Original Research Article

An ethnobotanical study on current status of some medicinal plants used in Bulgaria

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A B S T R A C T

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The present study represents a part of a wider ethnobotanical survey conducted in different localities of Bulgaria during May-July 2013. The survey was carried out with 255 people by using the face-to-face interview technique. The participants were asked: 1) to list five used by them medicinal plants (excluding *Achillea millefolium*, *Hypericum perforatum*, *Thymus* sp., *Melissa officinalis* L., *Origanum vulgare* L.) and 2) to present a detailed information about local names of plants listed, ethnobotanical use and the mode of use. Totally, 62 plant species were listed by respondents. Bulgarian botanical taxa cited included 49 plant taxa from 26 plant families. Most cited families were Lamiaceae (9 species), Asteraceae (7 species) and Rosaceae (5 species). The most frequently reported plants are *Calendula officinalis* L., *Tilia* sp, *Mentha* sp., *Rosa* sp., *Crataegus monogyna* Jacq., *Cotinus coggygria* Scop., *Sambucus nigra* L., *Urtica dioica* L., *Chamomilla recutita* (L.) Rauschert. These herbs are used mainly for disease treatment and prevention. The abundant information about Bulgarian botanical taxa reported by the participants in this study is an evidence for the existence of local knowledge of folk medicine in Bulgaria. At the same time, the interest and use of non-native plants display the impact of globalization and socio-cultural development on herbal utilization nowadays.

Introduction

Ethnobotany is broadly defined as the study of the relationship between plants and people (McClatchey, 2009). It usually focuses on the interaction of indigenous plants and the local inhabitants. The Bulgarian flora is remarkable for its diversity (Kültür and Sami, 2009) and 741 taxa are known as medicinal plants (Medicinal Plants Act, 2000; Kozuharova,

2012). Herbal utilization in our country has a long tradition (Dimitrova, 2010; Nedelcheva, 2012). This traditional knowledge has been documented during 19 and 20th centuries by teachers, University professors, naturalists, folklorists and physicians (Kozuharova et al., 2013).

Cultures constantly change and in recent

decades the rate of change has accelerated drastically (Heinrich 2003). Results of studies worldwide alarmed that traditional knowledge is dwindling rapidly (Ceuterick, 2008; Pirker, 2012; Akaydin et al. 2013). Different factors have impact on plant utilization: increasingly globalized society, modernization, migration, easier access to health services etc. (Akaydin et al. 2013). The current state of traditional knowledge in Bulgaria also is a object of interest for national and foreign scientists (Ivancheva and Stantcheva, 2000; Ploetz, 2000; Leporatti and Ivancheva, 2003; Ploetz and Orr, 2004; Kültür and Sami, 2009; De Boer, 2010; Bertsch, 2011; Kozuharova et al., 2013). Such ethnobotanical studies ensure updating data concerning knowledge about herbal medicine in Bulgaria.

In the past, ethnobotanical research was predominately a survey of the plants used by villagers (Choudhary, 2008). The most ethnobotanical studies frequently report on the most important plant families based on a simple count of species used as medicine (McClatchey, 2009; Colombo, 2012; Weckerle, 2012). Beginning in the 20th century, the field of ethnobotany experienced a shift from the raw compilation of data to a greater methodological and conceptual reorientation. This is also the beginning of academic ethnobotany (Choudhary, 2008). Today the field of ethnobotany requires a variety of skills: botanical training for the identification and preservation of plant specimens; anthropological training to understand the cultural concepts around the perception of plants; linguistic training, at least enough to transcribe local terms and understand native morphology, syntax, and semantics (Choudhary, 2008). The university faculties have realized the necessity of introduction of new academic curriculum to train their students and also identify the new

collaborative research areas in different sectors (Dangol, 2011).

Taking into consideration the abovementioned, one of the purposes of our project was to use the ethnobotanical survey as an educational tool for bachelor students. This study is a part of wider survey on current status of medicinal plant knowledge in Bulgaria. Some herbs as *Achillea millefolium*, *Hypericum perforatum*, *Thymus* sp., *Melissa officinalis* L. and *Origanum vulgare* L. are commonly used in Bulgaria. In present study the participants were asked: 1) to list five used by them medicinal plants (excluding the abovementioned herbs) and 2) to present detailed information about local names of plants listed, ethnobotanical use and the mode of use.

Materials and Methods

This survey was carried out in different areas of Bulgaria during May-July 2013 by using the face-to-face interview technique as described in similar studies (Akaydin, 2013; Seid, 2013). The researchers and Ethnobotany Club student members (Faculty of Natural Sciences, University of Shumen, Bulgaria) carried out the survey. The students were trained to conduct an ethnobotanical survey. The interviewed people were chosen randomly. The demographic features of the people who accepted to participate in the interview were determined. Then the participants were asked: 1) to list five used by them medicinal plants (excluding *Achillea millefolium*, *Hypericum perforatum*, *Thymus* sp.*, Melissa officinalis* L. and *Origanum vulgare* L.*)* and 2) to describe the detailed information (local names, ethnobotanical use and the way of preparation). Descriptive statistic procedures like percentages and frequency distributions are used for analyzing the data.

Result and Discussion

Interviews with 255 people were conducted. Among them, 224 were interviewed by Ethnobotany club members. The whole projects was aimed to 1) to detect current status on herbs and herbal medicine utilization in Bulgaria and 2) to collect ethnobotanical data on five commonly used plants (*Achillea millefolium*, *Hypericum perforatum*, *Thymus* sp., *Melissa officinalis* L. and *Origanum vulgare* L.). Then the participants were questioned to list five other medicinal plants and to describe detailed information (local names, ethnobotanical use and the way of preparation). This paper is focused on the answers to the last question.

All the quoted botanical taxa (n = 62), their local names and traditional uses are reported below. Bulgarian botanical taxa cited by respondents are presented in Table 1. Totally 49 plants were reported during the study. They belong to 26 families. Most often cited families were Lamiaceae (9 species), Asteraceae (7 species) and Rosaceae (5 species) (Fig. 1). The same families were reported to be most often used nowadays in the traditional way of healing in Bulgaria in other study (Kozuharova et. al, 2013).

Bulgarians have been used medicinal plants for centuries. The old written sources could provide valuable ethnobotanical information. The book "Canon Prayer to St. Ivan Rilski and Medicinal Text" (1845) was a part of the Bulgarian early printed literature heritage. It is a matter of interest to compare current results with old recipes presented in this book. The most frequently cited plants in this old book were Asteraceae (Compositae), Fabaceae (Leguminosae) and Apiaceae (Umbelliferae) (Nedelcheva, 2012).

Nine most frequently mentioned plants (pointed by more than 10 respondents) were *Calendula officinalis* L. (neven). *Tilia* sp. (lipa), *Mentha* sp. (menta), *Rosa* sp. (shipka) *Crataegus monogyna* Jacq. (glog), *Cotinus coggygria* Scop. (smradlika), *Sambucus nigra* L. (svirchovina/buz), *Urtica dioica* L. (kopriva), *Chamomilla recutita* (L.) Rauschert (layka) (Table 1). These plants were reported to be used mainly for disease treatment and prophylaxis (Fig. 2). The same plants were mentioned to be used in other recent studies in Bulgaria (Ploetz, 2000; Kültür and Sami, 2009; Bertsch, 2011; Kozuharova et al., 2013).

Five of the plants cited (*Calendula officinalis* L. (neven); *Tilia* sp (lipa); *Rosa* sp. (shipka); *Crataegus monogyna* Jacq. (glog); *Chamomilla recutita* (L.) Rauschert (layka)) are widely distributed in Bulgaria and Europe. As mentioned above, we compared our data with recipes in an old book (Nedelcheva, 2012). We established that these five plants were not included in this book but are reported in recent study (Kültür and Sami, 2009; Kozuharova et al., 2013). This observation confirms renewed interest on phytotherapy nowadays.

It must be noticed, that a several commonly used as spice native plants were reported in our study: kopur, magdanoz, dzhodzhen, rozmarin. As described by Nedelcheva (2012) the significant participation of spices in folk remedies sheds new light on the list of species that are traditional medicine. Vandebroek and Balick (2012) also reported that plants primarily used for culinary purposes in Dominican culture are widely used for medicinal purposes.

In this study 32 respondents listed 14 not-native plants (Table 2). These plants have been cultivated or are spices imported from Middle East. Historically, geographical

locality of Bulgaria predict influence of other cultures. This influence obviously had an effect on ethnobotanical knowledge. It must be noticed that 8 of them are mentioned in old Bulgarian recipes (Nedelcheva, 2012): *Ocimum basilicum* L. (bosilek), *Salvia officinalis* L. (salviya), *Pelargonium roseum* Willd. (indrishe), *Aloe vera* L. (aloe vera), *Zingiber officinale* Rosc. (dzhindzhifil), *Cassia acutifolia* Del. (maychin list), *Piper nigrum* L. (cheren piper) *Camellia sinensis* (L.) O. Kuntze (cheren chay).

Medicinal plant knowledge evolves historically within a specific social context. During the process of transmission, the content of knowledge undergoes constant change and new interpretations (Haselmair and Pirker, 2014). In present study some non-native plants were listed (*Ginkgo biloba* L. (ginko biloba), *Lycium barbarum* L.

(godzhi beri), *Paullinia cupana* Mart. (guarana), *Panax* L. (zhen-shen), *Origanum majorana* L. (mayorana) and *Aspalathus linearis* (Brum.f) Dahlg. (cheren chay)). These plants were absent in old recipes (Nedelcheva, 2012). As described by Leonti (2011) "Ethnobotanical studies should differentiate between local knowledge and widespread as well as newly generated knowledge reported and introduced through popular and scientific literature and media". The results of present study, in agreement with the statement of Vandebroek and Balick (2012), contradict the popular paradigm about loss of cultural plant knowledge. On the other hand, in modern society valuable plants could be used worldwide for disease prophylaxis and treatment. The results of our survey showed the positive influence of easy access to information nowadays.

Table.1 List of native plants used for ethnobotanical purposes

Family	Scientific name	Local name	Respondents, number (%)	Use
Anacardiaceae	*Cotinus coggygria* Scop.	smradlika	24 (9.41%)	prophylaxis; external washing; styptic; gingivitis; wounds
Apiaceae	*Anethum graveolens* L.	kopur	4 (1.57%)	stomache disorders; spice
	Petroselinum crispum (Miller) A.W.Hill	magdanoz	2 (0.78%)	high blood pressure; aphrodisiac
Asteraceae	*Achillea millefolium* L.	zhult ravnetsh	1 (0.39%)	no information
	Calendula officinalis L.	neven	18 (7.06%)	prophylaxis; nerve problems; stomache disorders; ulcer; anti-inflammatory; wounds; *blood detoxification*
	Carduus acanthoides L.	magareshki trun	3 (1.18%)	prophylaxis; hemorrhoids; heart disorders
	Chamomilla recutita (L.) Rauschert	layka	90 (35.29%)	prophylaxis; anti-inflammatory; stomache disorders; common colds; soar throat; gingivitis; eye inflammation; wounds; cosmetics
	Cichorium intybus L.	sinya zhluchka	3 (1.18%)	disease treatment; digestive stimulant
	Taraxacum officinale Weber	gluharche	2 (0.78%)	tonic; bile disorders
	Tussilago farfara L.	podbel	3 (1.18%)	cough
Brassicaceae	*Brassica nigra* (L.) Koch	cheren sinap	1 (0.39)	bronchitis; arthritic pains
	Capsella bursa-pastoris (L.) Medicus	ovcharska torbichka	2 (0.78%)	disease treatment
Caprifoliaceae	*Sambucus nigra* L.	svirchovina/buz	21 (8.24%)	prophylaxis; common colds; bronchitis; cough; flu; immunostimulant
Crassulaceae	*Sedum maximum* (L.) Suter	debela mara, golyama tlustiga	1 (0.39%)	wounds
Ericaceae	*Arctostaphylos uva-ursi* (L.) Sprenger	mecho grozde	9 (3.53%)	prophylaxis; urinary system
Onagraceae	*Epilobium parviflorum*	vurbovka	1 (0.39%)	urinary system

	Schreber			
Fabaceae	*Melilotus officinalis* (L.) Pallas	komuniga	1 (0.39%)	prophylaxis
	Trigonella foenum-graecum L.	sminduh	1 (0.39%)	spice
Gentianaceae	*Centaurium erythraea* Rafin	cherven kantarion	2 (0.78%)	hair loss; prophylaxis
Juglandaceae	*Juglans regia* L.	oreh	2 (0.78%)	ulcer
Lamiaceae	*Clinopodium vulgare* L.	koteshka stupka	3 (1.18%)	prophylaxis; immunostimulant; *detoxification;* cancer
	Lavandula angustifolia Miller	lavandula	1 (0.39%)	spice; aromateraphy
	Mentha sp.	menta	71 (27.84%)	cough; common colds; as a tonic; stomache disorders; nerve disorders; spice;
	Mentha spicata L.	dzhodzhen	3 (1.18%)	spice; *diarrhea*
	Rosmarinus officinalis L.	rozmarin	2 (0.78%)	spice; cosmetics
	Satureja hortensis L.	chubritsha	5 (1.96%)	spice
	Sideritis scardica Griseb.	mursalski chay	4 (1.57%)	prophylaxis; immunostimulant; common colds
	Teucrium chamaedrys L.	podubiche	1 (0.39%)	disease treatment
Malvaceae	*Malva sylvestris* L.	kamilyak, slez	1 (0.39%)	no information
Papaveraceae	*Chelidonium majus* L.	zmiysko mlayko	1 (0.39%)	warts
Pinaceae	*Pinus sylvestris* L.	byal bor (borovi vruhcheta)	3 (1.18%)	prophylaxis; cough; respiratory disorders
Plantaginaceae	*Plantago major* L.	zhivovlek	9 (3.53%)	wounds; stomache; cough; insects bite; acne
		shirokolist zhivovlek	1	prophylaxis; disease treatment
Poaceae	*Elymus repens* (L.) Gould.	pirey	1 (0.39%)	prophylaxis
	Zea mays L.	tsharevitsha (tsharevichna kosa)	2 (0.78%)	prophylaxis; disease treatment
Polygonaceae	*Rumex acetosa* L.	kiseletsh	1 (0.39%)	fresh breath
	Rumex patientia L.	lapad	1 (0.39%)	foodstuff
Rhamnaceae	*Paliurus spina-christi* Miller	draka	4 (1.57%)	cough
Rosaceae	*Agrimonia eupatoria* L.	kamshik	5 (1.96%)	prophylaxis; tonic for *strengthening* the *body; detoxification*
	Crataegus monogina Jacq.	glog	25 (9.80%)	prophylaxis; nerve disorders; heart disorders
	Prunus spinosa L.	trunka	2 (0.78%)	prophylaxis
	Rosa sp.	shipka	35 (13.73%)	prophylaxis; common colds; *vomiting; diarrhea*
	Rubus idaeus L.	malina	1 (0.39%)	disease treatment
Rubiaceae	*Galium* sp.	enyovche	2 (0.78%)	prophylaxis; disease treatment
Tiliaceae	*Tilia* sp.	lipa	101 (39.61%)	prophylaxis; *paradontosis;* sore throat; common colds; bronchitis; inhalation; kidney disorders; sedative; as wool dye; as aroma
Urticaceae	*Urtica dioica* L.	kopriva	17 (6.67%)	urinary tract disorders; tonic for *strengthening* the *body; during* spring; anti anaemic; rheumatism; diabetes; spice; foodstuff
Valerianaceae	*Valeriana officinalis* L.	dilyanka, valeriana	6 (2.35%)	nerve disorders
Verbenaceae	*Verbena officinalis* L.	vurbinka	1 (0.39%)	internal organ disorders
Zygophyllaceae	*Tribulus terrestris* L.	babini zubi	1 (0.39%)	anticholesterol plant

Table.2 List of not native plants used for ethnobotanical purposes

Scientific name	Local name	Respondents, n (%)	Use
Salvia officinalis L.	salviya	6 (2.35)	prophylaxis; soar throat; cough; spice
Pelargonium roseum Willd.	indrishe	4 (1.57)	prophylaxis; cough; foodstuff (jams)
Ocimum basilicum L.	bosilek	11 (4.31)	prophylaxis; sleeplessness; spice
Aloe vera L.	aloe vera	1 (0.39)	disease treatment
Ginkgo biloba L.	ginko biloba	1(0.39)	prophylaxis
Lycium barbarum L.	godzhi beri	1 (0.39)	prophylaxis
Paullinia cupana Mart.	guarana	1 (0.39)	prophylaxis
Zingiber officinale Rosc.	dzhindzhifil	1 (0.39)	prophylaxis; arthritis
Panax L.	zhen-shen	1 (0.39)	prophylaxis
Origanum majorana L.	mayorana	1 (0.39)	spice
***Cassia acutifolia* Del.**	**maychin list**	1 (0.39)	anti constipation
Aspalathus linearis (Brum.f) Dahlg.	roybos	1 (0.39)	prophylaxis
Piper nigrum L.	cheren piper	1 (0.39)	spice
Camellia sinensis (L.) O. Kuntze	cheren chay	1 (0.39)	prophylaxis

Figure.1 Ranking families (n = 26) according frequency of plant family members cited (n = 49)
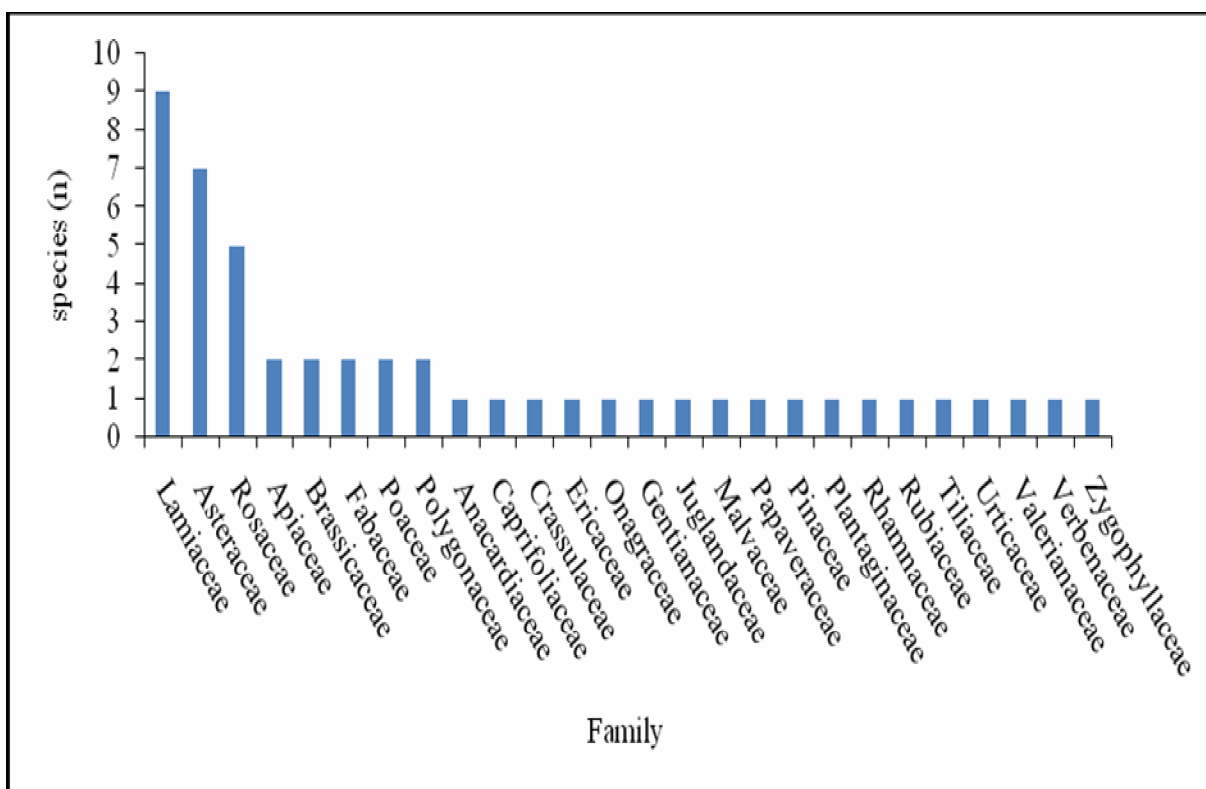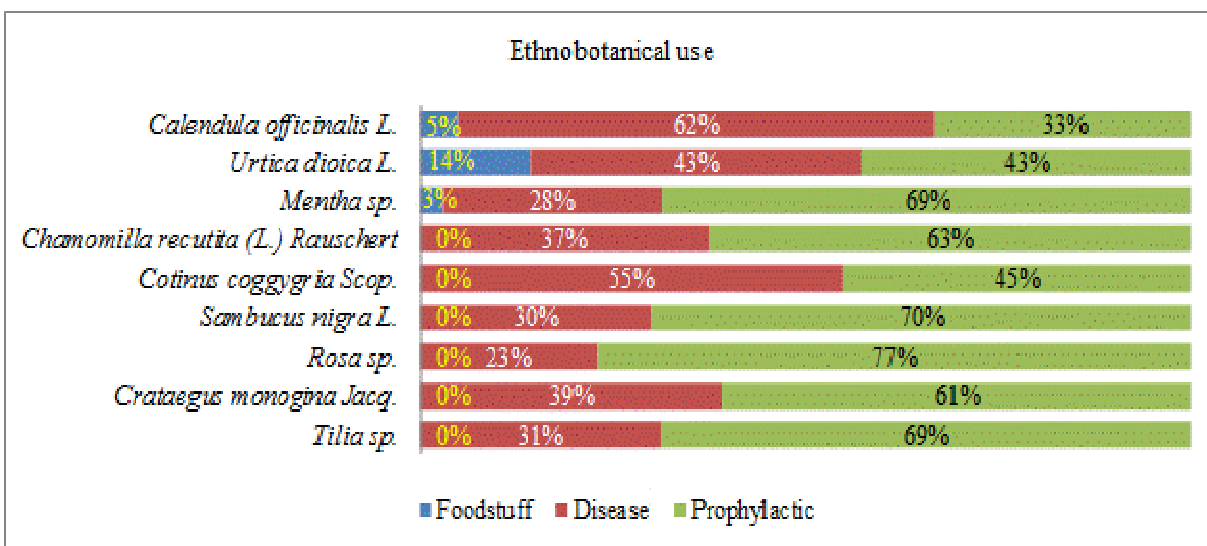
Figure.2 Ethnobotanical use of nine most frequently cited plants

In present study participants were asked to describe the mode of plant utilization. Infusion was cited as the most common way of utilization. A high variability of doses was mentioned (data not shown). For example, 24% of respondents that use *Tilia* sp. reported to use one bag of pharmaceutical tea form for a cup. On the other hand, doses of crude herb varied from one "pinch" to one „handful" per liter.

This observation is of importance as an indicative that herbal products, being natural, are generally considered to be safe. It must be noticed that plants contain a variety of secondary metabolites used as a chemical defense mechanism (Teixeira et al., 2003). Recently, a lot of studies reported that some of these bioactive compounds could affect adversely human health (Sousa and Viccini, 2011; Akaneme and Amaefule, 2012; Fatemeh and Khosro, 2012; Liman et al., 2012; Neelamkavil and Thoppil, 2014). These observations lead to necessity of estimation of potential toxicity of medicinal plants. The obtained data must be popularized especially in populations that rely on traditional medicine.

The abundant information about Bulgarian botanical taxa reported by the participants in this study is an evidence for the existence of local knowledge of folk medicine in Bulgaria. At the same time, the interest and use of non-native plants display the impact of globalization and socio-cultural development on herbal utilization nowadays.

Acknowledgments

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