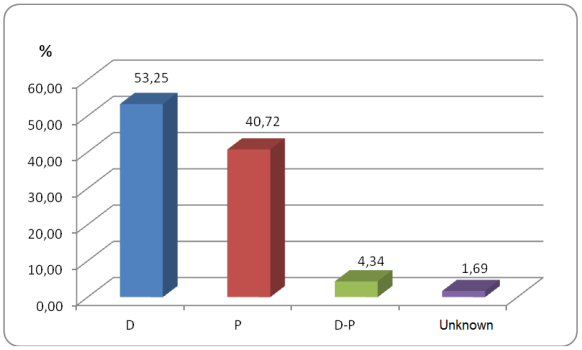

Fig. 6. The caryologic spectrum of flora from the surroundings of Ulieș Village

Thus, 4 endemic and subendemic taxa were found: *Aconitum lycoctonum* ssp. *moldavicum* (see **Fig. 8A** from the Supplementary Material), *Astragalus exscapus* ssp. *transilvanicus* (**Fig. 8C**), *Cephalaria radiata* and *Jurinea mollis* ssp. *transylvanica*. The taxa included in the European and National Red Lists are: *Adonis vernalis* (**Fig. 8B**; V, Dihoru and Dihoru, 1994), *Galanthus nivalis* (**Fig. 8E**; EGO 57/2007, Annex 5 A; Council Directive 92/43/EEC, Annex 5b/VU), *Gymnadenia conopsea* (**Fig. 8D**; R, Oltean et al., 1994), *Orchis morio* (**Fig. 8F**; R, Oltean et al., 1994), *Salvia nutans* (V, Dihoru and Dihoru, 1994) (Bilz et al., 2011; Mihăilescu et al., 2015; Oroian et al., 2017; Sămărghițan et al., 2017).

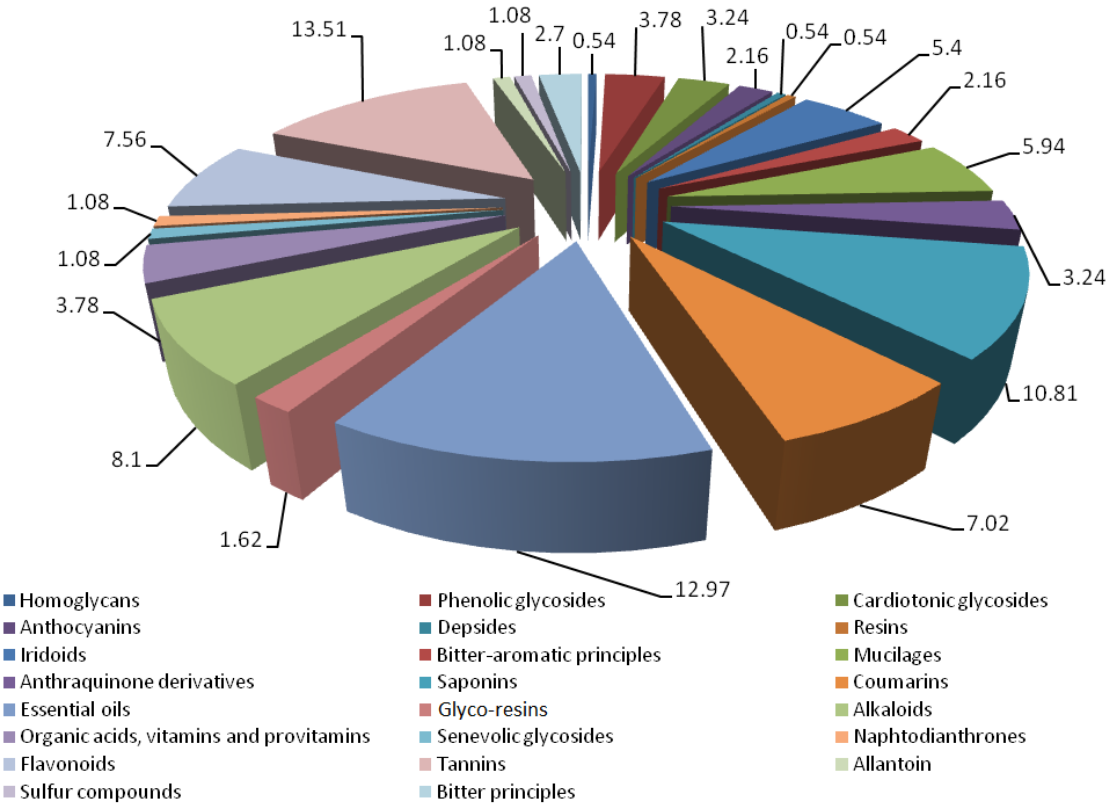

Fig. 7. The spectrum of the dominant active principles present in medicinal plants from the surroundings of Ulieș Village

Table 2. The dominant active principles of medicinal plants from the surroundings of Ulieș Village used in various human diseases

Dominant active principles	**Taxa/ Presence in the Pharmacopoeia**	**Drugs**	**Phytotherapy for human disease/Disorders of various systems**
Homoglycans	*Arctium lappa*	Radix	Dermatological problems: acne, eczema
Mucilages	*Hibiscus trionum* (see **Fig. 9C**, in the Supplementary Material)	Herba	Urogenital system disorders: diuretic/ aquaretic
	Malva sylvestris (**Fig. 9B**) **Eur. Ph.**	Flos et folium	Diseases of the mouth; respiratory system disorders (antitussives); dermatological problems (eczema)

	Orchis morio	Tuber	-
	Plantago lanceolata **Eur. Ph.** *Plantago major* *Plantago media*	Folium	Digestive system disorders: hyperacid gastritis and ulcer; respiratory system disorders (antitussives); dermatological problems: wounds
	Tussilago farfara	Folium	Respiratory system disorders (antitussives)
Senevolic glycosides	*Raphanus raphanistrum*	Herba	Hypoglycemic
	Sisymbrium officinale	Herba	Respiratory system disorders: expectorants
Phenolic glycosides	*Populus nigra* *Populus tremula*	Gemma	Dermatological disorders: wounds, superficial burns; locomotor system problems: anti-inflammatory/analgesic action
	Pyrus pyraster	Folium	Urogenital system disorders: antimicrobial
	Salix alba **Eur. Ph.** ***contains tannins** *Salix cinerea*	Cortex	Locomotor system problems: anti-inflammatory/analgesic action, arthrosis, rheumatoid arthritis
	Viburnum lantana	Cortex	Central nervous system disorders: sleep disturbances, nervousness
Anthraquinone derivatives	*Frangula alnus* **Eur. Ph., Rom. Ph.** *Rhamnus catharticus*	Cortex	Digestive system disorders: constipation
	Rumex acetosa	Herba	Digestive system disorders: constipation
	Rumex acetosella	Herba	
	Rumex conglomeratus	Rhizoma	
	Rumex crispus	Rhizoma	
Naphtodianthrons	*Hypericum perforatum* (**Fig. 8A**) **Eur. Ph., Rom. Ph.**	Herba	Digestive system disorders: hyperacid gastritis and ulcer, acute and chronic liver disorders, functional disorders of the bladder and biliary tract; respiratory system disorders: immunostimulants; dermatological problems: wounds, superficial burns; locomotor system problems: anti-inflammatory/analgesic action; central nervous system disorders (depressions)
Cardiotonic glycosides	*Adonis vernalis*	Herba	Cardiovascular system disorders: heart failure
	Convallaria majalis	Herba	Cardiovascular system disorders: heart failure
	Digitalis grandiflora	Folium	Heart failure
	Helleborus purpurascens	Rhizoma et radix	Cardiovascular system disorders: heart failure
	Leonurus cardiaca **Eur. Ph.**	Herba	Cardiovascular disease: cardiac neurosis
Saponins	*Anagallis arvensis*	Herba	Urogenital and locomotive disorders
	Bupleurum falcatum **Eur. Ph.**	Radix	Digestive system disorders: hyperacid gastritis and ulcer, fatty liver
	Eryngium planum	Herba	Respiratory system disorders: bronchodilators

	Equisetum arvense **Eur. Ph., Rom. Ph.**	Herba	Diseases of the mouth, hyperacid gastritis and ulcer; respiratory system disorders: immunostimulants; urogenital disorders: diuretic/ aquaretic
	Hedera helix **Eur. Ph.**	Herba	Respiratory system disorders: bronchodilators
	Ononis arvensis *Ononis spinosa*	Radix	Urogenital system disorders: diuretic/aquaretic
	Primula veris **Eur. Ph., Rom. Ph.**	Rhizoma cum radicibus	Respiratory system disorders: expectorants
	Saponaria officinalis	Radix	Respiratory system disorders: expectorants
	Solidago virgaurea **Eur. Ph.**	Radix	Urogenital system disorders: diuretic/aquaretic, antimicrobial; locomotor system problems: antirheumatic teas
	Trifolium pratense	Flos	Menopausal disorders
	Trifolium repens	Herba	Menopausal disorders
	Viola odorata	Herba	Respiratory system disorders: expectorants
	Viola tricolor **Eur. Ph.**	Herba	Urogenital disorders: diuretic/ aquaretic; dermatological problems: acne, eczema
Flavonoids	*Capsella bursa-pastoris*	Herba	Dermatological problems: wounds; gynecological disorders: metrorrhagia
	Crataegus monogyna **Eur. Ph., Rom. Ph.**	Folium,fructus, flos	Cardiovascular system disorders: cardiac neurosis, angina pectoris
	Prunella vulgaris **Eur. Ph.**	Herba	Digestive system disorders: chronic gingivitis; allergies; diabetes, etc.
	Prunus avium	Stipites	Urogenital system disorders: diuretic/aquaretic
	Sambucus nigra **Eur. Ph.**	Flos	Digestive system disorders: constipation; locomotor system problems: antirheumatic teas
Anthocyanins	*Papaver rhoeas* **Eur. Ph.**	Flos	Respiratory system disorders; central nervous system disorders
	Rosa gallica	Flos	Urogenital system disorders: diuretic/aquaretic
Coumarins	*Fraxinus excelsior* **Eur. Ph.**	Folium	Digestive system disorders: constipation
	Galium aparine *Galium verum*	Herba	Urogenital system disorders: diuretic/aquaretic; dermatological disorders: eczema, psoriasis
	Medicago falcata *Medicago lupulina*	Herba	Gynecological disorders: menopausal disorders
	Medicago sativa	Herba	Digestive system disorders: hyperacid gastritis and ulcer; menopausal disorders
	Melilotus officinalis **Eur. Ph.**	Flos et herba	Digestive system disorders: hyperacid gastritis and ulcer
	Pastinaca sativa	Radix	Digestive system disorders: diseases of the mouth, functional disorders of

			the bladder and biliary tract
Tannins	*Agrimonia eupatoria* **Eur. Ph.**	Herba	Digestive system disorders: diseases of the mouth, functional disorders of the bladder and biliary tract, diarrhea
	Epilobium hirsutum *Epilobium parviflorum*	Herba Herba	Urogenital disorders: benign prostatic hyperplasia
	Geranium robertianum	Herba	Digestive system disorders: irritated colon, hemorrhoids
	Geum urbanum	Rhizoma	Digestive system disorders: diseases of the mouth, diarrhea
	Juglans regia	Folium, pericarpium	Digestive system disorders: diseases of the mouth, diarrhea; respiratory system disorders: immunostimulants; dermatological disorders: eczema
	Lysimachia nummularia *Lysimachia vulgaris*	Herba	Digestive system disorders: diseases of the mouth
	Lythrum salicaria **Eur. Ph.**	Herba	Digestive system disorders: diseases of the mouth, diarrhea
	Polygonum aviculare	Herba	Urogenital system disorders: diuretic/aquaretic
	Potentilla anserina	Herba	Digestive system disorders: diseases of the mouth, diarrhea; gynecological disorders: dysmenorrhea
	Prunus spinosa	Flos, fructus	Digestive system disorders: constipation
	Quercus robur **Eur. Ph.** *Quercus petraea*	Cortex	Digestive system disorders: diseases of the mouth, diarrhea
Depsids	*Cichorium intybus* **Eur. Ph.**	Herba et radix	Digestive system disorders: functional disorders of the bladder and biliary tract, constipation
Essential oils	*Achillea millefolium* **Eur. Ph., Rom. Ph.**	Flos	Digestive system disorders: diseases of the mouth, functional disorders of the bladder and biliary tract, diarrhea, abdominal colic, helminthiasis (anthelmintic); respiratory system disorders: immunostimulants; dermatological disorders: eczema, dermato-mycoses, contusions
	Carum carvi **Eur. Ph.**	Fructus	Digestive system disorders: meteorism
	Matricaria chamomilla **Eur. Ph.**	Flos	Digestive system disorders: diseases of the mouth, hyperacid gastritis and ulcer, diarrhea, abdominal colic, meteorism; respiratory system disorders: immunostimulants, expectorants; dermatological problems: eczema, wounds, superficial burns, frostbite; locomotor system problems: anti-inflammatory/analgesic action; gynecological disorders: dysmenorrhea
	Mentha arvensis	Folium	Digestive system disorders: functional

	Mentha longifolia		disorders of the bladder and biliary tract, vomiting, nausea, abdominal colic, meteorism; locomotor system problems: hiperemiant
	Origanum vulgare **Eur. Ph.**	Herba	Respiratory system disorders: asthma
	Picea abies	Turiones	Respiratory system disorders: expectorants; locomotor system problems: hiperemiant
	Pinus sylvestris **Eur. Ph.**	Turiones	Respiratory system disorders: disinfectant of the airway, expectorants; locomotor system problems hiperemiant
	Thymus glabrescens *Thymus pannonicus* *Thymus pulegioides*	Herba	Digestive system disorders: mouth diseases, helminthiasis; dermatological problems: dermato-mycoses
	Tilia cordata **Eur. Ph., Rom. Ph.** *Tilia plathyphyllos*	Flos	Respiratory system disorders: respiratory tract infections, bronchitis; central nervous system disorders: sleep disorders, nervousness
	Valeriana officinalis **Eur. Ph., Rom. Ph.**	Radix	Digestive system disorders: hyperacid gastritis and ulcer, vomiting, nausea; cardiovascular disorders: cardiac neurosis; central nervous system disorders: sleep disorders, nervousness
	Xanthium spinosum	Herba	Urogenital system disorders: micturition disorders
	Symphytum officinale	Radix	Digestive system disorders: mouth diseases, hyperacid gastritis and ulcer; dermatological disorders: wounds, contusions
Resins	*Humulus lupulus* **Eur. Ph.**	Strobuli	Central nervous system disorders: nervousness; menopausal disorders
Glyco-resins	*Convolvulus arvensis* *Calystegia sepium*	Herba	Digestive system disorders: constipation
	Euphorbia cyparissias	Herba	Dermatological diseases: verrucosis
Sulfur compounds	*Armoracia rusticana*	Radix	Urogenital system disorders: antimicrobial
Iridoids	*Ajuga genevensis* *Ajuga reptans*	Herba	Respiratory system disorders: asthma
	Euphrasia rostkoviana	Herba	Ophthalmic disorders
	Lamium album	Herba et flos	Urogenital system disorders: diuretic/aquaretic
	Verbena officinalis **Eur. Ph**	Herba	Digestive system disorders: tonic; in convalescence; central nervous system disorders: headaches, migraines
Alkaloids	*Chelidonium majus* **Eur. Ph., Rom. Ph.**	Herba	Digestive system disorders: functional disorders of the bladder and biliary tract; dermatological diseases: verrucosis
	Datura stramonium	Folium	Respiratory system disorders: bronchodilators

	Echium vulgare	Herba	Urogenital system disorders: diuretic/aquaretic and transpiration stimulant; respiratory system disorders: expectorant; dermatological diseases: wound healing (cicatrization)
	Fumaria officinalis **Eur. Ph.**	Herba	Digestive system disorders: mouth diseases, acute and chronic liver disorders, functional disorders of the bladder and biliary tract
	Solanum dulcamara	Stipites	Dermatological diseases: eczema; locomotor system disorders: anti-rheumatic teas
	Vinca minor **Rom. Ph.**	Herba	Cardiovascular system disorders: hypertension
Bitter principles	*Ballota nigra* **Eur. Ph.**	Herba	Digestive, locomotor and central nervous system disorders
	Centaurium erythraea **Eur. Ph.**	Herba	Digestive system disorders: hypoacidity-dyspepsia, anorexia
	Marrubium vulgare	Herba	Digestive system disorders: hypoacidity-dyspepsia, anorexia, functional disorders of the bladder and biliary tract; respiratory system disorders: immunostimulators
	Taraxacum officinale **Eur. Ph.**	Radix et herba	Digestive system disorders: acute and chronic liver disorders, functional disorders of the bladder and biliary tract; urogenital system disorders: diuretic/aquaretic; Dermatological diseases: acne, eczema; locomotor system disorders: anti-rheumatic teas
Bitter-aromatic principles	*Artemisia absinthium* **Eur. Ph.**	Herba	Digestive system disorders: hypoacidity-dyspepsia, anorexia, functional disorders of the bladder and biliary tract
	Tanacetum vulgare	Herba	Digestive system disorders: helminthiasis
Organic acids, vitamins and provitamins	*Hippophaë rhamnoides*	Fructus	Dermatological diseases: eczema
	Rosa canina **Eur. Ph.**	Fructus	Digestive system disorders: helminthiasis; urogenital system disorders: urolithiasis
	Rubus caesius	Folium	Digestive system disorders: diarrhea
	Urtica dioica **Eur. Ph.**	Folium, Radix	Urogenital system disorders: diuretic/aquaretic, micturition disorders; dermatological diseases: *Alopecia areata*; locomotor system problems: anti-inflammatory/analgesic action, anti-rheumatic teas, arthrosis, rheumatoid arthritis; urogenital system disorders: benign prostatic hyperplasia

Conclusions

The floristic inventory revealed the presence of 415 taxa included in 76 families. There were identified 185 medicinal plant taxa. Plants containing tannins (13.51%) were in higher proportion followed by those with essential oils (12.97%), saponins (10.81%) and alkaloids (8.10%). A total of 40 species have monographs in the Romanian Pharmacopoeia and in the European Pharmacopoeia. Most of the medicinal plants are used in digestive, respiratory, skin, locomotor, genitourinary and cardiovascular disorders. The area gives shelter for 10 rare, endemic and subendemic plant taxa.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

1. Bilz M. Kell SP, Maxted N, Richard V. Lansdown R (2011) European Red List of Vascular Plants, Luxembourg: Publications Office of the European Union, IUCN Publications Services
2. Borza A (1929) Vegetaţia şi flora Ardealului, Schiţă geobotanică, Atelierele grafice „Cultura Naţională", Bucureşti
3. Borza A (1931) Botanic excursion through „The Câmpia", Guide de la sixieme excursion phytogeographique internationale, Roumaine, Institutul de Literatură şi Tipografie „Minerva" SA Cluj
4. Borza A (1936) Câmpia Ardealului. Studiu geobotanic, Tipografia cărţilor bisericeşti, Bucureşti
5. Conţiu VH, Conţiu V (2010) Comuna Râciu. Spaţiu de dăinuire multimilenară. Studiu monografic, Ed. Casa Cărţii de Ştiinţă, Cluj-Napoca, 1-156.
6. Cristea V (2014) Plante vasculare: diversitate, sistematică, ecologie și importanță, Ed. Presa Universitară Clujeană, Cluj Napoca
7. Dihoru G, Dihoru A (1994) Plante rare, periclitate și endemice în flora României-Lista roșie, Acta Botanica Horti Bucurestiensis, 173-197
8. Domokos E, Csizmadia B, Elekes T, Kárp A, Domokos J (2018), The characteristic medicinal plants of different vegetation types from the Niraj Valley, Romania, Acta Biologica Marisiensis, 1(1): 10-17
9. Doniţă N, Ivan D, Coldea G, Sanda V, Popescu A, Chifu T, Paucă-Comănescu M, Mititelu D, Boşcaiu N (1992) Vegetaţia României, Ed. Tehnică Agricolă, Bucureşti
10. Eşianu S, Laczkó-Zöld E (2016) Manual de Farmacognozie, vol. I and II, Ed. University Press, Tîrgu Mureş
11. Eşianu S, Ștefănescu R (2016) Fitoterapie University Press, Tîrgu Mureş
12. Florea N, Munteanu I (2012) Sistemul Român de Taxonomie a Solurilor (SRTS), Institutul Naţional de Cercetăre-Dezvoltare pentru pedologie, agrochimie şi protecţia mediului-ICPA Bucureşti
13. Istudor V (1998) Farmacognozie, Fitochimie, Fitoterapie, vol. 1, Ed. Medicală, Bucureşti
14. Istudor V (2001) Farmacognozie, Fitochimie, Fitoterapie, vol. 2. Ed. Medicală, Bucureşti
15. Istudor V (2005) Farmacognozie, Fitochimie, Fitoterapie, vol. III, Ed. Medicală Bucureşti
16. Mihăilescu S, Anastasiu P, Popescu A (2015) Ghidul de monitorizare a speciilor de plante de interes comunitar din România

17. Nagy ZS (2018) Pharmaco-botanical mapping and evaluation of the medicinal flora – potencial along the Niraj and Târnava Mică Rivers, Acta Biologica Marisiensis, 1(1): 37-52
18. Oltean M, Negrean G, Popescu A, Roman N, Dihoru G, Sanda V, Mihăilescu S (1994) Lista Roşie a plantelor superioare din România, Instit. de biologie, Studii, sinteze, Bucureşti
19. Oroian S (2011) Botanică Farmaceutică, Ed. University Press, Tîrgu-Mureş
20. Oroian S, Sămărghiţan M (2014) Contribution to the study of spontaneous vascular plants from „Câmpia Transilvaniei" (Mureş Country), Marisia Studii şi Mat Studia Scient Nat, Tîrgu Mureș, 33/34: 9-80
21. Oroian S, Sămărghiţan M, Tănase C (2017) Plants species of community interest identified in the flora of the Transylvanian plain (Mureş County), Studia Universitatis "Vasile Goldiş", Seria Ştiinţele Vieţii Vol. 27 issue 2:121-126
22. Sămărghiţan M, Oroian S, Tănase C (2017), Endemic species identified in the flora of the Transylvanian plain (Mureş County), Studia Universitatis "Vasile Goldiş", Seria Ştiinţele Vieţii, Vol. 27 issue 2:127-134
23. Oroian S, Sămărghiţan M (2018) Flora from Fărăgău area (Mureş County) as potential source of medicinal plants, Acta Biologica Marisiensis, 1(1): 60-70
24. Rácz G, Rácz-KE, Szabó LGy (2012) Gyógynövények ismerete. A fitoterápia és az alternativ medicina alapjai. Ed. Galenus, Budapesta
25. Sârbu I, Ştefan N, Oprea A (2013) Plante vasculare din România - Determinator ilustrat de teren. Ed. VictorBVictor, Bucureşti
26. Stănescu U, Miron A, Hănceanu M, Aprotosoaie C (2002) Bazele farmaceutice, farmacologice şi clinice ale fitoterapiei, vol. I, Ed. „Gr.T.Popa", UMF, Iaşi
27. Stănescu U, Miron A, Hănceanu M, Aprotosoaie C (2002) Bazele farmaceutice, farmacologice şi clinice ale fitoterapiei, vol. II, Ed. „Gr.T.Popa", UMF, Iaşi
28. Stănescu U, Miron A, Hăncianu M, et al. (2004) Plante medicinale de la A la Z. Monografii ale produselor de interes terapeutic, vol. I -II, Ed. Gr. T. Popa, Iași
29. Şoneriu I, Mac I (1973) Judeţele patriei. Judeţul Mureş, Ed. Acad. RSR, Bucureşti
30. Tutin TG, (1991) Flora Europaea, vol**.** I, edit. II, Cambridge University Press
31. Tutin TG et al (1964-1980) Flora Europaea, I-V, Cambridge University Press
32. Yberrt E, Delesalle-FT (coord.) (2013) Larousse des Plantes Medicinales-Identification, preparation, soins, Franţa, Ed. Encyclopedia of Medicinal Plans, edit. II
33. ***Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
34. ***Emergency Government Ordinance No. 57/2007 on the regime of protected natural areas, conservation of natural habitats, wild flora and fauna, with further amendments
35. ***European Pharmacopoeia Online 9.3 http://online6.edqm.eu/ep903/. Accessed 16 June 2018
36. ***Farmacopeea Română (1993) Ed. a X-a, Ed. Medicală, București
37. ***International Code of Nomenclature for algae, fungi, and plants (Melbourne Code), Regnum Vegetabile 154. Koeltz Scientific Books, 2012, 1-8