



Research paper

Medical and food ethnobotany among Albanians and Serbs living in the Shtërpçë/Štrpce area, South Kosovo

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ABSTRACT

Ethnobotanical research in the Balkans is important for providing concrete insights aimed at developing small-scale markets of local medicinal plants and food products to support rural development. An ethnobotanical field study was carried out in the spring of 2017 among Muslim Albanians and Christian Orthodox Serbs living in 20 villages located in South Kosovo. The aim of the study was to assess if two different ethnic affiliations played a role in shaping traditions of local plant uses by ethnic groups living in the same natural environment in South Kosovo over many centuries. The field survey was conducted via semi-structured interviews with 181 local adults who were chosen for their retention of traditional ecological knowledge (TEK) regarding traditional uses of wild and cultivated food and medicinal plants and fungi relevant to either human or animal health. A total of 122 botanical and fungal folk taxa, belonging to 51 families, and 19 other domestic remedies were recorded. The most common plants species cited by the study participants belongs to family Rosaceae, followed by Lamiaceae, and Asteraceae. Approximately 10 % of the total reports have not been previously recorded in the Western Balkans.

Comparison of the recorded reports between the Serbian and Albanian demonstrated that only 28.4 % of the recorded remedies are shared between the two ethnic groups, thus confirming the importance of religious and ethnic divides in shaping divergent traditional uses of natural resources. A more "herbophilic" attitude of the Slavic population (pointed out in previous studies) was not evident in this survey.

1. Introduction

Over the last few decades, several studies have explored the ethnobotany of the Western Balkans with the aim of recording folk knowledge and perceptions of wild plants used in the food and medicinal domains (Hajdari et al., 2018; Jarić et al., 2007, 2015, 2018 and 2019; Pieroni et al., 2005, 2008 and 2010; Menković et al., 2011; Pieroni et al., 2011, 2013, 2014a, 2014b, 2015, and 2017; Mustafa et al., 2012a, 2012b, and 2015; Savikin et al., 2013; Pieroni and Quave, 2014 and references therein; Zlatković et al., 2014; Quave and Pieroni, 2014 and 2015; Pieroni and Soukand, 2017; Janačković et al., 2019; Savić et al., 2019). The rationale for these studies has stems from the assumption that this area in Southeastern Europe still possesses a tremendous reservoir of Traditional Ecological Knowledge (TEK) related to wild plants. This is based on several key factors: 1) the complex biocultural diversity of this region, which is a hotspot of biodiversity

and also hosts a variety of different ethnic and religious groups; 2) the socio-economic environment related to the troubled vicissitudes of the last few decades, which has slowed down the economic development of the former Yugoslavia, especially in Bosnia, Kosovo, and Macedonia, fostering the permanence of subsistence economies in rural and mountainous areas, managed mainly by elderly peoples; and 3) the long held "tradition" in the collection of wild plants in the region, including before the end of the disintegration/occupation of the Ottoman Empire, which started at the beginning of the 19th Century (Kathe et al., 2003). Small-scale agro-pastoral activities, therefore, still represent the pillar of subsistence economies for those local ethnic groups who live in mountainous and rural areas in the Western Balkans, and TEK-centered studies are not only important for understanding local perceptions and uses of plants, but even more so for establishing baseline data for projects intended to foster rural development programs focusing on sustainable valorisation of local herbal and wild food resources.

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South Kosovo, in particular, represents an economically disadvantaged montane area in the Balkans that could provide new ingredients to the European herbal market in terms of new medicinal plant uses that are still practiced locally. Moreover, ethnobotanical studies are relevant to bio-conservation strategies, and these initiatives aimed at preserving local medicinal, aromatic, and wild food plants need to be culturally sensitive; i.e. the “emic” perceptions that local populations have towards their natural plant environment must be considered in order to successfully implement measures regarding nature protection.

The main goal is to assess if two different ethnic affiliations may have played a role in shaping traditions of local plant uses by ethnic groups living in the same natural environment in South Kosovo over many centuries. The objectives of this study were three-fold: 1) to document the ethnobotanical knowledge related to cultivated and wild plant or fungal-based cuisine and medicinal remedies pertaining to humans; 2) to compare the collected data between the two distinct ethnic groups (Albanian and Serbs), differing in religion and language; and 3) to compare the same data with the findings of previous ethnobotanical surveys conducted in SW Balkans, in order to highlight new plant and fungal uses of potential interest for further phytochemical and/or phytopharmacological studies, as well as for local development.

2. Materials and methods

2.1. Study area

Twenty villages in South Kosovo were visited (Fig. 1); the study area is situated at a latitude and longitude of E 20.86444 - E21.14804; N42.25122 - N 42.1398. The local population dynamics for each site are described in Table 1. These villages are located in the Sharr Mountains (in Albanian known as Malet e Sharrit; in Serbo-Croatian Šar Planina), which is one of the largest mountain massifs in the Balkans (1600 km²), spanning the Republic of Macedonia (in a total area of 826.8 km² or 51.44 %) and the Republic of Kosovo (in a total area of 780.4 km² or 48.56 %) (Cukić, 1983).

Different names for the Sharr Mountains have been used during

different historical periods. The author Polibi called it “Scardus orus”, while Tit Livija referred to it as “Scordi montis” and “Scordus”. The name “Scardus” is also found in different maps of Ptolomeu. The classic name “Scardus” was used until the 16th century (Cvijić, 1911), and from that time until middle of the 19th century, the names “Monte Argentaro”, “Schardagah”, “Çardagh”, “Scharta”, “Sharsilsilesi”, and “Sharr” were also used (Krivokapić, 1969). These differences in the geographic nomenclature of the region, which appeared in various maps and the literature, are an indication of the interest shown by Europeans and the Ottoman Empire for the region.

Many authors have made attempts to clarify the meaning of the name “Sharr”. For example, according to Kovačević and Jovanović (1893), the name “Sharr” was derived from the word “Scard” or “Shqarth” (“Shqarth” is the Albanian name for *Martes foiana*), or from “Sharrë” (“Sharrë” is the Albanian name for Saw). According to Frannck (1932), the name “Scardus” is derived from the Illyrian word “Scard”, while for Vladimir (1903), the name “Sharr” is derived from Latin word “Scardus”. During the 20th century, different authors used the name “Shar planina” which is the Slavic name of Sharr translated from “Schardagh” (Schar - Sharr and dagh-mountain) and is the name used for Sharr by the Ottoman administration. The name “Sharr” was used for the first time by Ami Boue in 1840 (Boue, 1840).

Due to its favourable and unique geographic position, the Sharr Mountains have a specific climatic and hydrological character and are geologically diverse with volcanic, metamorphic and sedimentary rocks of varying ages and origins, which foster the biodiversity of the region. Sharr in general is characterized by a continental climate, in lower altitudes the continental climate that is influenced by the Mediterranean climate coming from the Adriatic Sea via the Drini Bardh river valley and from the Aegean sea via the Vardar and Lepenci river valley, whereas in higher altitudes the continental climate is influenced by a subalpine and alpine climate. The soils of this region are generally rich with nutrients, providing a good growth medium for plants, resulting in a rich level of biodiversity (Mustafa and Hoxha, 2001).

To date, there are roughly 1,500 vascular plant species known to grow in the Sharr Mountains (Stevanović and Janković, 1984). A special characteristic of the plant population here is the presence of the

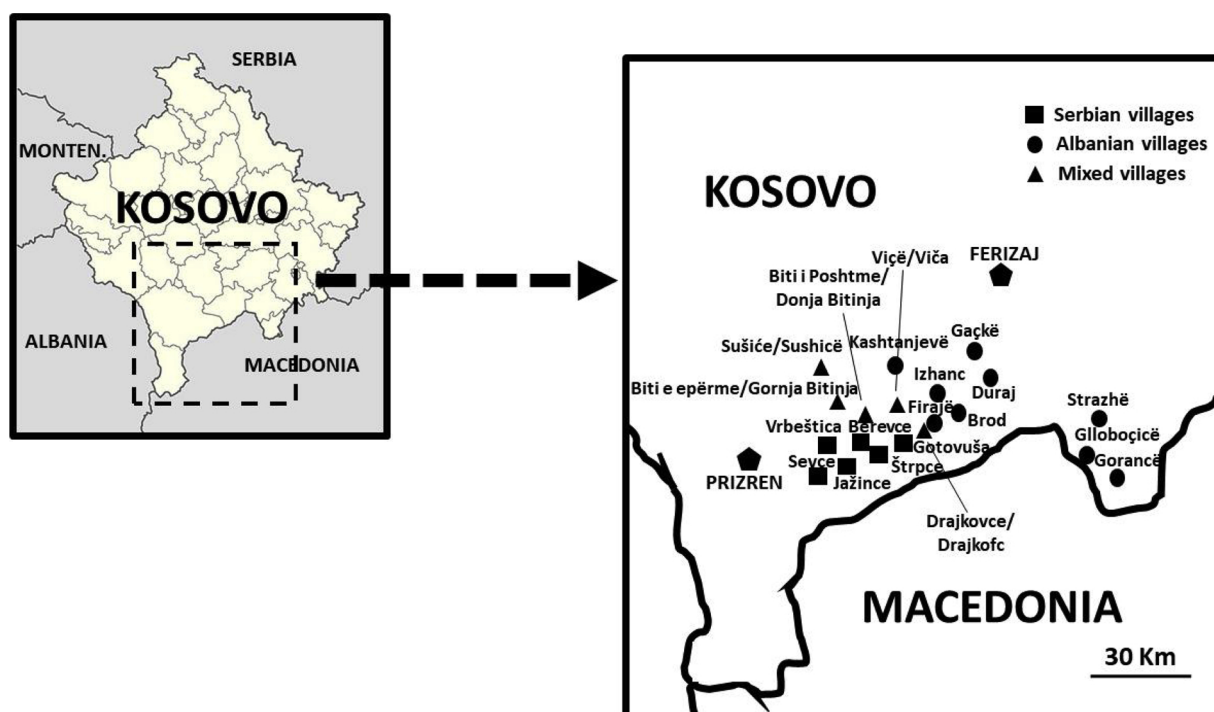


Fig. 1. Map of study site and visited villages.

Table 1
Demographic data on ethnic groups included in the field study (Kosovo Agency of Statistics, population censuses, 2011).

Village Name	Elevation (m.a.s.l.)	Total Population Size	Number of Albanian Inhabitants	Number of Albanians Interviewed	Number of Serbs Inhabitants	Number of Serbs Interviewed
Beroc / Berevce	820	286	0	0	286	1
Biti e epërme/ Gornja Bitinja	833	329	195	5	134	2
Biti i Poshtme/ Donja Bitinja	780	383	252	6	131	3
Brod	720	1678	1678	12	0	0
Drekoc / Drajkovce	816	106	39	2	67	5
Duraj / Dura	635	651	651	3	0	0
Firajë/ Firaja	860	1103	1103	11	0	0
Gaçkë / Gatnje	618	2356	2356	6	0	0
Gllloboçicë / Globoçica	830	1283	1283	6	0	0
Gorancë	704	1028	1028	7	0	0
Gotovushë / Gotovuša	845	445	0	0	445	13
Izhanc / Ižance	835	88	88	3	0	0
Jazhincë / Jažince	965	161	0	0	159	10
Kashtanjevë / Koštanjevo	1104	123	123	4	0	0
Sevcë / Sevce	1054	174	0	0	174	16
Strazhë / Straža	1040	258	258	5	0	0
Shtërpçë / Štrpce	855	1228	0	0	1211	12
Sušicë / Sushicë	1157	74	39	2	35	21
Viçë / Viča	780	209	197	8	12	5
Vërbeshticë / Vrbeštica	1027	449	0	0	449	13

endemic, relict, and rare species and plant communities, with 150 Balkan endemic species (Stevanović and Janković, 1984). The Sharr Mountains provide an interesting richness and diversity of plant life, with a flora belonging to three different bio-geographic zones: the Mediterranean, the Central-European and the Central-South European regions (Mustafa, 1998; Krasniqi, 1998). Because of its rich biodiversity, the Sharr Mountains are known as the centre of Balkan endemic plants (Krasniqi, 1987).

The most representative vegetation units of this region are black alder (*Alnetum glutinosae*) communities, found widespread and along streams and rivers; oriental hornbeam (*Carpinetum orientalis scardicu*) forests; hop hornbeam mixed forests and oriental hornbeam (*Ostryo-Carpinion orientalis*) forests; thermophilous oak forests (*Quercetum frainetto-cerris scardicum* and *Quercetum pubescens*, *Quercetum montanum*, *Quercetum trojanae dukagjini*); beech (*Fagetum montanum*) forests; and pine (*Pinetum heldreichii*, *Pinetum peucis*, and *Pinetum mughi typicum*) forests (Rexhepi, 1994); etc.

The Sharr Mountains and surrounding areas have been inhabited for centuries and thus serve as home to many villages that are isolated from the urban areas and mainly engaged in agricultural and pastoral activities.

When Romans arrived in the region (years 40–50 of the 1st Century), they found a local population composed of Dardanians and Illyrian tribes (Albanian ancestors). Serbs arrived in the area for the first time in 1190, and were then expelled by the Byzantines. By the end of the 13th century, the area was occupied by the Serbian Kingdom and the area was recolonized by Serbs (Schmid, 2012). Cadastral records of the Ottoman Empire (1455) show that Albanians and Serbs were present in the area (Handžić, 1969; Bukumirić, 1981).

2.2. Field study

The field study was conducted over a five day period in the spring (April) 2017, as part of a fieldwork training and research project with students from the University of Prishtina. The research team consisted of three professors and 12 students, who were divided into three small groups that interacted with either individual respondents or small focus groups of no more than three individuals. Participants were selected among members of the adult population that retained traditional

knowledge concerning plants, usually those engaged in small-scale farming and pastoral activities, as these socio-economies activities still represent the primary income source for families in the study area.

In-depth open and semi-structured interviews were then conducted with 181 selected villagers (101 Albanians and 80 Serbs), Table 1. The participants ranged in age from 39 to 85 years (mean age: 63.3; standard deviation: 14.2), with the large majority of the informants from all ethnic groups being more than 60 years of age.

Participants were asked about local uses of: wild food plants; medicinal plants (wild, semi-domesticated, and cultivated) in both the human and the veterinary medicine; semi-domesticated and cultivated food plants used in “unusual” ways (i.e. diverging from what those cultivated plants in Europe and in Western Countries are normally used for); edible or medicinal mushrooms, if any; and other domestic remedies pertaining to the medicinal domain. Specifically, local name(s) of each reported taxon, the plant part(s) used, details about their preparations and food, medicinal, or other domestic uses were recorded. Uses were broken down into generic use categories for data analysis (Table 2).

Study participants were asked to report current uses considered “traditional”, i.e. considered part of the perceived cultural heritage, as well as uses they could recall from their childhood, which may no longer be exploited. Interviews were conducted in the Albanian and Serbian languages. Informed consent from all participants was verbally obtained prior to conducting interviews and ethical guidelines prescribed by the International Society of Ethnobiology (ISE, 2008) were followed. During the interviews, informants were always asked to show the reported plants (fresh or dried), whenever available. Voucher specimens were collected and stored at the Herbarium of the Biology Department of the University of Prishtina (voucher codes listed in Table 3).

Taxonomic identification followed relevant standard botanical literature of the area (Paparisto et al., 2000; Pajazitaj, 2004; Demiri, 1981; Tutin et al., 1964). Botanical nomenclature and family assignments followed The Plant List database (2013) and the Angiosperm Phylogeny Group III (Stevens, 2016), respectively. Local plant names were transcribed following the rules of standard Albanian and Serbian languages. Serbian plant names are written in the Latin alphabet.

Table 2
Comparison of Albanian and Serbs plant use by informant consensus factor (F_{ic}) analysis.

Category of Use	Number of taxa (N_t) [*]		Number of Use Citations (N_{uc})		Informant Consensus Factor (F_{ic})	
	Albanian	Serbs	Albanian	Serbs	Albanian	Serbs
FOOD						
Lactic or Acetic Acid Fermentation	8	4	60	21	0.88	0.85
Alcoholic Fermentation	2	6	4	80	0.67	0.94
Jam	16	13	72	64	0.79	0.81
Savoury pie filling (Pita/Burek)	8	5	97	33	0.93	0.88
Recreational beverage	22	18	104	154	0.80	0.89
Salad ingredient	4	7	18	38	0.82	0.84
Sarma ingredient	4	3	45	6	0.93	0.60
Seasoning	9	7	22	31	0.62	0.80
Snacks	14	5	86	23	0.85	0.82
Subtotal	87	68	508	450	0.83	0.85
MEDICINE						
Anti-Cancer	1	3	10	2	1.00	0.86
Cardiovascular	14	4	126	82	0.84	0.98
Culture Bound Syndrome	5	3	13	14	0.69	0.85
Dermatological	22	15	92	58	0.63	0.88
Endocrine	6	7	62	39	0.87	0.92
Gastrointestinal	19	20	109	67	0.73	0.89
General Health	12	17	87	58	0.81	0.87
Neuromuscular	9	10	51	38	0.78	0.86
Ophthalmological	2	2	12	8	0.86	0.94
Oral Health	6	3	10	17	0.69	0.91
Otolaryngological	7	3	26	27	0.77	0.94
Respiratory	18	17	118	96	0.82	0.89
Urological	14	8	42	44	0.70	0.84
Veterinary Health	11	8	59	58	0.82	0.88
Women's Health	6	6	4	14	0.62	0.78
Subtotal	152	126	821	622	0.76	0.89
OTHER						
Cosmetic	5	2	14	7	0.69	0.83
Household	7	3	32	18	0.81	0.88
Subtotal	12	5	46	25	0.76	0.83
OVERALL TOTAL	251	199	1176	1579	0.79	0.87

* Individual taxa may be listed in multiple use categories.

† A high F_{ic} value indicates a high rate of agreement between the informants regarding plants used for the corresponding category of use; a low value indicates a low level of agreement.

2.3. Data analysis

2.3.1. Informant consensus factor

The Informant Consensus Factor (F_{ic}) for Albanian and Serb participants is provided for use categories in Table 2. Informant consensus factor was calculated per each category of use, using the following formula:

$$F_{ic} = \frac{N_{uc} - N_t}{N_{uc} - 1}$$

where N_{uc} is the total number of use citations in each category and N_t is the number of taxa used in that category. High F_{ic} values (near 1.0) are obtained when one, or a few species, is reported to be used by a large proportion of informants for a particular category, whereas lower F_{ic} values indicate that informants disagree over which taxa to use (Quave and Pieroni, 2015).

2.3.2. Significance of plant uses

We employed Fisher's exact test to determine the significance of differences in the number of use citations (N_{uc}) for each unique plant use between cultural groups of the informants. We followed previously described methods for this test (Quave and Pieroni, 2015). P-values were calculated using a two-tailed method and the difference in N_{uc} between groups was considered significant for $P < 0.05$, and reported in Table 3.

2.3.3. Fidelity level analysis

The Fidelity Level (FL) percentage measure was applied to assess the

key use of each reported taxa, as agreed upon by both groups (Albanians and Serbs) (Friedman et al., 1986). The FL represents the ratio of the total number of informants that independently cited a specific plant use (N_p) and the total number of informants use citations for any use (N), calculated as:

$$FL = \left(\frac{N_p}{N} \right) \times 100$$

Any species with three or less use citations were excluded from this analysis.

2.3.4. Use-value analysis

The use-value citation (UV_c) analysis for each species was calculated for each ethnic group in the study (de Albuquerque et al., 2007). It is calculated as the sum of independent use citation reports (U_{is}) for a particular group (Serbs or Albanians) and for a particular species. This is then divided by the total number of informants within the group (N):

$$UV_c = \frac{\sum U_{is}}{N}$$

This assessment offers insight into the relative importance of each species. To further assess how this importance ranking compares across ethnic groups, the use-value matrix analysis as previously described (Quave and Pieroni, 2015) was applied. Briefly, UV_c values were plotted on an x-y axis and quadrants aligned at an intersection point of the maximum UV_c value (UV_{max}) divided by two. Quadrants were assigned based on the overlay plot, with Quadrant V representing those species

Table 3
Medicinal and wild food plant uses recorded in the study area.

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{Alb}	UV _{Seab}	UV _Q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{rec Alb} ^d	N _{rec Seab} ^d	FL
<i>Achillea millefolium</i> L. (Asteraceae) 79/GO/09	Bar i hajnave ^A , Barpezmi ^A	0.12	0.99	II	Flowers	Tea	Med: improve general health	1	0	1%
	Čaj mali ^A					Med: hypertension	0	11	10%	
	Hajdučka trava ^S				Leaves	Fresh leaves squeezed and topically applied	Med: stomach-ache, diarrhoea	0	11	10%
						Med: anti-diabetic	0	11	10%	
<i>Aesculus hippocastanum</i> L. (Sapindaceae) 29/GO/09	Gishtaja e eger ^A	0.01	0.00	V	Fruits	Tincture, topically applied	Med: skin wounds	2	2	4%
						Med: laceration (hemostatic)	3	0	3%	
						Med: earache	3	0	3%	
<i>Agaricus</i> sp. (Agaricaceae)	Puqurka e kuqe ^A	0.03	0.00	V	Fruiting body	Cooked	Med: earache	3	0	3%
	Virak ^S				Whole plant	Mixed with milk fat (mehlem), topically applied	Med: acne	3	0	3%
<i>Allium ampeloprasum</i> L. (Amaryllidaceae) 09/DE/10	Purrinj ^A , Presh ^A	0.04	0.03	V	Leaves	Squeezed and applied in ear	Food: recreational tea	0	20†	19%
	Purrinj ^A					Med: rheumatism	0	20†	19%	
						Med: diabetes	0	20†	19%	
<i>Allium cepa</i> L. (Amaryllidaceae) 11/DE/10	Kepra ^A , Qepa ^A , Lluk ^S	0.08	0.01	V	Bulb	Boiled until turns light brown in color	Med: anti-rheumatic	1	0	-
						Mixed with other ingredients and cooked	Food: seasoning and food additive	3	0	-
						Cut into small pieces and mixed with salt	Med: for menstrual problems, menopause	0	2	-
						Tea	Med: earache	17	0	71%
<i>Allium sativum</i> L. (Amaryllidaceae) 10/DE/10	Hudra ^A , Beli luk ^S	0.09	0.03	V	Outer skin	Tea	Med: cough	1	0	4%
						Tea	Med: kidney stones	1	0	4%
						Squeezed, a drop added in ear	Food: savoury pie filling	3	0	13%
						Eaten fresh	Med: ear infection	1	1	8%
<i>Allium ursinum</i> L. (Amaryllidaceae)	Hudra e eger ^A , Semu ^S , Divlji luk ^S	0.19	0.29	V	Whole plant	Dried/Fresh	Med: antitussive	1	0	10%
						Tea	Food: sarma	0	1	10%
						Fresh	Med: hematoma	1	0	10%
						Tincture, mixed with alcohol for 140 days	Med: cough and lung diseases	2	0	20%
<i>Alnus glutinosa</i> (L.) Gaertn. (Betulaceae) 05/DE/10	Verri ^A	0.01	0.00	V	Leaves	Pie (fresh)	Other: hair colouring	1	0	20%
						Tea	Med: abortifacient	1	0	10%
						Fresh	Med: earache	2	0	20%
						Fresh	Med: hypertension	0	3	50%
<i>Althaea officinalis</i> L. (Malvaceae) 07/DE/10	Beli slez ^S , Uvin čaj ^S	0.00	0.14	V	Bulbs	Grind (dried)	Med: anthelmintic	2	0	33%
						Leaves	Med: toothache	1	0	17%
						Tea	Med: cultural bound syndrome (Evil Eye)	2	8	24%
						Fresh	Food: salad	6	6	29%
<i>Arctostaphylos uva-ursi</i> (L.) Spreng. (Ericaceae) 02/Pz/2013	Medvedje uši ^S , Crna trava ^S	0.01	0.00	V	Leaves	Tincture, mixed with alcohol for 140 days	Med: to lower cholesterol	0	2	5%
						Fresh	Med: hypertension	0	1	2%
						Fresh	Food: for animals to produce better milk	0	1	2%
						Grind (dried)	Food: seasoning	1	0	2%
<i>Arctostaphylos uva-ursi</i> (L.) Spreng. (Ericaceae) 02/Pz/2013	Medvedje uši ^S , Crna trava ^S	0.00	0.14	V	Leaves	Fresh	Med: improve general health	0	3	7%
						Fresh	Food: salad	4	1	12%
						Pie (fresh)	Med: improve general health	4	1	12%
						Tea	Food: pie filling	1	0	2%
<i>Arctostaphylos uva-ursi</i> (L.) Spreng. (Ericaceae) 02/Pz/2013	Medvedje uši ^S , Crna trava ^S	0.00	0.14	V	Leaves	Tea	Med: abortifacient	1	0	-
						Tea	Med: bronchitis, coughing	0	6	100%
						Tea	Med: urinary system inflammations	0	3	27%
						Tea	Med: good for general health	0	4	36%
<i>Arctostaphylos uva-ursi</i> (L.) Spreng. (Ericaceae) 02/Pz/2013	Medvedje uši ^S , Crna trava ^S	0.00	0.14	V	Leaves	Tea	Med: inflamed tonsils	0	4	36%
						Tea		0	4	36%
						Tea		0	4	36%
						Tea		0	4	36%

(continued on next page)

Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{Alb}	UV _{Serb}	UV _Q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{ic} Alb ^d	N _{ic} Serb ^d	FL
<i>Atriplex hortensis</i> L. (Amaranthaceae)	Laboda ^A	0.01	0.10	V	Leaves	Cooked (fresh)	Food: savoury pie filling (mixed with onions, cream milk)	8	8	89%
<i>Avena sativa</i> L. (Poaceae) 15/Pz/2013	Thekna ^A	0.02	0.00	V	Seeds	Topically applied (fresh)	Med: laceration	1	0	11%
<i>Bellis perennis</i> L. (Asteraceae) 94/GO/09	Lulebardha ^A	0.03	0.00	V	Flowers	Animal food (dried)	Food: used for increasing milk production	2	0	-
<i>Beta vulgaris</i> L. (Amaranthaceae) 17/DE/10	Kaqana te kuqe ^A Kaqani i kuqe ^A Rrepa e kuqe ^A Rrepa e sheqerit ^A	0.06	0.00	V	Fruits	Tea Decoction (dried) Tea Grinded Eaten (fresh) Fresh	Med: diarrhoea Med: respiratory disease Med: diarrhoea Med: anti-anaemic Food: seasoning Med: antiemetic Med: Veterinary, cultural bound syndrome (Evil Eye)	1	0	33%
<i>Betula pendula</i> Roth, (Betulaceae) 94/GO/09	Bello breza ^S Breza ^S Fshisa ^A	0.01	0.05	V	Sap is tapped from the trunk Fruits Leaves and twigs Fruiting body	The sap is drunk Tea Tea Eaten	Med: urinary systems Med: for urinary systems Med: bladder Food: seasoning, pickles Food: seasoning, pickles Med: lacerations, bleeding	0	2	40%
Boletus sp. (Boletaceae)	Kërpudhat e njerzve ^A Virgan ^S Kpurdha vergana ^A Pequrka e arushes ^A , Fenë arushë ^A	0.08	0.32	V	Powder (spores)	Typically applied	Med: general health	4	0	100%
<i>Brassica oleracea</i> L. (Brassicaceae)	Lulekane ^A	0.01	0.00	V	Flowers	Squeezed (fresh)	Other: hair colouring	1	0	-
<i>Bryonia cretica</i> subsp. <i>dioica</i> (Jacq.) Tutin (Cucurbitaceae) 64/GO/09	Rrushqeni ^A Kaqani ^A Kunglli i eger ^A Bar tlyni ^A	0.07	0.00	V	Fruits Storage root	Squeezed, topically applied Topically applied (fresh) Eaten (fresh) Fresh	Med: anti-rheumatism Med: anti-rheumatic Med: abortifacient Food: yogurt starter	3	0	38%
<i>Calendula officinalis</i> L., (Asteraceae) 28/DE/10	Neven ^S	0.00	0.01	V	Aerial part,	Mehlem (mixed with pig's fat)	Med: laceration, skin infections	0	1	-
<i>Cannabis sativa</i> L. (Cannabaceae)	Barqja e konopit ^A	0.01	0.00	V	Aerial part	Placed in water for 10 days	Other: rope (konop)	1	0	-
<i>Cantharellus cibarius</i> Fr. (Cantharellaceae)	Lisiçarka ^S Lisiçarka ^A Kpurdha liseqarka ^A	0.03	0.09	V	Fruiting body	Fresh and dried	Food: as salad	3	1	40%
<i>Capsicum annuum</i> L. (Solanaceae)	Divlji papric ^S	0.00	0.01	V	Leaves	Tea	Food: soup Food: savoury pie filling Med: against gastritis	0	3	30%
<i>Carlina acutis</i> L. (Asteraceae)	Kaqani ^A	0.07	0.00	V	Storage roots	Snacks	Food: against gastritis	0	1	-
Chelidonium majus L. (Papaveraceae) 96/GO/09	Žutice trava ^S Žtrava ^S	0.00	0.17	V	Leaves Latex	Dried as tea Fresh Tea	Med: against hepatitis Med: against warts Med: stomach-ache, diarrhoea, vomit	0	13	7%
<i>Centaurea erythraea</i> Rafn (Gentianaceae) 21/De/10	Kitica ^S Kiçica ^S Crveni kantarijon ^S	0.00	0.27	V	Aerial parts	Tea Tincture	Med: antipyretic Food: tea Food: flavouring for alcohol (raki)	0	10	43%
<i>Ceterach officinarum</i> Willd. (Aspleniaceae)	Fieri i eger ^A Fieri i gurit ^A	0.03	0.00	V	Aerial parts	Tea Decoct	Med: for stomach ache Med: kidney	0	1	5%
<i>Citrullus lanatus</i> (Thumb.) Matsum. & Nakai (Cucurbitaceae) 33/DE/10	Bostan ^A	0.01	0.00	V	Roots Fruits	Tea Squeezed and topically applied in ear	Med: anticancer Med: respiratory diseases Med: prostate	1	0	25%
<i>Coprinus</i> sp. (Agaricaceae)	Puqurka me kapuq ^A Kërpudha te gjata ^A	0.02	0.00	V	Fruiting body	Topically applied (dried, softened in milk prior to application)	Med: furuncles	2	0	-

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{Alb}	UV _{Serb}	UV _Q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{ic} All ^d	N _{ic} Serb ^d	FL
<i>Cornus mas</i> L. (Cornaceae) 35/GO/09	Thana ^A Divlji dren ^S Dren ^S	0.25	0.40	V	Fruits	Tea (fresh) Fresh	Med: hypertension Food: snacks Food: drink Food: jam Food: food colorant and flavouring for alcohol (rakli)	1	2	2%
<i>Corylus avellana</i> L. (Betulaceae) 15/GO/09	Lajthia ^A	0.04	0.03	V	Fruits and leaves Fruits	Tea Fresh or dried	Med: improving health Med: improving health	0	2	4%
<i>Crataegus monogyna</i> Jacq. (Rosaceae) 48/GO/09	Murrizi ^A , Murrizi i kuq ^A Gilog ^S	0.23	0.35	V	Leaves Flowers or Fruits Spine Flower and Leaves	Fresh Tea Fresh (used to sting the warts) Dried as tea	Food: as a yogurt and cheese starter Med: blood circulation, flu, hypertension Med: warts Food: recreational tea	1	0	14%
<i>Cucurbita pepo</i> L. (Cucurbitaceae) 66/GO/09	Kungull ^A , Kungull stambolli ^A	0.09	0.00	V	Fruits Leaves Fruits	Tea Tea Cooked (mixed with milk, sugar, salt and flour)	Med: hypertension Med: headache Med: for lungs/respiratory complaints Food: savoury pie filling	9	9	35%
<i>Cydonia oblonga</i> Mill. (Rosaceae) 23/DE/10	Froni ^A Fio ^A Dunja ^S	0.06	0.09	V	Fruits cortex Leaves Fruits	Piece of fruit cortex Tea Fermented Boiled Compote	Food: Jam (requel) Med: Msysh (protect from evil eye) Med: cough, respiratory system Food: pickles Food: jam Food: beverage Food: beverage Med: toothache	2	0	22%
<i>Datura stramonium</i> L. (Solanaceae)	Matragan ^A	0.05	0.00	V	Seeds	Raki (fermented for 21 days) Smoke (Inhalation of smoke from seeds heated with charcoal). Inhalation of seeds and tea	Med: toothache Food: pickles	3	0	60%
<i>Daucus carota</i> L. (Apiaceae)	Šargarep ^S	0.00	0.01	V	Storage root	Fresh, usually, mixed with peppers, tomato	Med: for urinary systems Food: drinks Med: for prostate problems	2	0	40%
<i>Equisetum arvense</i> L. (Equisetaceae) 40/GO/09	Bishti i kalit ^A Konjurep ^S	0.02	0.03	V	Aerial part	Tea		0	2	50%
<i>Euphorbia cyparissias</i> L. (Euphorbiaceae) 18/GO/09	Sitna mljeticka ^S	0.02	0.00	V	Aerial part	Tea		2	0	50%
<i>Euphrasia officinalis</i> L. (Orobanchaceae)	Vid vida ^S	0.00	0.04	V	Leaves	Fresh	Med: external use for eye inflammation	0	3	-
<i>Fagus sylvatica</i> L. (Fagaceae)	Ahut ^A ,	0.01	0.00	V	Timber	Firewood	Other: Firewood	1	0	-
<i>Ficus carica</i> L. (Moraceae)	Fiq ^A Smokva ^S	0.01	0.01	V	Latex Fruits	Topically applied Boiled	Med: warts Food: jam Bee repellent	0	1	-
<i>Fomes</i> sp. (Polyporaceae)	Eshka ^A	0.01	0.00	V	Fruiting body	Dried		1	0	-

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{alb}	UV _{serb}	UV _q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{ic} All ^d	N _{ic} Serb ^d	FL
<i>Fragaria vesca</i> L. (Rosaceae) 47/GO/09	Divlja jagoda ^s Dredhza e eger ^A	0.25	0.29	V	Leaves	Tea, mixed with <i>Thymus vulgaris</i>	Med: against diabetes, internal cleaning of organism Med: for nervous system, insomnia Med: for stomach	0	2	4%
					Fruits	Boiled	Food: jam Food: drinks Food: drinks	7	8	30%
						Tea	Med: for hypertension	2	0	4%
						Eaten fresh	Med: mouth disease (usually those associated with blisters in inner part of the mouth)	1	0	2%
<i>Fraxinus excelsior</i> L. (Oleaceae)	Frashni ^A	0.03	0.01	V	Bark	Tea	Food: snacks Med: veterinary, Newcastle disease	8	0	16%
<i>Fraxinus ornus</i> L. (Oleaceae)	Frashni ^A	0.12	0.01	V	Wood	Wood pieces in triangle form Handcraft	Med: Mysh (Protection from evil eye) Other: handle of different equipment	3	1	-
					Bark	Tea, mixed with wheat bran	Med: veterinary, Newcastle disease	1	0	8%
<i>Gentiana lutea</i> L. (Gentianaceae) 44/DE/10	Bari i zemres ^A , Ravanj ^s Lincura ^s	0.01	0.16	V	Aerial part	Tea	Med: anthelmintic, toothache	3	1	31%
					Leaves	Dried as tea	Med: for blood	0	4	22%
					Roots	Tea	Med: ulcer of stomach	0	4	22%
					Tubers	Tincture	Med: ulcer of stomach	0	1	6%
<i>Helianthus tuberosus</i> L. (Asteraceae) 82/GO/09	Arashka ^A	0.06	0.00	V	Aerial part	Eaten fresh	Med: heart disorders	1	0	6%
<i>Hordeum vulgare</i> L. (Poaceae)	Elbi ^A	0.01	0.00	V	Aerial part	Fodder for animals	Med: for better digestion	0	8	44%
<i>Hypericum perforatum</i> L. (Hypericaceae) 32/GO/09	Lule e sarit ^A Kantarion ^A Kantarion ^s Zuti čaj ^s	0.21	1.65	I	Aerial part	Decoct (used before eating) Extracted with oil for 40 days exposed to sun Tea	Med: veterinary, to increase general health and strength Med: kidney disorders Med: skin wounds, burns, skin cuts, skin infections	5	2	4%
					Leaves	Tea	Med: clean eyes, Med: stomach disorders, hypertension, heart disorders	0	14	9%
							Med: hypertension, heart disorders	0	14	9%
							Med: diarrhoea	2	0	1%
							Med: Against gastritis, for warts, earache, headache	0	17	11%
							Med: for warts	0	17	11%
							Med: earache and headache	0	17	11%
							Med: Against internal inflammation	0	4	3%
							Med: skin cuts	2	1	2%
							Med: anaemia	4	0	3%
							Med: for better digestion, against diarrhoea and anaemia	4	0	3%
<i>Juglans regia</i> L. (Juglandaceae) 22/GO/09	Arra ^A Orahovulje ^s Oraho ^s	0.05	0.05	V	Cortex of fruits Unripe fruits	Dye Extracted with oil 30–40 days exposed to sun	Cosm: colouring nail (fresh) Med: Skin burns, hair oil, and protecting skin for sun burn	2	0	22%
					Oil of fruits	Squeezed (fresh)	Med: earache	1	0	11%
					Fruits	Tea (fresh)	Med: cough	1	0	11%
					Stem medulla	Additive in aaki	Food: seasoning	0	2	22%
					Fruits	Topically applied in tooth	Med: toothache	1	0	11%
<i>Juniperus communis</i> L. (Cuepressaceae) 12/GO/09	Glija e zeze ^A Crna smreka ^s	0.05	0.01	V	Fruits Aerial part	Fresh or dried Dried as tea	Food: seasoning Med: improve general health	5	0	83%
								0	1	17%

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{alb}	UV _{serb}	UV _q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{ic} All ^d	N _{ic} Serb ^d	FL
<i>Juniperus oxycedrus</i> L. (Cuepressaceae) LEB/2012/5	Dlinja e kuqe ^A Glija ^A Crvena smreka ^S	0.13	0.06	V	Fruits	Tea	Med: kidney disorders Med: cough Med: kidney stones	6	0	33%
<i>Lathyrus aphaca</i> L. (Fabaceae)	Pasuli i eger ^A	0.01	0.00	V	Leaves	Oil	Med: warts	2	0	11%
<i>Lathyrus tuberosus</i> L. (Fabaceae)	Arashka e zezel ^A	0.05	0.00	V	Aerial part	Tea	Med: gynaecological problems of women	0	3	17%
<i>Macrolepiota procera</i> (Scop.) Singer (1948) (Agaricaceae)	Jabuka ^S	0.05	0.00	V	Seeds	Dried	Food: seasoning	1	0	-
<i>Matulis domestica</i> Borkh. (Rosaceae) CAME-26236	Arashka e zezel ^A	0.05	0.06	V	Tubers	Eaten fresh	Food: snacks	5	0	100
<i>Malus</i> sp. (Rosaceae)	Suncanica ^S	0.00	0.06	V	Body fruits	Fresh and dried	Food: as salad	0	5	50%
<i>Malus sylvestris</i> (L.) Mill. (Rosaceae) 59/GO/09	Mollat xufe ^A Molla e eger ^A Molla turschi ^A Divljačka jabuka ^S Divlja jabuka ^S	0.01 0.49	0.00 0.48	V V1	Fruits Fruits	Jam Eaten (fresh) Eaten (fresh)	Food: additive in other foods Food: raki (alcoholic beverage) Med: toothache Food Med: antihypertension Food: beverage Food: snacks Med: antihypertension Med: diarrhoea Food: vinegar Med: increase general health especially for blood	0 0 0 5 1 5 5 1 21	1 0 0 15 15 0 1 0 10	11% 50% 42% 42% 17% - 1% 6% 7% 1% 36% 13%
<i>Matba sylvestris</i> L. (Matvaceae) 90/GO/09	Mullaga ^A	0.01	0.00	V	Stem	Fresh	Food: pickles	10	0	11%
<i>Matricaria chamomilla</i> L. (Asteraceae) 99/GO/09	Kamomili ^A Kamelica ^A Divlja kamilica ^S Kamilica ^S	0.10	0.54	V	Flowers	Tea	Med: measles Food: alcoholic beverage (raki) Food: beverage (compote) Med: rheumatism Food: yogurt starter	1 4 2 0 1	0 0 1 4 0	2% 12% 16% 3% 1%
<i>Melissa officinalis</i> L. (Lamiaceae) 58/DE/10	Bari i bletel ^S Matienjak ^S	0.14	0.06	V	Leaves	Dried as tea	Med: diarrhoea Med: to clean eyes Med: relaxing, headache, Med: stomachache, Med: urinary system, eyes, ears Med: eyes Med: ears Food: tea Med: good for general health especially for cold and flu	1 4 1 1 1 1 1 0	0 2 1 1 10 10 10 3	2% 12% 4% 4% 22% 22% 22% 5%
<i>Mentha longifolia</i> (L.) L. (Lamiaceae) 63/DE/10	Konjski bosiljak ^S	0.00	0.10	V	Leaves	Fresh Tea	Med: good for general health Med: heart diseases Med: for nervous system Vet: bee attractant Med: against bronchitis, headache, for lungs inflammation	6 6 2 2 0	2 1 1 8	5% 42% 42% 16% 100%
<i>Mentha × piperita</i> L. (Lamiaceae)	Nana ^S	0.03	0.13	V	Aerial part	Tea	Med: improving general health, better breathing (lungs)	3	6	69%
<i>Mesplus germanica</i> L. (Rosaceae) LEB/2012/5	Mushmolla ^A	0.03	0.00	V	Leaves	Tea	Med: stomach-ache, relaxing Med: diarrhoea Med: good for general health Med: Food: tea Food: as salad	0 1 1 1 0	4 0 0 0	31% - - - 100%
<i>Morchella</i> sp. (Morchellaceae)	Smrčak ^S	0.00	0.08	V	Body fruits	Fresh and dried		0	6	100%

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{alb}	UV _{serb}	UV _q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{uc} Alb ^d	N _{uc} Serb ^d	FL
<i>Morus alba</i> L. (Moraceae) LEB/2012/5	Mani i bardhë ^A Dud ^S	0.04	0.08	V	Leaves	Fresh	Med: veterinary, against diarrhoea in animals	0	4	40%
<i>Morus nigra</i> L. (Moraceae) 01/GO/09	Mani i zi ^A Dudi ^A	0.06	0.03	V	Fruits	Juice Jam (Pekmez) Eaten fresh Juice Jam (Pekmez) Dried, topically applied	Food: beverage Food: jam Med: mouth disease Food: beverage Food: jam Med: skin cuts, stop bleeding	2	1	300%
<i>Nicotiana tabacum</i> L. (Solanaceae)	Duhan ^A , Duvan ^S	0.01	0.05	V	Leaves			1	4	100%
<i>Nymphaea alba</i> L. (Nymphaeaceae)	Helmatum ^A Almatum ^A	0.01	0.00	V	Leaves	Carried with clothes (dried)	Med: Msysh (people believe that it helps those who can't get pregnant)	1	0	-
<i>Ocimum basilicum</i> L. (Lamiaceae) 51/Pz/2013	Pasoleg ^A Bosoleg ^A Bosiljak ^S R Bosiljak ^S	0.04	0.06	V	Aerial parts	Tea	Med: cultural bound syndrome Med: for nervous system Food: seasoning	2	0	25%
<i>Origanum vulgare</i> L. (Lamiaceae) 74/GO/09	Divlji bosiljek ^S Luleqajj ^A Çaj lulesh ^A Çaj mAl ^A , Planinska čaj ^S Vranilova trava ^S	0.50	0.95	II	Flowers	Tea	Med: respiratory system Med: kidney, Diuretic Med: general health Med: for gynaecological problems to women	0	3	25%
<i>Petroselinum crispum</i> (Mill.) Fuss (Apiaceae) 70/DE/10	Peršun ^S	0.00	0.08	V	Aerial parts	Tea	Med: good for cold and flu Med: improving general health Med: for flu and respiratory system	16	27	36%
<i>Phaseolus vulgaris</i> L. (Fabaceae) 62/Pz/2013	Pastuli ^A	0.02	0.00	V	seeds	Burned and topically applied Boiled	Med: urinary system, Med: toothache Med: relaxing, nervous disorders Med: hypertension	5	7	9%
<i>Papaver rhoeas</i> L. (Papaveraceae) 14/GO/09	Lulebozhur ^A	0.02	0.00	V	Seeds	Tea	Med: For cleaning internal organism Med: hypertension, urinary system	5	7	9%
<i>Pinus</i> sp. (Pinaceae)	Pisha ^A Borovina ^S Igiče od borova ^S Šisarka ^S	0.01	0.10	V	Young twigs Young cones	Add water and sugar, like honey Fresh 20-50 young cones mixed with honey Fresh, topically applied	Med: wound caused by bite of a dog Food: yogurt started Med: given to young children for sleeping	1	0	-
<i>Plantago major</i> L. (Plantaginaceae) 04/GO/09	Lapa e oborrit ^A Lapa e oborrit ^A , Gjethemadhori ^A Živolak ^S Živovlaka ^S Bima për me lan duhanin ^A Bokvica ^S	0.11	0.11	V	Leaves		Med: respiratory disorders. Med: increase immunity Med: asthma and respiratory system	1	3	44%
<i>Plantago lanceolata</i> L. (Plantaginaceae) 03/GO/09	-	0.16	0.24	V	Aerial parts	Dried	Med: skin wounds, furuncle, skin cut Med: skin burns Med: skin eczema Med: antipyretic Med: earache, antimicrobial Med: anti cigarettes Med: stop bleeding	5	8	65%
Poaceae (various unidentified species)	-	0.18	1.49	I	Flowers	Tea	Med: veterinary, food for animal in the winter Med: respiratory disease, cough, asthma, throat ache Med: improving general health Med: hypertension	16	19	100%
<i>Primula veris</i> L. (Primulaceae) 56/Pz/2013	Agulicja ^A Lule me gishita ^A Jaglitçe ^S	0.18	1.49	I	Flowers	Tea	Food: tea	6	36‡	31%
					Leaves	Tea		6	36‡	31%
								0	11	8%

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{Alb}	UV _{Serb}	UV _Q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{uc} All ^d	N _{uc} Serb ^d	FL
<i>Prunula vulgaris</i> Huds. (Primulaceae) 30/GO/09	Jagorčevina ^s	0.12	0.65	V	Aerial parts	Tea	Med: stomach ulcer, to increase appetite Med: Bronchitis, for cough of children Med: for stones in kidneys	0	7	11% 30%
<i>Prunus avium</i> (L.) L. (Rosaceae) 71/DE/10	Bojlija ^A Qershia ^A Vishnje ^s	0.04	0.03	V	Fruits	Bioled Dried (Ashraf) and then dried	Med: for liver Food: jam Food: compote	4	15	30% 30%
<i>Prunus cerasifera</i> Ehrh. (Rosaceae) 51/GO/09	Kojsia ^A Kajsija ^A Gjenrike ^A Šilve ^s , Divlje šljive ^s Suve šljive ^s	0.12	1.13	I	Fruits	Eaten (fresh) Fermented for 21 days Compote Boiled until get consistency mass is obtained	Food: snacks Food: alcoholic beverage (raki) Food: beverage: Med: anti-constipation Food: jam	4	11	14% 41%
<i>Prunus domestica</i> L. (Rosaceae) 68/DE/10	Kumbullia ^A Šilva ^s	0.11	0.05	V	Fruits	Jam (pistil) Dried (Ashraf) and then compote Fermented for 21 days Tea	Med: against constipation Food: jam Food: beverage Food: alcoholic beverage (raki) Med: antidiabetic	7	0	50% 29%
<i>Prunus spinosa</i> L. (Rosaceae) 49/GO/09	Kulumria ^A	0.18	0.08	V	Fruits	Tea Eaten fresh Fermented for 21 days	Med: antidiabetic Med: antihypertensive Med: stone kidney Food: drinks Med: antidiabetic Food: snacks Food: alcoholic beverage (raki)	3	0	14% 19% 5% 19% 19%
<i>Pyrus amygdaliformis</i> Vill. (Rosaceae)	Kruške ^s , Dardha ^A Dardha eger ^A Dardha turshi ^A Dardha kakioke ^A , Dardha polloshka ^A	0.02	0.09	V	Fruits	Compote Pickle Jam (pekmez)	Food: beverage Med: anti constipation Food: pickles Food: jam	0	7	78% 11% 11% 61%
<i>Pyrus pyraeaster</i> (L.) Burgsd. (Rosaceae) 78/DE/10	Divlja kruska ^s	0.07	0.15	V	Fruits	Fermented Jam Nectar Tea	Food: alcoholic beverage (raki) Food: jam Other: food for bees Med: flu, immunity, cold Food: Beverage	7	5	63% 37%
<i>Robinia pseudoacacia</i> L. (Fabaceae) 62/GO/09	Bagrenit ^A Kača ^A Šipurak ^s Šipkinje ^s	0.02	0.00	V	Flowers Fruits	Tea	Med: cough Med: stone kidney Food: snacks	8	16	48% 18%
<i>Rosa canina</i> L. (Rosaceae) 50/GO/09	Šipkinje ^s	0.29	0.26	V	Fruits	Eaten Mixed with sugar and boiled Decoct Tea Dried fruits	Med: stone kidney Food: snacks Med: good for kidneys stones Food: drinks Med: good for kidneys Med: for bronchitis, cough Food: snacks Food: jam Food: beverage	2	0	4% 10% 18% 14% 23% 14% 9% 18%
<i>Rubus fruticosus</i> L. (Rosaceae) 43/GO/09	Manza ^A Mana ^A Kupina ^s	0.17	0.06	V	Roots Leaves Fruits	Eaten fresh Mixed with sugar and boiled Dried (ashraf) and then boiled (compote)	Food: snacks Food: jam Food: beverage	3	0	23% 14% 9% 18%

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{Alb}	UV _{Serb}	UV _Q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{ic} Alb ^d	N _{ic} Serb ^d	FL
<i>Rubus idaeus</i> L. (Rosaceae) 80/DE/10	Divlje maline ^S Malina ^S Divlje kupine ^S Mjedra ^A	0.17	0.06	V	Fruits	Dried (ashaf) and then boiled (compote) Fermented Tincture Mixed with sugar and boiled Eaten (fresh) Eaten fresh Eaten fresh Tea	Food: beverage Food: alcoholic beverage (raki) Med: regulate the menstrual cycle Food: jam Food: snacks Med: regulator of hypertension Med: against cancer Med: general health, get stronger Med: tea that is good for general health Food: savoury pie filling	4	10	20 %
<i>Rumex acetosa</i> L. (Polygonaceae) 71/GO/09	Uflla ^A Uflla e malit ^A Drastafiq ^A Kiselica ^S	0.55	0.10	V	Leaves Leaves	Fresh leaves mixed with cheese, or with onions and milk cream Fresh leaves Eaten (fresh) Snack (fresh) Dried Fresh leaves mixed with cheese, or onions, cream milk To roll sarma Topically applies (fresh) Tea Fresh leaves mixed with cheese, or to roll sarma Added at the doors on St. George's Day	Food: kids use as snacks Food: snacks Food: snack Food: seasoning Food: Filling for savoury pie and sarma Food: Filling for savoury pie and sarma Med: warts Med: kidney Food: savoury pie to roll sarma Med: cultural bound syndrome (Evil Eye)	15	2	27%
<i>Rumex patientia</i> L. (Polygonaceae) CAME-26285	Lepjeta ^A Lepjeta ^A Rraj kuqe ^A Lepedra ^A Štaviljak ^S Štaviljak ^S	0.80	0.09	V	Aerial parts Stem Leaves	Fresh leaves mixed with cheese, or onions, cream milk To roll sarma Topically applies (fresh) Tea Fresh leaves mixed with cheese, or to roll sarma Added at the doors on St. George's Day	Food: kids use as snacks Food: snacks Food: snack Food: seasoning Food: Filling for savoury pie and sarma Food: Filling for savoury pie and sarma Med: warts Med: kidney Food: savoury pie to roll sarma Med: cultural bound syndrome (Evil Eye)	16	0	25%
<i>Sagittaria sagittifolia</i> L. (Alismataceae)	Puri gajurni ^A Vrbo ^S	0.01	0.03	V	Leaves	Fresh leaves mixed with cheese, or to roll sarma Added at the doors on St. George's Day	Food: kids use as snacks Food: snacks Food: snack Food: seasoning Food: Filling for savoury pie and sarma Food: Filling for savoury pie and sarma Med: warts Med: kidney Food: savoury pie to roll sarma Med: cultural bound syndrome (Evil Eye)	40	3	46%
<i>Salix alba</i> L. (Salicaceae) 70/ Pz/2013	Šelgu ^A	0.00	0.05	V	Aerial parts	Added at the doors on St. George's Day	Food: kids use as snacks Food: snacks Food: snack Food: seasoning Food: Filling for savoury pie and sarma Food: Filling for savoury pie and sarma Med: warts Med: kidney Food: savoury pie to roll sarma Med: cultural bound syndrome (Evil Eye)	0	4	100%
<i>Salvia officinalis</i> L. (Lamiaceae)	Žalfia ^S	0.03	0.05	V	Aerial parts Leaves	Eaten (dried) Dried as tea Dried	Vet: pasture bloat in cattle Med: for respiratory inflammations Med: cough	3	0	50%
<i>Salvia</i> sp. (Lamiaceae)	Xhymezhde ^A	0.00	0.01	V	Aerial parts	Dried	Vet: pasture bloat in cattle Med: for respiratory inflammations Med: cough	0	3	50%
<i>Sambucus ebulus</i> L. (Adoxaceae) 28/GO/09	Kinla ^A	0.06	0.00	V	Leaves Leaves and flowers Fruits	Fresh Topically applied	Med: For lacerations Med: to treat wounds caused by poisonous snakes	1	0	20 %
<i>Sambucus nigra</i> L. (Adoxaceae) 26/GO/09	Shtogu ^A Boza ^S Zova ^S Rrushqeni ^A	0.21	0.29	V	Cortex Leaves Flowers	Fresh, topically applied Mixed with sugar and boiled Mixed with milk cream Extracted with fat Tea Tea, 41 flowers added in hot water, with 3 lemons and 3 kg sugar Tea	Med: anti-rheumatic Food: for jam Other: cosmetics Med: acne and face diseases, against burns Med: headache Med: anti-rheumatic Med: respiratory diseases Med: good for general health Med: anti-asthmatic, general health, bronchitis Food: beverage	1	0	3%
<i>Satureja montana</i> L. (Lamiaceae) 19/Pz/11	Čubrica ^S	0.01	0.01	V	Fruits	Juice, fresh flower mixed with sugar and water Dried	Med: anti-rheumatic Food: for jam Other: cosmetics Med: acne and face diseases, against burns Med: headache Med: anti-rheumatic Med: respiratory diseases Med: good for general health Med: anti-asthmatic, general health, bronchitis Food: beverage	1	0	%
<i>Secale cereale</i> L. (Poaceae)	Thekra ^A	0.02	0.00	V	Aerial parts Seeds	Fodder for animals Boiled (fresh)	Vet: increasing production of milk Med: anthelmintic	1	0	-

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{alb}	UV _{serb}	UV _q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{ic} All ^d	N _{ic} Serb ^d	FL
<i>Senecio jacobina</i> L. (Compositaceae) 87/DE/10	Čuvar kutče ^s	0.00	0.70	V	Leaves	Squeezed, topically applied in ear Tea Eaten fresh Squeezed, topically applied in oedema area Tea	Med: for earache Med: eye disorders Med: for gynaecological problems Med: stomachache Med: against oedemas in feet	0	25‡	69 %
<i>Sideritis scardica</i> Griseb. (Lamiaceae)	Qaj bjeshke ^A	0.06	0.00	V	Aerial parts	Tea	Med: bronchitis	1	0	17%
<i>Solanum tuberosum</i> L. (Solanaceae)	Patatja ^A , Kompira ^A	0.22	0.00	V	Tuber	Typically applied around the head	Food: drinks Med: fever Med: headache Food: savoury pie filling	5	0	83%
<i>Spinacia oleracea</i> L. (Amaranthaceae)	Sekla ^A	0.05	0.00	V	Leaves	Cooked, Mixed with cream milk, flour, salt, Cooked, mixed with cheese, or onions	Food: savoury pie filling	5	0	100%
<i>Syringa vulgaris</i> L. (Oleaceae) 09/GO/09	Lule jargovani ^A	0.02	0.01	V	Aerial parts	Squeezed (Fresh)	Other: bee repellent	2	1	–
<i>Tanacetum vulgare</i> L. (Asteraceae) 75/Pz/2013	Kallumper ^s Kallamfer ^A	0.01	0.05	V	Leaves	Tea Topically apply, round the head (fresh) Tea	Med: against diabetes Med: hypertension Med: Headache	0	2	40%
<i>Taraxacum officinale</i> (L.) Weber ex F.H.Wigg. (Asteraceae) 77/GO/09	Lule grejza ^A , Lhule mji ^A , lule verdhe ^A , Lule e sarit ^A , Masićak ^s , Lule verdha ^A , Lule verdha ^A , Masićak ^s , Pipilia ^A	1.17	1.80	IV	Flowers	Fresh flower mixed 400 flowers 1 kg sugar and boiled until the honey consistence	Med: respiratory disease Med: anti-cancer Med: earache Med: against cancer, Med: asthma, respiratory problems Med: blood Food: honey	9	6	4%
								2	0	1%
								1	0	1%
								0	11	4%
								0	11	4%
								0	11	4%
								15	16	12%
								15	16	12%
								15	16	12%
								15	16	12%
								9	0	4%
								9	0	4%
								0	1	1%
<i>Teucrium montanum</i> L. (Lamiaceae)	Sugreba trava ^s	0.00	0.01	V	Leaves	Squeezed and topically applied in skin Cooked, mixed with mil cream Fresh	Med: improving general health Med: antidiabetic, Med: hypertension Med: stomach Food: honey Med: bronchitis Med: skin cuts Med: when the skin is dried, Food: savoury pie filling Food: salad	0	7	3%
<i>Teucrium chamaedrys</i> L. (Lamiaceae) 94/DE/10	Plavo cveta ^s	0.00	0.01	V	Leaves	Tea	Food: additive in different foods Med: for better health of gallbladder Med: cholesterol Med: warts Med: skin problems Med: stomachache	1	9	4%
					Stem	Dried as tea		2	0	%
					Roots	Decoction		0	1	1%
					Latex	Topically applied in warts		0	2	1%
					Leaves	Tea (topically applied)		0	1	–
					Leaves	Tea		0	1	–

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Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{alb}	UV _{serb}	UV _Q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{ic} Alb ^d	N _{ic} Serb ^d	FL							
<i>Thymus serpyllum</i> L. (Lamiaceae) 67/GO/09	Çaj mali ^A , Majčina dušica ^S	0.55	1.75	I	Aerial parts	Tea	Med: improving general health	8	20*	14%							
							Med: respiratory system	8	20*	14%							
<i>Vitis platyphyllos</i> Scop. (Vitaceae) 06/GO/09	Lipa ^S Blini ^A	0.85	1.00	II	Flowers	Tea	Med: stomach	8	20*	14%							
							Med: nervous system (calming)	8	20*	14%							
							Med: anti-diabetic	8	20*	14%							
							Med: skin burns	8	20*	14%							
							Med: kidneys, bronchitis, nervous system, against flu	21	19	24%							
							Med: kidneys	21	19	24%							
<i>Trifolium</i> sp. (Fabaceae)	Detelina ^S	0.14	0.11	V	Leaves	To roll sarma	Med: nervous system, against flu	1	4	3%							
							Med: improving general health	1	0	1%							
							Food: sarma	1	0	1%							
							Med: veterinary, to increase milk production	14	9	100%							
							<i>Triticum aestivum</i> L., (Poaceae) 9/DE/10	Grut ^A	0.01	0.00	V	Seeds	Fodder for animals	Med: veterinary, fodder	1	0	-
														Med: warts	1	0	-
							<i>Typha latifolia</i> L. (Typhaceae) 82/Pz/2013	Shavar ^A	0.02	0.00	V	Polen	Typically applied	Med: skin cut	2	0	-
														Med: savoury pie fill	16	12	16%
							<i>Urtica dioica</i> L. (Urticaceae) 21/GO/09	Kopriva ^S	0.64	1.40	II	Leaves	Cooked, mixed with cheeses	Food: yoghurt starter	4	0	2%
														Med: cough	10	25*	20%
Med: for blood and heart	10	25*	20%														
Med: stomach	10	25*	20%														
<i>Vaccinium myrtillus</i> L. (Ericaceae) 98/DE/10	Boronica ^A Borovnica ^S	0.24	0.41	V	Fruits	Tea	Food: for salad	0	1	1%							
							Med: for anaemic people	0	1	1%							
							Other: cosmetic, hair wash	3	3	3%							
							Med: vaginal baths	1	6	4%							
							Med: rheumatic problems	0	6	3%							
							Med: veterinary, to warm cold animals	0	3	2%							
							Med: increase blood (anemia)	0	1	1%							
							Med: hair	0	2	1%							
							Med: eczemas	1	0	%							
							Other: As pesticides	1	0	1%							
<i>Vaccinium myrtillus</i> L. (Ericaceae) 98/DE/10	Boronica ^A Borovnica ^S	0.24	0.41	V	Fruits	Tea	Med: anti-anaemic	4	0	2%							
							Med: anti-rheumatic	3	0	2%							
							Med: headache	2	0	1%							
							Food: veterinary, food for pigs to produce tastier, healthier meat	0	2	1%							
							Med: improving general health, blood	1	9	17%							
							Med: Tea against diarrhoea	0	3	5%							
							Food: tea	2	5	12%							
							Food: beverage	4	3	12%							
							Med: increasing blood	4	3	12%							
							Food: snack	4	0	7%							
<i>Vaccinium myrtillus</i> L. (Ericaceae) 98/DE/10	Boronica ^A Borovnica ^S	0.24	0.41	V	Fruits	Tea	Food: Jam	2	0	8%							
							Food: alcoholic beverage (raki)	0	3	5%							
							Med: for diabetes	7	7	23%							
							Leaves										

(continued on next page)

Table 3 (continued)

Botanical or Fungal Taxon and Herbarium Accession Code ^a	Local folk plant name ^b	UV _{Alb}	UV _{Serb}	UV _Q	Parts of the plant used	Preparation	Local recorded uses ^c	N _{uc} Alb ^d	N _{uc} Serb ^d	FL
<i>Veratrum album</i> L. (Melanthiaceae) 99/DE/10	Shtara ^A	0.02	0.00	V	Aerial parts	Eaten (fresh)	Med: veterinary, poisonous for cows	1	0	-
<i>Viola odorata</i> L. (Violaceae)	Ljubičica ^S	0.00	0.03	V	Tuber	Ground and topically applied	Med: flu	1	0	-
<i>Vitis labrusca</i> L. (Vitaceae)	Mastika ^S	0.00	0.01	V	Flower	Mixed with milk cream	Other: cosmetic	0	2	-
<i>Vitis vinifera</i> L. (Vitaceae) 90/Pz/2013	Grozdje ^S	0.00	0.04	V	Leaves	Dried leaves	Food: in pickles as seasoning	0	1	-
<i>Zea mays</i> L. (Pooaceae) 14/GO/09	Kollonoqi ^A	0.19	0.21	V	Fruits	Fresh fruits added to alcohol (mastika)	Med: general health, rheumatism	0	3	%
	Misri ^A ,				Fruits	Fresh and dried	Food: veterinary, fodder for animals in winter, for increasing quality and amount of meat	13	16	81%
	Kukumiz ^S				Fruits					
Unidentified taxa (Fungus)	Bllagabuba ^S ,	0.01	0.00	V	Seeds	Tea	Med: anthelmintic, antidiarrheal	6	0	17%
Unidentified taxa (Fungus)	Vllagabuba ^S ,	0.01	0.01	V	Stigma of flowers	Tea	Med: for diabetes	0	1	3%
	Bllagabuba ^S ,				Fruiting body	Fresh fruiting body topically applied	Med: anti acne	1	0	-
	Puqurika ^S ,				Fruiting body	Fresh fruiting body topically applied	Med: skin burns	1	1	-
Unidentified taxa	Gllababuba ^A (kerputhe)	0.01	0.00	V	Aerial part	Dried	Med: laceration, warts, skin burns	1	0	-
Unidentified taxa	Kollastr ^A	0.01	0.00	V	Leaves	Squeezed and topically applied	Med: warts	1	0	-
Unidentified taxa	Çaj gruni ^A	0.01	0.00	V	Seeds (Seeds are brown)	Tea	Med: kidney diseases	1	0	-
Unidentified taxa	Vimarka ^S	0.00	0.03	V	Aerial part	Fresh	Med: veterinary, udder inflammations/mastitis	0	2	-
Unidentified taxa	Boronica veçe ^S	0.00	0.03	V	Fruits	Fresh	Med: cancer, stomach, high pressure blood, blood circulatory disorders	0	2	-

^aBotanical Taxon and Herbarium Accession Code: The most common plants cited by the study participants are highlighted in bold text.

^bLocal folk plant name: A- Albanian; S- Serbs.

^cLocal recorded uses: Med – Medicinal. Refer to Table 2 for a breakdown of use categories (Food, Medicinal, and Other).

^dN_{uc} Alb: Number of use citations by Albanian informants. ^dN_{uc} Serb: Number of use citations by Albanian informants. P-values (t-tailed) represented as * - P < 0.05; † - P < 0.01; and ‡ - P < 0.001 as determined by Fisher's Exact test comparison of the two groups (Albanian vs. Serbs).

Other abbreviations: UV_{Alb} - Use-value index for Albanian informants; UV_{Serb} - Use-value index for Serbs informants; UV_Q - Use-value analysis quadrant; FL – fidelity level.

with the lowest relative importance for both comparator groups and Quadrant IV representing the greatest relative importance by both groups. Quadrants I and VIII represent high relative importance for one group, but not the other.

2.3.5. Qualitative assessment

All of the collected field data (cited plants and plant reports, i.e., plant x used in way y) were compared with the entire ethnobotanical literature of Kosovo (Sejdiu, 1984; Mustafa et al., 2012a, 2012b, and 2015; Hajdari et al., 2018), Albania (Pieroni, 2008; Pieroni et al., 2005, 2011, 2014a, 2014b, 2015, and 2017; Quave and Pieroni, 2014 and 2015; Pieroni and Sökand, 2017), Montenegro (Menković et al., 2011), South Serbia (Jarić et al., 2007 and 2015; Savikin et al., 2013; Zlatković et al., 2014), Bosnia (Redzic, 2006; Sarić-Kundalić et al., 2010 and 2011), Macedonia (Pieroni et al., 2013; Rexhepi et al., 2013), and region (Sökand et al., 2015; Dogan et al., 2015) in order to assess if the recorded reports in the current studies were “new” for the region or had been already reported and known.

3. Results

3.1. Plant use data

The plant-based domestic, folk medicinal remedies cited by the informants, as well as the wild food plants locally gathered and consumed, are presented in Table 3. For each cited folk species, we reported the botanical taxon and family, voucher code, used plant parts, local folk name, traditional local use(s), citations, and frequency of use for each plant report. A total of 115 plant taxa and seven fungal taxa belonging to 51 families were recorded. Of 122 reported taxa, 40 (32.7 %) were reported only by Albanians, 24 (19.6 %) only by Serbs, while 58 (47.5 %) taxa were used by both Albanians and Serbs (Fig. 2). A total of 419 plant reports were recorded, of them 169 (40.3 %) were reported by Albanians, 131 (31.3 %) by Serbs, while 119 (28.4 %) were reported by both Albanians and Serbs (Fig. 3). The majority of the cited taxa (indicated in boldface in Table 3) were ubiquitously mentioned by members of the two ethnic groups. However, when the specific uses of taxa were taken into consideration, the differences between both groups became larger.

The fidelity level (FL) for every plant use is reported in Table 3 and is based on the combined reports of both groups. As the reported species are commonly prepared in numerous ways for various purposes, the FL for most plant uses is quite low. However, there are a few instances of high FL (> 80 %), and these include the use of *Althaea officinalis* used to treat bronchitis and coughs; *Atriplex hortensis* used as a savoury pie filling (mixed with onions and milk cream); *Bovista dermoxantha* to treat

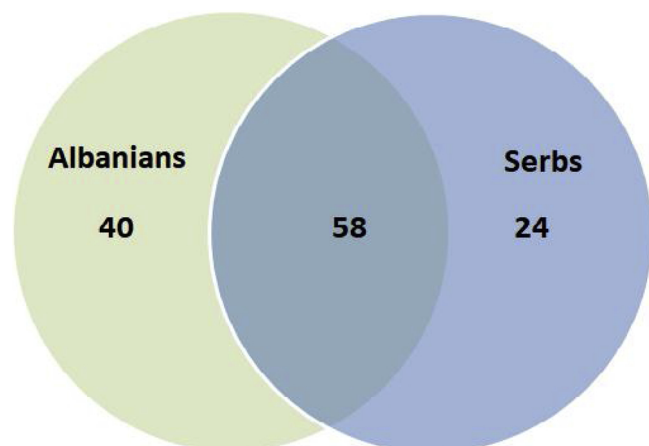


Fig. 2. Venn diagram representing the overlap of taxa cited by Albanians and Serbs for medicinal and food use.

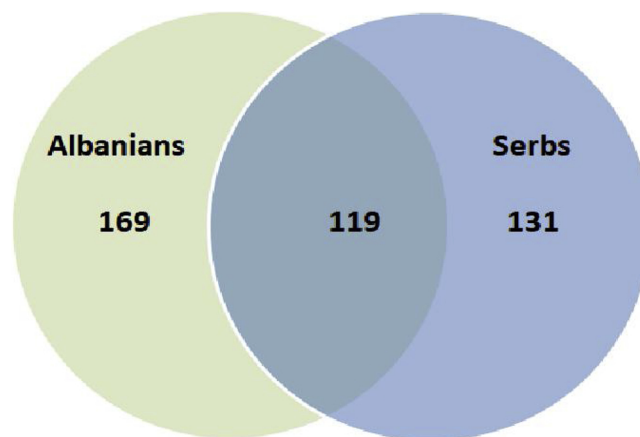


Fig. 3. Venn diagram representing the overlap plant reports recorded by Albanians and Serbs for medicinal and food use.

lacerations and to stop bleeding; *Carlina acaulis* as a snack; *Chelidonium majus* against warts; *Corylus avellana* as a snack; *Helianthus tuberosus* as a snack; *Juniperus communis* as a seasoning; *Lathyrus tuberosus* as a snack; *Malva sylvestris* as a yogurt starter; *Mentha longifolia* against bronchitis and to treat lung inflammation; *Morchella* as salad; *Nicotiana tabacum* to treat skin lacerations and stop bleeding; *Salix alba* as a cultural bound syndrome (Evil Eye) prophylactic; *Sambucus ebulus* to treat wounds caused by poisonous snakes; *Sideritis scardica* as a recreational tea; *Spinacia oleracea* as a savoury pie filling; *Trifolium* sp. as fodder to produce higher amount of milk in livestock; and *Zea mays* as fodder for animals in winter to increase the quality and amount of meat produced.

3.2. Informant consensus on categories of use

Individual use reports were divided into the generic categories of Food, Medicine, or Other (Tables 2 and 3). Within each broad category, the number of specific use reports and number of taxa are broken down into subcategories of more specific uses, and presented by ethnic group (Table 2). The most use-citations for both Albanians and Serbs was for the category of Medicine, with 821 and 622 use-citations, respectively. The greatest number of taxa was also reported by both groups for the Medicine category as well. Regarding subcategories, the largest number of use citations and taxa for both groups was for gastrointestinal and respiratory ailments.

Regarding informant consensus on taxa for specific categories of use, high consensus ($F_{ic} \geq 0.85$) among both Albanians and Serbs was observed for the following subcategories of food: lactic or acetic acid fermentation and savoury pie filling. Regarding medicine, only anticancer, endocrine, and ophthalmological reached high consensus in both groups. None of the subcategories of the Other category did (Table 2). Fidelity levels for specific use citations for each species are reported in Table 3.

3.3. Use-value analysis and cultural divergences in plant use

Statistical analysis of differences in plant use citations by the Fisher's exact test revealed significant differences in specific plant uses between cultures for the following species: *Achillea millefolium*, *Hypericum perforatum*, *Primula veris*, *Prunus cerasifera*, *Rumex patientia*, *Sempervivum tectorum*, *Thymus serpyllum*, and *Urtica dioica* (see Table 3).

The use-value matrix analysis revealed that while the majority of taxa fell in Quartile V, signifying lower use-value indices across both Albanian and Serb informant groups, there were a few that diverged in importance from one group to another (Fig. 4). Quartile I represents those taxa that were considered of high use-value to Serbs, but low to

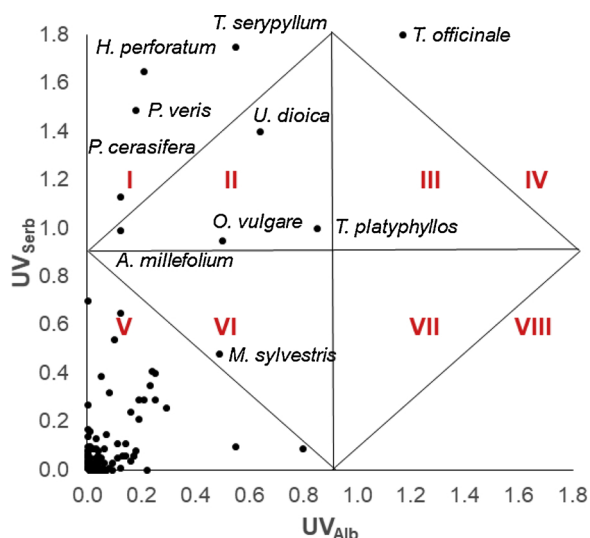


Fig. 4. Use-value matrix analysis for taxa cited by Albanians and Serbs.

Albanians, and included *Hypericum perforatum*, *Primula veris*, *Prunus cerasifera*, and *Thymus serpyllum*. Quartile II represents taxa that were of high use-value to Serbs and moderate to Albanians: *Achillea millefolium*, *Origanum vulgare*, *Tilia platyphyllos*, and *Urtica dioica*. Quartile IV represents taxa considered of high importance to both groups, and only one species was found in this group: *Taraxacum officinale*. Lastly, Quartile VI represents taxa of low use-value to Serb informants and moderate to Albanians: *Malus sylvestris*. No taxa were grouped in Quartiles III, VII, or VIII.

3.4. Comparison of reported plant uses with the ethnobotanical literature

The most common wild plants mentioned by the study participants (in bold in the table) were: *Achillea millefolium* L., *Allium cepa* L., *Allium ursinum* L., *Boletus* sp., *Chelidonium majus* L., *Cornus mas* L., *Crataegus monogyna* Jacq., *Fragaria vesca* L., *Hypericum perforatum* L., *Malus sylvestris* (L.) Mill., *Matricaria chamomilla* L., *Mentha × piperita* L., *Origanum vulgare* L., *Plantago major* L., *Primula veris* L., *Primula vulgaris* Huds., *Prunus cerasifera* Ehrh., *Prunus domestica* L., *Prunus spinosa* L., *Pyrus communis* L., *Rosa canina* L., *Rubus fruticosus* L., *Rubus idaeus* L., *Rumex acetosa* L., *Rumex patientia* L., *Sambucus nigra* L., *Taraxacum officinale* (L.) Weber ex F.H. Wigg., *Thymus serpyllum* L., *Tilia platyphyllos* Scop., *Urtica dioica* L., *Vaccinium myrtillus* L. and *Zea mays* L.

Comparison of the ethnobotanical data collected in this field study from the Southwest Balkan ethnobotanical literature revealed that the following plant species are reported for the first time with the following applications:

- *Coprinus* sp. topically applied to treat skin furuncles;
- *Fraxinus excelsior* L. bark prepared as a tea and used to treat Newcastle disease in poultry;
- *Sagittaria sagittifolia* L. used as a savoury pie ingredient and to roll sarma;
- *Vilva odorata* L. mixed with milk cream and used in cosmetics;
- *Lathyrus aphaca* L. seeds used for food seasoning; and
- *Macrolepiota procera* (Scop.) Singer body fruits used as salad and as a seasoning additive in other foods.

On the other hand, the following plant reports emerged as novel or poorly known in the region:

- *Achillea millefolium* L. tea to treat hypertension and fresh leaves squeezed and topically applied in the ear to treat earache;
- *Arctostaphylos uva-ursi* (L.) Spreng. tea as panacea;

- *Allium cepa* L. tea prepared from the outer epidermis of the bulb for hair colouring, and drunk as an abortifacient;
- *Allium ampeloprasum* L. tea prepared from leaves to treat coughs;
- *Allium ursinum* L. aerial parts as fodder to improve cattle milk quality and a tea of its leaves as panacea and fresh leaves as a savoury pie filling ingredient;
- *Atriplex hortensis* L. topically applied to treat lacerations of the skin;
- *Bryonia dioica* Jacq. eaten fresh as an abortifacient and as a yogurt starter;
- *Centaurium erythraea* Rafn, added to alcoholic beverages for flavouring and aerial parts in a decoction to treat cancer;
- *Corylus avellana* L. as a yogurt starter; *Crataegus monogyna* Jacq. spine to prick warts in order to eliminate them;
- *Cucurbita pepo* L. fruits to make jam (reçel), and the fruit cortex against the msysh (protect from Evil Eye);
- *Datura stramonium* L. (inhalation of seed smoke to treat toothache);
- *Fraxinus ornus* L. bark to treat Newcastle disease in poultry and as an anthelmintic;
- *Hypericum perforatum* L. tea to treat heart disorders, warts and earache;
- *Juglans regia* L. fruit oil squeezed and instilled in the ear to treat earache and stem topically applied to the tooth to treat toothache;
- *Juniperus oxycedrus* L. tea to treat kidney disorders, kidney stones and to treat women's gynaecological problems, and oils to treat warts;
- *Malus domestica* Borkh. fermented to make alcohol for treating toothache;
- *Malva sylvestris* L. as yogurt starter; *Morus alba* L. fresh leaves to treat diarrhoea in livestock;
- *Plantago major* L. dried leaves smoked to stop tobacco smoking;
- *Pyrus amygdaliformis* Vill. fruits fermented to produce an alcoholic beverage and fruits dried (ashaf) and then used to prepare compote, which is used as beverage and to treat constipation;
- *Rubus idaeus* L. fruits eaten fresh to treat cancer;
- *Sambucus nigra* L. fresh fruits topically applied to treat rheumatism and a tea of the leaves used as an anti-rheumatic too, an anti-helminthic;
- *Sempervivum tectorum* L. squeezed and topically applied in eye to treat eye disorders;
- *Tanacetum vulgare* L. tea of leaves to treat diabetes, and hypertension;
- *Taraxacum officinale* (L.) Weber ex F.H.Wigg. leaves cooked and then used as savoury pie filling and latex used topically against warts;
- *Thymus serpyllum* L. tea of aerial parts as antidiabetic and to treat skin burns;
- *Typha latifolia* L. pollen topically as cicatrizant;
- *Urtica dioica* L. fresh leaves as a yogurt starter and in veterinary applications, the leaves are fodder to improve the quality of pig meat; and
- *Veratrum album* L. tubers ground and topically applied to treat the flu.

4. Discussion

The most common plants species cited by the study participants belong to the Rosaceae, Lamiaceae and Asteraceae families. These same three "top" families were found to also be predominant among the wild medicinal taxa used in the folk medicine in other Balkan countries (Menković et al., 2011; Pieroni et al., 2005, 2008, 2010; Mustafa et al., 2012a, 2012b, 2015; Hajdari et al., 2018; Jarić et al., 2018; Žuna-Pfeiffer et al., 2019; Savić et al., 2019; Janačković et al., 2019), which is not unusual because many of the medicinal plant species in the Balkans belongs to those plant families (Igić et al., 2010). The most common wild plants mentioned by the study participants (in bold in the Table 3) were the most important species used for medicinal purposes in other

areas of Kosovo as well (Mustafa et al., 2012a, 2012b, 2015; Hajdari et al., 2018).

The most frequently cited medicinal uses referred to respiratory, general health, cardiovascular urological, gastrointestinal and dermatological illnesses. These categories, with slight variation, were also the most frequently cited in other ethnobotanical studies conducted in the region (Mustafa et al., 2012a, 2012b, 2015; Pieroni, 2008, 2010; Menković et al., 2011; Hajdari et al., 2018; Savić et al., 2019; Janačković et al., 2019).

Compared to previous ethnobotanical studies, a high number of plant species used as yogurt starters were recorded (*Bryonia dioica*, *Corylus avellana*, *Malva sylvestris*, *Morus alba*, *Phaseolus vulgaris* and *Urtica dioica*) and this is related to the pastoralist activities of the local inhabitants. The knowledge regarding plant species used as yogurt starters is declining and those species are no longer used for this purpose. The loss of plant based yogurt starters may be due to a decline in pastoralist activities in the region (Pieroni et al., 2017), and improvement of infrastructure, which enables the local population to have access to “modern products” in local shops.

4.1. Albanian vs. Serbian ethnobotany

The divergences observed between Serb and Albanian ethnobotanical knowledge and practice are linked to small differences in household economic strategies. This was most evident upon examination of plants emerging in either quadrants I of the use-value matrix analysis (Fig. 4). This analysis is useful for identifying which taxa are highly valued by one group (for example *Hypericum perforatum*, *Primula veris*, *Prunus cerasifera*, and *Thymus serpyllum*), but not the others. Furthermore, the matrix analysis is useful for identifying taxa that are highly valued by both groups (Quadrant I). In this study, the common food use of the wild edible greens from *Taraxacum officinale*, was important for both Albanians and Serb informant groups.

The uses of plant species cited/practised only by Albanians and quoted by more than 10 informants are: *Allium ampeloprasum* leaves squeezed and instilled in the ear to treat earache; *Malus sylvestris* used as pickles; *Pyrus communis* used as pickles; *Rumex acetosa* used as snacks and *Solanum tuberosum* tubers topically applied to treat fever and headache, while the uses of plant species cited only by Serbs and quoted by more than 10 informants are: *Achillea millefolium* tea used to treat hypertension, rheumatism and diabetes; *Chelidonium majus* latex topically applied to treat warts; *Hypericum perforatum* tea used for stomach disorders, as antipyretic, for hypertension, heart disorders, headache, earache and warts; *Malus domestica* alcoholic fermentation used to treat toothache; *Malus sylvestris* used for alcoholic fermentation (raki); *Primula veris* used as a recreational tea; *Pyrus pyrastrer* used for alcoholic fermentation (raki); and *Sempervivum tectorum* leaves squeezed and instilled in ear to treat earache.

These differences confirm the importance of cultural, religious and ethnic divisions in shaping divergent traditional uses of natural resources. In general, the Albanians use pickles as well as wild plant snacks more than Serbs, while Serbs use more plant ingredients to create alcoholic beverages (raki), as well as plants with yellow flowers, which confirms the particular significance of the yellow colour in South Slavic folklore (Pieroni et al., 2014a). A presumed more “herbophilic” attitude of the Slavic population (pointed out in previous studies) (Mustafa et al., 2012a, 2015, Pieroni et al., 2014a); could not be confirmed in this survey, which however represents the most extensive field study (number of the informants = 181) conducted in Southeast Europe in the last two decades. This could be due to the fact that the Serb ethnic group living in the study area was very isolated from most of the mainland Serb territories. Subsequently, the influence of printed media and former Yugoslavian phytotherapy popular books may have been less than in other Slavic areas, where strong herbophilic attitudes emerged in other field studies conducted in the recent years (Pieroni et al., 2014a; Quave and Pieroni, 2015). Popular printed books

published in several Slavic languages in Eastern Europe may have played in fact during the past Century a crucial role in spreading, reinforcing and/or popularizing specific medicinal plant uses.

4.2. Folk herbal traditions in South Kosovo: perspectives for the future

The data presented in this study demonstrates that a tremendous reservoir of traditional ethnobotanical heritage among the local population is still present in South Kosovo. However, as many other studies in the Balkans have noted (see Pieroni and Quave, 2014, and references therein), this heritage of plant knowledge and practice, is under threat. Younger community members tend to move to urban centers or abroad and they are more and more detached from traditional agro-pastoral activities, thus interrupting the oral transmission of TEK. Subsequently, daily interactions with the surrounding plant environment are on the decline, which ultimately may influence their level of ethnobotanical knowledge. However, the persistence of some trade of medicinal plants, with families involved in gathering and selling herbs to intermediaries, especially among the Serb ethnic group, supports the importance of these species to the local economy. Moreover, the pristine environment of this area could become of strategic importance for the further development of sustainable eco-tourism activities and the intensification of small-scale trade of local, common (non-endangered) medicinal herbs and wild food plants for the internal and external markets. The findings of this study may provide baseline data that, appropriately valorized, could help to achieve the goals that the European Union has set in the Western Balkans, where sustainable rural development and reconciliation-based projects may be the pillar of local circular economies.

While this study represents the most extensive field study conducted in Southeastern Europe in the last two decades, it has some limitations. During field work, we carried out several interviews in small groups composed of both men and women, limiting our ability to classify and then analyse data on traditional knowledge based on gender. The age of the participants were variable and while most were older than 60 years, uneven age groups limited some of the analyses. Furthermore, the authors recruited interview informants who were mainly engaged in agricultural activities and who typically acquired ethnobotanical knowledge from their direct ancestors (parents, grandparents) via oral traditions and excluded educated informants who potentially had contact with modern literature. This approach limited the ability to examine qualitative comparisons of traditional knowledge held based on number of years of formal education.

5. Conclusions

The study showed that this area located in southern Kosovo still represents an important reservoir of ethnobotanical knowledge. Some of this traditional knowledge is unique. Specifically, following applications were reported for the first time in the Southwest Balkans: *Coprinus* sp. (topically applied to treat skin furuncles), *Fraxinus excelsior* L. (bark prepared as a tea and used to treat Newcastle disease in poultry), *Sagittaria sagittifolia* L. (used as a savoury pie ingredient and to roll sarma), *Viloa odorata* L. (mixed with milk cream and used in cosmetics), *Lathyrus aphaca* L. (seeds used for food seasoning) and *Macrolepiota procera* (Scop.) Singer (body fruits used as salad and as a seasoning additive in other foods). The majority of the cited taxa were ubiquitously mentioned by members of the two ethnic groups, however, the specific uses of taxa differed between the groups. These differences confirm the importance of cultural, religious and ethnic divisions in shaping divergent traditional uses of natural resources. Unfortunately, these results also indicate a decline in ethnobotanical knowledge and practice in the investigated areas.

Cross-cultural ethnobotanical studies are urgently needed in many parts of the world in order to better understand the cultural factors that may affect plant perceptions and uses. In post-war areas such as the

Balkans, ethnobotanical studies may also foster reconciliation and initiatives aimed at supporting community-centred management of natural resources and celebration of local bio-cultural heritage. The data presented here reflect a highly articulated level of local plant knowledge, which merits further valorization. In order to compare information between different groups based on gender, age and level of education, further investigation is needed and should be corroborated with more comprehensive statistical analyses.

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CRediT authorship contribution statement

Behxhet Mustafa: Conceptualization, Methodology, Writing - review & editing. **Avni Hajdari:** Conceptualization, Methodology, Software, Formal analysis, Investigation, Writing - original draft, Visualization. **Bledar Pulaj:** Investigation. **Cassandra L. Quave:** Formal analysis, Software, Writing - review & editing, Visualization. **Andrea Pieroni:** Conceptualization, Methodology, Formal analysis, Investigation, Writing - review & editing.

Declaration of Competing Interest

We confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome. We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us. We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have followed the regulations of our institutions concerning intellectual property.

We confirm that we have provided a current, correct email address, which is accessible.

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