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Ethnomedical Knowledge among Slavic Speaking People in South Kosovo

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ABSTRACT

Local natural resources play an important role in securing human health in the Balkans, particularly as a source of food and medicine. The aims of this study were to document the ethnomedical practices of Slavic speaking groups in South Kosovo and to compare these findings to other studies conducted in the Western Balkans. Field research was conducted over a series of trips in 2014. Semi-structured interviews in which respondents were asked to list local taxa used for food and/or medicine were conducted in six communities located in the municipalities of Prizren and Dragash. Prior informed consent was obtained and 91 people were interviewed. Voucher specimens of cited wild flora and fungi were collected and deposited in duplicate at the herbaria of the University of Prishtina (Kosovo) and Emory University (USA). A total of 1,050 use citations were recorded for the various uses of 119 species (4 fungi and 115 plants) for food and/or medicine. Additionally, the ethnomedical uses of 27 ingredients of animal, mineral or industrial origin were also documented. The greatest number of citations were for dermatological and food uses of local plants. The most common families reported were Rosaceae (18 species cited), Lamiaceae (16) and Asteraceae (10). Informant consensus regarding category of use was highest (Fic ≥ 0.85) for the categories of oral health, dermatological, and otolaryngological applications. Both wild and locally cultivated plants continue to play an important role among various ethnic groups in South Kosovo, with 389 distinct applications documented in this study alone.

Keywords: Balkans; Traditional Ecological Knowledge; Medicinal Plants

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INTRODUCTION

Traditional ecological knowledge (TEK) of local resources is closely tied to community resilience and food security in the Balkans. Over the past decade, a number of studies have focused on the ethnobotanical documentation of TEK in the Balkan Peninsula as it pertains to the use of flora and fungi for food, handicrafts and medicine. Specific to the Western Balkans, extensive fieldwork has been conducted in Albania (Pieroni, Dibra et al. 2005, Pieroni 2008, Pieroni 2010, Pieroni, Cianfaglione et al. 2014, Quave and Pieroni 2014), Bosnia and Herzegovina (Redžić 2006, Redžić 2007, Šarić-Kundalić, Dobeš et al. 2010, Šarić-Kundalić, Fritz et al. 2010), Croatia (Pieroni, Elena Giusti et al. 2003, Łuczaj, Fressel et al. 2013), Kosovo (Mustafa, Hajdari et al. 2011, Mustafa, Hajdari et al. 2011, Mustafa, Hajdari et al. 2012, Mustafa, Hajdari et al. 2015), Macedonia (Rexhepi, Mustafa et al. 2013, Pieroni, Rexhepi et al. 2013), Montenegro (Menković, Šavikin et al. 2011, Pieroni, Giusti et al. 2011), Serbia (Jarić, Popović et al. 2007, Šavikin, Zdunic et al. 2013, Jarić, Mitrović et al. 2014, Stevanović, Petrović et al. 2014, Zlatković, Bogosavljević et al. 2014, Jarić, Mačukanović-Jocić et al. 2015), but until now, research comparing traditional ethnomedical practices between Slavic speaking groups in Kosovo has not been carried out. Geographically, the Western Balkans represent a unique biocultural landscape, featuring extensive biological, cultural, and linguistic diversity across an area of just 213,320 km^2.

Despite its small geographic size (10,840 km2), Kosovo offers a unique hotspot of biocultural diversity for ethnobotanical study. While most of the country's landscape is dominated by two plains (the Kosovo plain in the north-eastern and Dukagjin Plain in the south-western), the Sharr Mountains form the southern border, shared with Marcedonia and Albania, and Albanian Alps form the western border, shared with Montenegro and Albania. These geographic features offer a range in elevation from 265 to 2,656 m.a.s.l., with the majority of the area lying between 500 to 1,500 m.a.s.l. These geographic features combined with its modified continental climate (including sub-Mediterranean and alpine climatic zones) offer a rich range of habitats for a diverse flora to flourish. Although a complete floristic survey has not yet been conducted, it is estimated that there are between 2,800-3,000 vascular plant species in Kosovo.

TEK concerning the medicinal use of local plants, fungi and animals and their byproducts was investigated in the territory of Prizren, which lies in the southern part of the Sharr Mountains (in Albanian known as Malet e Sharrit; in Serbo-Croatian as Šar Planina) and represent one of the main centers of biodiversity in Balkans. In recognition of the rich levels of biodiversity in this region, a 53,469 hectares region of the Sharr Mountains was declared a National Park.

Until the end of the World War II, healthcare in this region was almost entirely based on traditional medicine, and these traditions continued after the war as well. Healthcare was commonly attended to within the family, and all physical and mental illnesses were treated with traditional medicines and rituals. These folk-medical traditions continue even now, especially in the more mountainous and isolated areas. Local people have withstood the extreme conditions of this region for centuries – including very harsh winters. Until very recent decades, limitations in infrastructure and communication forced local residents to be self-sufficient in the provision of their food

and healthcare. As a result, their primary pharmacopoeia consisted of local medicinal plants. Previous ethnobotanical and ethnolinguistic studies conducted in Kosovo have demonstrated that medicinal plants still play a crucial role in the sphere of human health, especially in isolated rural areas (Sejdiu 1984, Mustafa, Hajdari et al. 2011, Mustafa, Hajdari et al. 2011, Mustafa, Hajdari et al. 2015).

Recently, local populations have been negatively affected by migration due to displacement and the harsh economic conditions caused by the last Kosovo War (1998-1999). Migration patterns contribute to the rapid decline of traditional knowledge and the vertical transmission of oral traditional knowledge from one generation to another.

In addition to the highly biodiverse characteristics of the region, it is also very rich in terms of cultural and linguistic diversity. This region was historically occupied by three great empires – Byzantine, Roman, and Ottoman. During the periods of between the fall and rise of different empires, it was occupied primarily by Bulgarians and Serbs. Today, the area is populated by various ethno-linguistic groups: ethnic Albanians (who speak the Gheg dialect of Albanian, as opposed to Tosk Albanian typical of southern Albania), Serbs (who speak Serbian), Turks (who speak Turkish), Bosniaks (who speak Bosnian), Gorani (who speak a Slavic language or “Našinski”, a Gora dialect similar to Bosnian), and Roma (who speak Romani). In 2014, the year of our field-study, the resident population of Kosovo was estimated to be 1.78 million, with 28% being of the age 0-14, 65% at 15-64, and 7% that were 65 years and older, with an average life expectancy of 79.4 years for women and 74.1 for men . Additional information concerning the geographic characteristics, population, cultural aspects and nature values of this region have been previously described.

In previous field studies, we analyzed the medical ethnobotany of Albanians and different ethnic groups living in Kosovo ; here we focus on the medical and food ethnobotany of the Slavic speaking Bosniaks and Gorani (Muslims), Serbs (Christian Orthodox) and surrounding Albanians populations (Muslim) living in South Kosovo. As previously found in other works, the folk heritage of the medico-botanical resources among South Slavs is particularly rich when compared with that of other ethnic groups. It is for this reason that we pursued ethnomedical documentation in this area with these particular ethnic groups. The main aims of this study were to document the ethnomedical remedies (plants, animal, mineral substances and other materials found in nature) used among Slavic speaking groups in South Kosovo and to compare these findings across ethnic groups, as well as with the pre-existing ethnobotanical literature of the Western Balkans available in English.

MATERIAL AND METHODS

Field Study

Ethnobotanical field research was conducted in 6 villages belonging to the municipalities of Prizren (3 villages) and Dragash (3), located in Sharr Mountains, which are situated in the southern part of Kosovo.

Field studies were conducted over six day field trips in 2014 as part of a fieldwork training course with students from the University of Prishtina. The research team was divided into small groups consisting of

one professor and 2-3 students (three groups in total) that interacted with either individual respondents or small focus groups of no more than 3 individuals. Prior informed consent was obtained prior to conducting interviews and all researchers adhered to the ethical guidelines of the International Society of Ethnobiology. In most cases, small group interviews were conducted with different members of the same family unit. Snowball sampling methods were used to recruit informants and we particularly focused on local people who regularly use natural resources for medicinal purposes.

TEK was recorded using semi-structured interviews with informants. In particular, informal conversations focused on the issue of local taxa traditionally used for food (esp. wild food sources) and medicine. We sought in particular the following information: respondent demographics (age, gender, and community of residence), local names of useful plants or fungi, part(s) used, means of preparation, means of administration, local folk uses of taxa. Special care was taken to specifically document individual responses to all questions. In other words, within a small group, each person was questioned concerning their knowledge and use of each material discussed. Data sets collected reflect TEK of each independent informant.

In total, data were collected from 91 respondents, all from Slavic speaking groups – 48 Bosniaks (24 male, 24 female), 27 Gorani (12 male, 15 female), and 12 Serbians (7 male, 7 female) – with the exception of two Albanian participants (1 male, 1 female). The respondents were older than 50 years (with a few exceptions), mainly engaged in agricultural activities, and typically inherited their ethnobotanical knowledge from their direct ancestors (parents, grandparents) via oral traditions.

Biological Specimens

During the interviews, fresh plants were collected to create voucher specimens for herbarium deposit and whenever possible, informants were followed into the field to show us the quoted species. Most plant species were collected while flowering. Taxonomic identification of plants was undertaken using relevant standard botanical literature of the area. Plant nomenclature largely follows the Flora Europaea, while plant family assignments follow the current Angiosperm Phylogeny Group IV guidelines. Fungal taxonomy was confirmed using MycoBank. Voucher specimens of the wild taxa were deposited at the University of Prishtina Herbarium and Emory University Herbarium (Index Herbarium code: GEO). Specimens are in the process of being digitized; full collection information and digital images can be accessed via the SERNEC portal.

Data Analysis

We analyzed the data collected in effort to assess TEK across ethnic groups in this highly biodiverse pocket of the Balkans. We have employed a number of tools in our quantitative analysis of the pooled data, described below.

Use-Value Citation Index

The Use-Value (UV_c) citation index is useful for evaluating the relative importance of each species based on its cited uses . The UV_c was calculated for all taxa as follows:

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

where U_{is} is the sum of the total number of all individual use citation reports concerning a given taxa, divided by the total number of informants (N).

Informant Consensus Factor

The categories selected for use in the Informant Consensus Factor (F_{ic}) analysis are provided in Table 1 and follow a previously described system . Each taxa use was added to the appropriate category prior to analysis 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 are 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.

RESULTS

A total of 119 species (4 fungal and 115 plant species), representing 4 fungal and 43 plant families (Figure 1) were cited for ethnopharmacological applications, ranging from health food to various forms of medicine. Emic categories of medicinal or other applications were determined based on analysis of informant reports on plant uses, and qualitative interpretation of local illness assignments based on body system (e.g., cardiovascular system, gastrointestinal, dermatological, etc.), as previously described in other work using F_{ic} analysis . Seventy-one taxa were collected

Table 1. Ethnomedicine use reports

General Category of Use	Examples of indications and uses
Cardiovascular	Cardiotonic, hypertension, anemia, heart disorders, high cholesterol, varicose veins, venous ulcers
Dermatological	Alopecia, anti-inflammatory, antiseptic, burns, contusions, dog bite, eczema, circumcision, edema, facial rejuvenation, hair strengthener/fortifier, infected wounds, laceration, psoriasis, scabies, seborrheic dermatitis, warts, wounds
Endocrine	Diabetes
Food	Recreational tea, beverage, lacto-fermented food, vegetable pie
General health	Immune boosting, health promotion, weight loss, cleansing, recovery from sports injuries, fever
Gastrointestinal	Appetite stimulant, stomach ache, internal haemorrhages, bloody diarrhoea, constipation, digestive aid
Neuromuscular	Neurorelaxant, anti-stress, insomnia, headache, rheumatic pain
Ophthalmological	Conjunctivitis, eye inflammation
Oral health	Toothache
Otolaryngological	Ear infection
Psychiatric	Anxiety, fear
Respiratory	Cough (antitussive), respiratory tract infection, asthma, expectorant, bronchitis
Urological	Urogenital disorders, kidney stones, urinary tract infections, diuretic
Women's Health	Fertility, difficult childbirth, galactagogue, menopause symptoms, postpartum infection
Veterinary care	Insect repellent, skin injury, wounds

Legend: Division of ethnobotanical use reports by general categories for Informant Consensus Factor (F_{ic}) analysis.

from the wild, 42 were cultivated, 2 were semi-cultivated, 3 were purchased, and one was either wild harvested or cultivated. The most broadly represented plant families were Rosaceae (18 species cited), Lamiaceae (16 spp.) and Asteraceae (10 spp.) (Figure 1). Additionally, 13 ingredients of animal origin (Appendix I) and 14 of mineral or industrial origin (Appendix II) were spontaneously cited for medicinal applications, without specific questions to informants concerning the use of such materials.

The most frequently quoted manner of preparation of medicinal plants was represented by infusions (58%), tropical application (15%), decoction (7%), macerations (6%), eaten fresh (4%) squeezed liquid (3%) tincture (2%), ointments (2%) and others preparation with 1% or less (Figure 2). On the other hand, the most frequent food preparations were: tea (35%), lacto-fermented products (17%), fill for pies (14%), jams (8%), compote (6%), alcoholic fermentation 5% and with 1% vinegar and 'ajvar' preparations (Figure 3).

The most frequently cited medicinal uses referred to dermatological disorders (20%) gastrointestinal diseases (20%), respiratory (15%) troubles, gastrointestinal illness (12%), illnesses, cardiovascular illness (11%), etc. (Figure 4). 72% of the plants were internally administered while 28 of the preparations were externally administered.

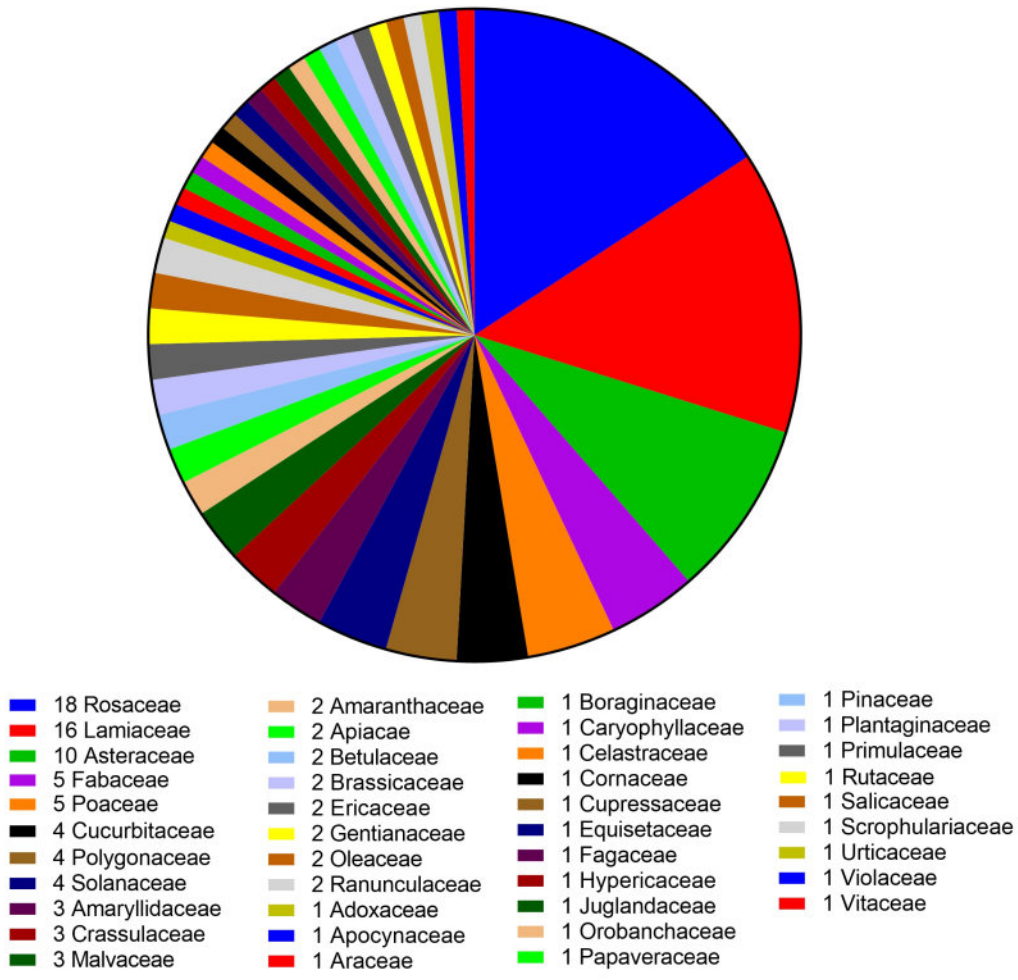

Figure 1. Number of plant families and their number of species, cited for ethnopharmacological applications, ranging from health food to various forms of medicine.

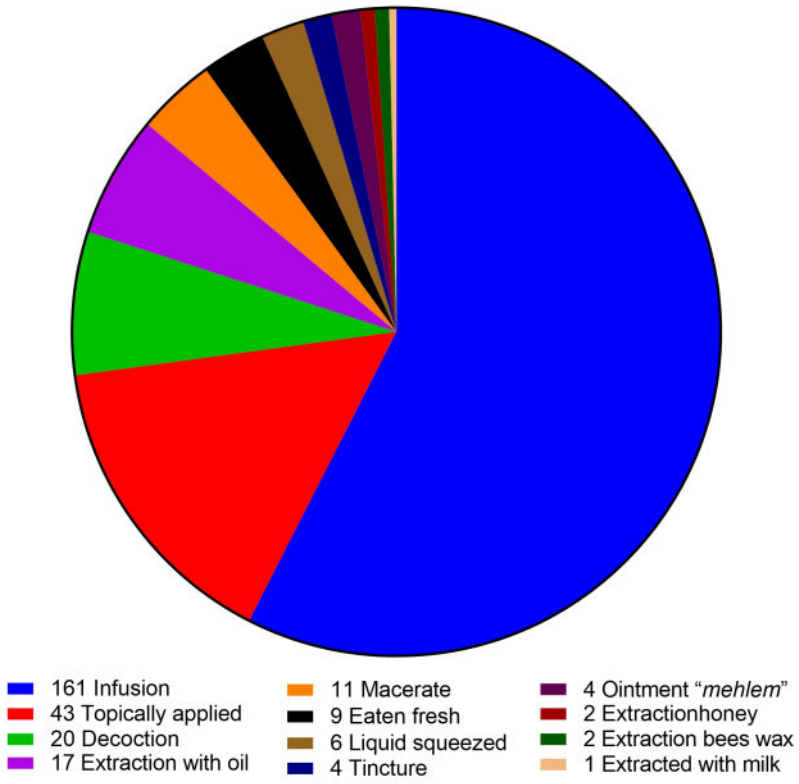

Figure 2. Preparation of plants for medicinal uses

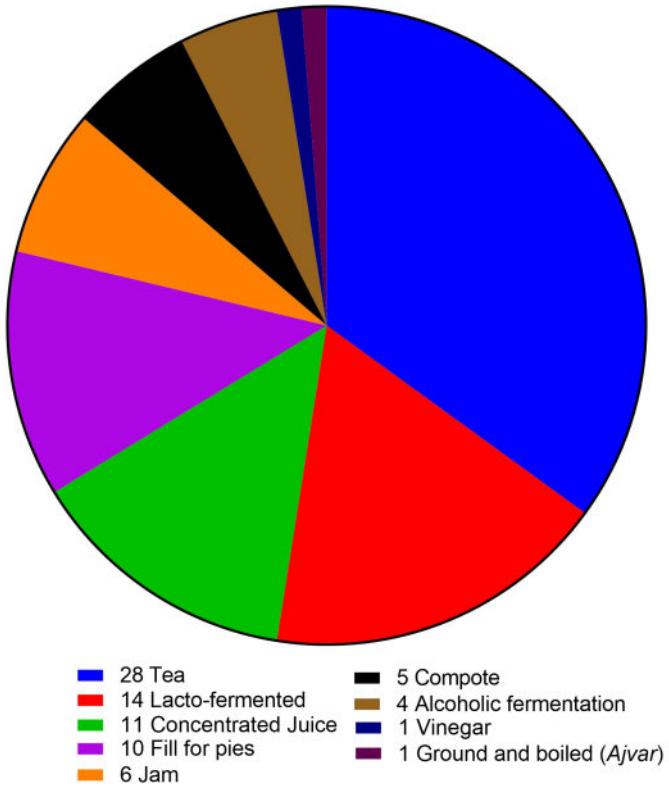

Figure 3. Preparation of plants for foods

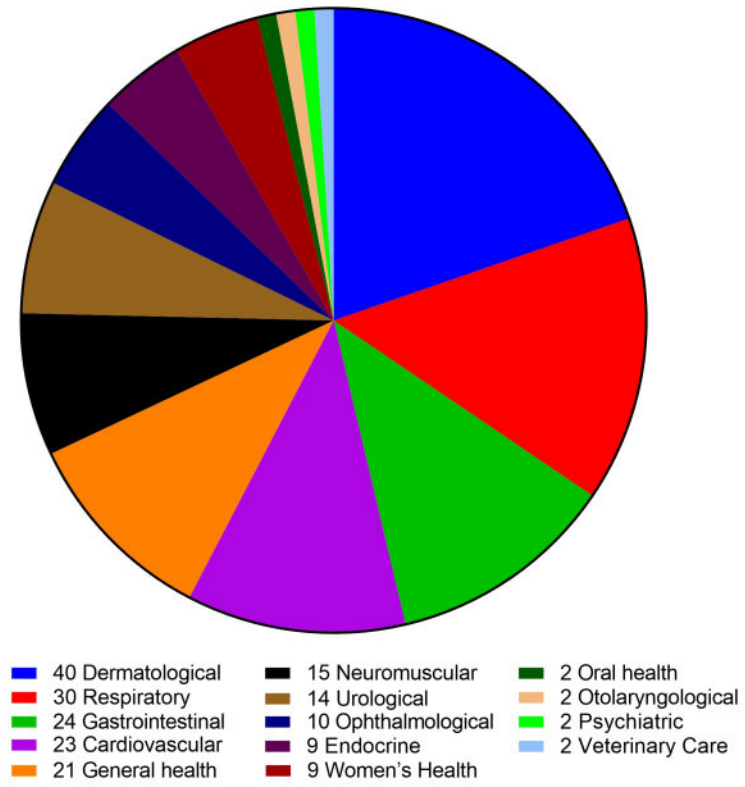

Figure 4. Medicinal uses of plant species

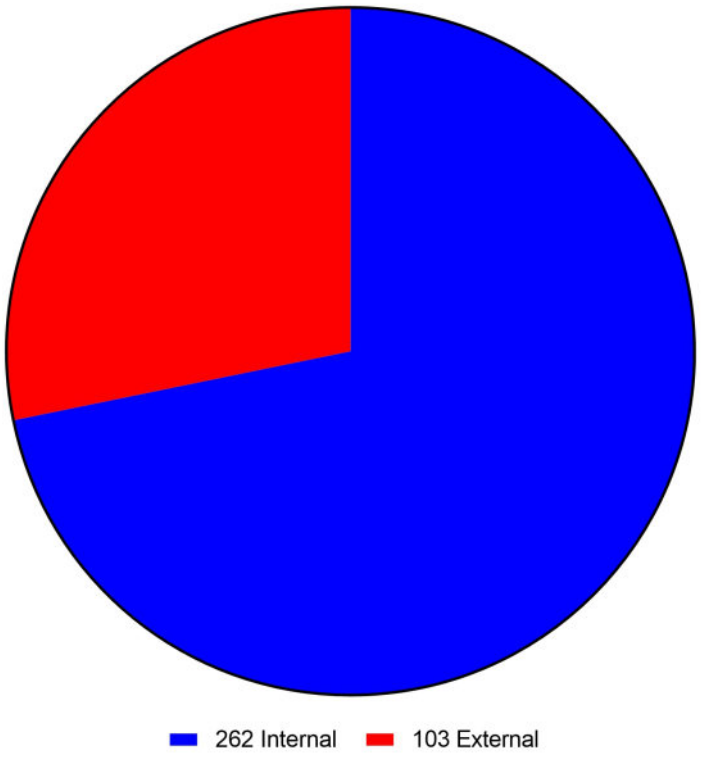

Figure 5. Administration of the extracts for medicinal purposes

Informants and Consensus

There were a total of 1,050 use citations (N_{uc}), and taxa were cited for different categories 389 times (N_t). Categories of use are described with examples in Table 1. The number of taxa (N_t), number of use citations (N_{uc}) and the informants consensus factor (F_{ic}) for each category is reported in Table 2. The most frequently cited (N_{uc}: 327) use of taxa was for dermatological applications, followed by food (255), gastrointestinal (88), respiratory (83), and cardiovascular (78). The highest consensus ($F_{ic} \geq 0.75$) was for taxa used for oral health (F_{ic}: 0.952), dermatological (0.880), otolaryngological (0.857), food (0.756) and psychiatric (0.750) applications.

Table 2. Informant consensus

Category of Local Use	Number of Taxa (N_t)	Number of Distinct Reports	Number of Use Citations (N_{uc})	Informant's Consensus Factor (F_{ic})
Cardiovascular	23	33	78	0.714
Dermatological	40	81	327	0.880
Endocrine	9	12	21	0.600
Food	63	102	255	0.756
Gastrointestinal	24	30	88	0.736
General health	21	25	55	0.630
Neuromuscular	15	18	35	0.588
Ophthalmological	10	12	22	0.571
Oral health	2	3	22	0.952
Otolaryngological	2	3	8	0.857
Psychiatric	2	3	5	0.750
Respiratory	30	41	83	0.646
Urological	14	14	30	0.552
Women's Health	9	10	17	0.500
Veterinary Care	2	2	4	0.667
Overall Total	266	389	1050	

Legend: Informant consensus concerning the internal use of local plants and fungi.

Use-Value for Cited Taxa

A detailed report of UV_c values for all cited taxa is provided in Appendix I. The average UV_c was 0.095. *H. perforatum* had the highest use-value index score of all species reported (UV_c: 2.56). Ten species had a use-value index score greater than 0.25, and all were collected from the wild: *Achillea millefolium, Matricaria recutita, Vaccinium myrtillus, Gentiana lutea, Hypericum perforatum, Origanum vulgare, Thymus serpyllum, Plantago major, Rosa canina*, and *Urtica dioica*. Notably, most species were cited for a number of applications. For example, while all reports of *T. serpyllum* were for its preparation as an infusion of aerial parts, the infusion was cited a variety of uses, ranging from food, general health promotion, and for various medical applications for women's health, neuromuscular, respiratory, and urological complaints. Likewise, *U. dioica* was reported to be prepared as an infusion (of the aerial parts, seeds, or flowers) for food (as a tea beverage) and for various medicinal applications ranging from urological, general health, cardiovascular, neuromuscular or

endocrine system complaints (Appendix I).

Reports of Animal, Mineral and Industrial Products

In addition to plant and fungal ingredients, reports of animal, mineral and industrial ingredients for medicinal applications were also recorded. Thirteen animal species were cited, with 38 distinct uses reported, and a total of 58 individual use citations (Appendix II). Of these, the top use-value index scores were for sheep products (N_{uc}: 0.132), with different dermatological applications cited using milk, gallbladder, skin, fat or feces; and human products (N_{uc}: 0.088) of urine and breast milk used for otolaryngological and dermatological applications.

Fourteen ingredients of mineral or industrial origin were cited for 17 distinct uses reported and 21 total citations for dermatological, veterinary and ophthalmological applications (Appendix III). The top two reported ingredients had low use value scores (relative to plant or animal ingredients); both ash and sugar had as UV_c of 0.033.

DISCUSSION

Similarities with other Reports in the Balkan Literature

Similar to a number of previous studies conducted in different communities spread across the Western Balkans (including Albania, Kosovo, Serbia and Montenegro), the most frequently cited plant families for food and medicinal use were Rosaceae, Lamiaceae and Asteraceae. Their predominance as a source of wild food and medicine is thus well documented throughout the region and not surprising to find here as well.

Measure of use-value indices for individual taxa can be especially useful for cross-cultural comparison studies concerning the use of different taxa, and mechanisms for data analysis between two or three groups have been explored with field data collected in this region of the Balkans. Due to limitations in the present study design (uneven numbers from different ethnicities having been recruited), a rigorous cross-cultural assessment of use-values across ethnic groups was not possible here. However, comparison of the present study data with that of a previous study conducted in SW Kosovo revealed that six of the eight most commonly cited taxa (with >30% of respondents citing their use) were also reported to have the highest UV_c scores (>0.25) here: *Achillea millefolium, Urtica dioica, Hypericum perforatum, Thymus serpyllum, Matricaria recutita* and *Vaccinium myrtillus*. The other two high ranking taxa from the prior study were also documented in the present work, but at a lower frequency: *Sambucus nigra* L. (UV_c: 0.176) and *Tilia platyphyllos* Scop. (UV*c*: 0.055). Furthermore, comparison of our data with the entire Western Balkan ethnobotanical literature available in English (see references cited in the introduction) revealed that the folk plant remedies with the highest fidelity levels, defined as those with high reports of the same specific use, were also recorded as being commonly used in the most of the considered studies.

Furthermore, in addition to their role in traditional medicine of this region, a number of these species have also been incorporated into the broader European market as plant food supplements, sold in various forms ranging from capsules, raw herbs, and tinctures; this includes *A. millefolium, H. perforatum, M. recutita, S. nigra, T. serpyllum, T. platyphyllos, U.*

dioica, and *V. myrtillus*.

Health Foods

Most of the plant foods quoted as being "healthy" by the informants referred to a few wild vegetables used as filling for börek and to lacto-fermented cultivated vegetables. The Ottoman culinary tradition of preparing wild plant-based savoury pies is widespread across the Balkans and wild sorrel and dock leaves (*Rumex* spp.) represent the most used ingredients. Both plants – sour and astringent at the same time (sorrel more sour, dock more astringent) are consumed in the spring as a panacea and a healthy food serving as a reconstituent following the long, cold winter period. Moreover, similarly to what we found also among Albanian Gorani , the customs of preparing home-made lacto-fermented plant ingredients, to consume them during the winter, and also to drink the resulting sour liquid portion as a panacea is a cultural trait of South Slavs (and especially Gorani) and should be better investigated in terms of biological evaluation of the nutraceutical potentialities of these probiotic foods.

Uncommon Plant Uses

The most uncommon use documented in the present work concerned the use of *Euonymus europaeus* L. fruiting branches in teas as a cardiotonic. This is unusual because across Europe, the plant is considered toxic and has never been quoted in our prior field studies as being internally used. Although it was only reported by two informants, it was also being sold at a local market; this finding should be better investigated by assessment of the chemical makeup of the water infusion as it pertains to the plant's toxicological relevance as well as its phytopharmacology.

Vinca minor L. was another uncommonly recorded species used as infusion to improve the general health. In general, it is known to be a valuable medicinal plant use to prevention and treatment the cerebrovascular insufficiencies and disorders, it increases cerebral blood flow, oxygen consumption and glucose utilization. Further work on the bioactivity and toxicology of the traditional leaf infusion could be worthwhile.

Other ingredients for local health practices

In addition to medicinal plants, other ingredients gleaned from the environment are commonly used in the traditional medical practices of this region. For example, we documented the use of thirteen animal species for pharmacological application. This practice of using animal and their byproducts for medicine is known as zootherapy, and has constituted an important component of the pharmacopoeia across many cultures since ancient times. Similar to other contemporary studies on zootherapeutic practices, we identified insects, birds, mammals (small and large), and reptiles as ingredients for various medical afflictions. Unlike other studies on this topic, no aquatic animals were reported. It should be noted, however, that as this was not a primary line of inquiry in interviews, which were mainly focused on the ethnopharmacological uses of plants and fungi, the scope of animals uses and number of actual user reports are likely highly underreported in the present study. Further research into zootherapeutic practices, as well as other practices which incorporate industrial materials or minerals, would be useful to improving our understanding of this phenomenon in the

Balkans.

Traditional formulations of *Hypericum perforatum*

Of all of the species encountered in our field study, *H. perforatum* (locally referred to as kantarion) dominated the discussion of more than half (52%) of all interviews conducted. It had the highest use-value index (UV_c: 2.56), much higher than the overall average of 0.095. This is similar to results of an ethnobotanical study in Eastern Serbia, which also documented this as the most frequently cited species, with 40.5% of informants citing its use .

Here, the flowering aerial parts were reported to prepared by infusion to be drunk for urological, respiratory and gastrointestinal complaints; but the most common preparation involved macerating the flowering aerial parts in a clear bottle full of olive or sunflower oil in the sunlight for a period of 40 days, at which time the oil will take on a deep blood red color. In some cases, this recipe included modifications, such as the addition of *Calendula officinalis* flowers to the oil macerate, or addition of other materials such as iodine or brick powder to the final oil product. The *H. perforatum* flower oil preparation (Oleum Hyperici), was reported for many different topical applications for dermatological, cardiovascular and veterinary use. Almost half (44%) of all informants referenced specific dermatological applications of Oleum Hyperici for wound healing, burn injuries, skin infections, eczema, and skin softening (emollient).

The antibacterial properties of *H. perforatum* is well known; growth inhibitory action of its extracts against *S. aureus* have been previously reported. A major constituent responsible for the antibacterial activity of extracts from this species is the phloroglucinol, hyperforin. However, this compound is very unstable, especially in the presence of heat and light , calling into question whether or not it is present in the traditional oil, and if not, what is responsible for the purported antibacterial activity of the folk remedy.

Another major constituent commonly found in *H. perforatum* extracts is the napthodianthrone, hypericin. It is known to be a major cause of photosensitization and cause of hypericism, a form of photodermatitis. Research on the topical application of hypericin gel and oil formulations demonstrated a clinically relevant rise in skin erythema. However, in our extensive discussions with informants on the use and effects (including adverse effects) of topical use of the kantarion oil, there were no reports of photodermatitis or a need to avoid sun exposure during use. This suggested that hypericin might be lacking in the traditional formulation, and this was confirmed in biochemical analyses .

CONCLUSIONS

A total of 389 distinct ethnomedical and food uses of 115 plant, 4 fungal, and 13 animal species were cited. Interviews with 91 informants yielded 1,050 total use citations for plants and fungi, and an additional 58 for animal products, with the highest consensus rankings attributed to the categories of oral health, dermatological, otolaryngological, food, and psychiatric applications.

In comparison to other ethnobotanical studies conducted in the Western Balkans, our findings reaffirm the importance of certain families (Rosaceae, Lamiaceae and Asteraceae) as sources of food and medicine in this region of South Kosovo. Of

note, a total of 21 species are used for the purpose of general health, and many of these are commonly consumed as a "health food". We noted two unusual plant uses not previously documented in the Balkans: the use of *Vinca minor* leaf infusion as a healthy beverage and an infusion of *Euonymus europaeus* as a cardiotonic. We also noted the critical importance of *Hypericum perforatum* as an ingredient for infusion and oil formulations used for several different categories of medical care, with dermatological application of the Oleum Hyperici being the most prevalent of all plant uses recorded in the region.

The *H. perforatum* oleolite paradox highlights an important issue in ethnopharmacology. Laboratory produced extracts do not necessarily reflect the chemical composition of the traditional medicine in use by people. Differences in extraction method and formulation or delivery vehicle can yield substantial differences in the final product's chemical makeup and bioavailability, and thus impact its potential bioactivity and toxicity. In order to gain a more accurate understanding of the potential efficacy and safety of traditional medicines in the future, it is imperative that precise details concerning the extraction and formulation of raw natural materials are recorded and reported.

In conclusion, this study provides a solid foundation for the understanding of ethnomedical practices of communities in South Kosovo. Our findings demonstrate that local people rely on a broad and biodiverse set of natural resources for their food and health. Furthermore, natural resources of this region provide an important source for acquisition of key ingredients for food and medicine by local people. Ethnobiological research can provide critical insight into how local people interact with the natural world, and provide baseline data for future pharmacological studies on traditional remedies. In particular, details concerning the parts used, mode of preparation or formulation, disease target, mode of application, frequency of use, and adverse effects can provide important clues for consideration in future laboratory analyses of the cited ingredients for potential toxicity and bioactivity.

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Apendix I. Ethnomedical and food uses of local taxa

Legend: St: Status. C: cultivated; SC: semi-cultivated; W: wild.

Local Name: "--" indicates that no local name was cited. SR: Serbian name; BO: Bosniak name; GO: Gorani name AL: Albanian name.

PU: Parts Used. AP: Aerial parts. Ba: Bark. Bd: Basidiome. Bu: bulb. imFl: immature flowers; Fbr: Flowering branch. FrBr: fruiting branches. Fl: Flowers. Fr: Fruits. Inflorescence: Inf. L: leaves. Ro: Roots. Se: Seeds. Sr: Storage root. Th: Thallus. Tu: Tubers. UFr: unripe fruit. Ysb: Young stems and branches.

U_{is}: Number of individual use citation reports by informants.

UV_c: Use-value Index. This index measures the relative importance of each species based on its reported use by informants.

FL: Fidelity Level %. This measure is useful for highlighting the central role of each taxa. Any taxa with ≤3 total use citations is excluded from this analysis due to limitations of this tool, and is denoted with --

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
FUNGI							
Boletaceae							
Boletus sp.	W	Rudčak[GO]	-	0.011	Bd	Food: Cooked and eaten.	1
Cantharellaceae							
Cantharellus cibarius Fr. AH-050	W	Peçurka[BO]	Chanterelle	0.011	Bd	Food: Cooked and eaten.	1
Lycoperdaceae							
Bovista dermoxantha Pers.	W	Pečurka[SR] Pufka[BO, GO]	-	0.066	Bd	Dermatological: pulverized and topically applied to eczema	2
						Dermatological: pulverized and topically applied to the penis following circumcision	1
						Dermatological: pulverized and topically applied as a hemostatic	2
						Dermatological: pulverized and topically applied to localized swelling (edema)	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
Parmeliaceae							
Cetraria islandica (L.) Ach.	W	Plučnjak bilka[BO]	Island lichen	0.011	Th	Respiratory: Tea drunk for cough – as antitussive.	1
PLANTAE							
Adoxaceae							
Sambucus nigra L. BP-066 BP-017	W	Zova[BO] Boza[BO] Bos[BO, GO] Belocveče[BO,SR]	Elderberry	0.176	Inf	General Health: Infusion drunk to promote health	1
						Respiratory: Infusion drunk for asthma, cough, bronchitis, fever	1
						Oral Health: Infusion for toothache	2
						Gastrointestinal: Infusion drunk for stomach disorders and to promote appetite	1
						Cardiovascular: Infusion drunk as anti-hypertensive	1
						Food: Tea	5
						Food: Cold macerate beverage	2
					Fr	Respiratory: 250 g sugar and 1L of fruit juice are boiled until reduced to 1 L, then drunk for respiratory infections and bronchitis	2
						General Health: 250 g sugar and 1L of fruit juice are boiled until reduced to 1 L, then drunk as healthy beverage	1
						Oral health: Infusion is used as rinse for toothache	1
Amaranthaceae							
Beta vulgaris L.	C	Cvekla[GO] Zele[GO]	Common beet	0.022	Sr	Food: Lacto-fermented and eaten.	1
					L	Food: Prepared in savoury vegetable pies and eaten.	1
Spinacia oleracea L.	C	Spanač[BO, GO]	Spinach	0.033	L	Food: Vegetable pie	3
Amaryllidaceae							
Allium cepa L.	C	Kromit[GO,SR] Krumit[BO]	Onion		L	Food: Cooked in vegetable pies and eaten.	1
						Respiratory: Liquid is squeezed from leaves and drunk as antitussive.	1
					Bu	Food: Cooked in vegetable pies and eaten.	1
						Respiratory: Mixed with honey and eaten to treat cough and bronchitis.	1
						Dermatological: Juice expressed and topically applied to warts	1
						Dermatological: Crushed and mixed with salt or sugar and topically applied to bruises and wounds	2

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
Allium porrum L.	C	Pras[GO, BO]	Garden leek	0.077	AP	Food: Cooked in vegetable pies and eaten.	6
						Endocrine: Extracted in white wine by maceration for 10 days and then drunk every morning to treat diabetes.	1
Allium sativum L.	C	Beli luk[SR]	Garlic	0.033	Bu	Cardiovascular: Crushed, mixed with yogurt and eaten to treat hypertension	1
						Dermatological: Topically applied to warts	2
Apiacae							
Daucus carota var. *sativus* Hoffm.	C	Šangarepi[BO,GO]	Queen Anne's lace	0.055	Ro	Food: lacto-fermented or pickled in vinegar	5
Petroselinum crispum (Mill.) Fuss BP-057	C	Pershun[BO]	Garden parsley	0.022	AP	Urological: Infusion drunk for urinary tract disorders	1
						Endocrine: Tea for diabetes	1
Apocynaceae							
Vinca minor L. PB-014 BP-054	C	Pletenica[BO] Vilinia kosa[BO]	Dwarf periwinkle	0.033	L	General Health: Infusion	1
						Dermatological: Leaf is squeezed to extract its juice, which is topically applied to the wound; acts as a suppurative to draw out the pus	1
					AP	Dermatological: Infusion is massaged into the scalp to treat alopecia and strengthen the hair root	1
Araceae							
Alocasia sp.	W	Adam i Eva[BO]	-	0.011	L	Neuromuscular: Topically applied as a foot wrap to treat rheumatic pains brought on by changes in the weather	1
Asteraceae							
Achillea millefolium L. BP-043, AH-025, AH-032, BP-016 AH-62, AH-66, AH-008, BP-036	W	Hajdučka trava[BO, GO, SR]	Common yarrow	0.330	AP	Gastrointestinal: Infusion drunk as an appetite stimulant	7
						Gastrointestinal: Infusion drunk to treat stomachache	3
						Urological: Infusion drunk to treat urogenital disorders	3
						Respiratory: Infusion drunk as antitussive	2
						Gastrointestinal: Infusion drunk to treat internal hemorrhages	2
						Neuromuscular: Infusion drunk as neurorelaxant	1
						General health: Infusion drunk to promote health	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						Food: Tea	1
						Dermatological: Apply topically to dog bite wound (for infected wounds)	1
						Ophthalmological: Mixed with *Planta major* leaves and topically applied to eye area to treat conjunctivitis	1
					L	Respiratory: Squeezed juice of leaves drunk to treat pulmonary disorders	1
						Food: Tea	2
					Fl	Food: Decoction of 10 L water, 1 kg flowers, 8 kg sugar, and 1 lemon is prepared and then drunk as a beverage	1
						Food: Infusion of 10 L water and 100 flowers macerated for 24 hours, then lemon juice added; to create a beverage for enjoyment and general health promotion	2
						Dermatological: Liquid expressed and topically applied as hemostatic	1
					im Fl	Respiratory: Infusion of flowers is drunk for respiratory disorders	1
Artemisia absinthium L.	W	Pelin[BO]	Absinthium	0.011	L	Endocrine: Tea drunk to treat diabetes	1
Calendula officinalis L. BP-020 PB - 007 BP-037	C	Neven[BO]	Pot marigold	0.187	Fl	Urological: Infusion drunk to treat urogenital infections	2
						Endocrine: Infusion with *Achillea millefolium* flowers drunk to treat thyroid disorders	1
						Dermatological: Mixed with pig or other fats to create an ointment "*mehlem*", which is topically applied for eczema and other inflammatory skin disorders	8
						Dermatological: *Mehlem* is topically applied to the skin for burns	1
						Cardiovascular: *Mehlem* is topically applied to varicose veins	1
						Dermatological: Extracted in oil in the sun for 40 days an stored for use when needed, topically applied to burns of the skin	1
						Dermatological: Extracted in oil in the sun for 40 days an stored for use when needed, topically applied to varicose veins	1
						Dermatological: Flowes combined with flowering aerial parts of *Hypericum perforatum* and extracted in olive or sunflower oil for 40 days in the sun to yield a blood red oleolite, which is then used for topical applications for healing skin injuries	1
						Cardiovascular: Oleolite prepared with *H. perforatum* flowers (see above) topically applied to areas affected by varicose veins	1
Centaurea cyanus L.	W	Kičica[BO]	Garden	0.011	AP	Women's Health: Infusion drunk to increase female fertility	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
AH-010			cornflower				
Cichorium intybus L.	W	Vodopija[BO]	Chicory	0.011	Fl	Gastrointestinal (pediatric): Infusion drunk to treat diarrhea	1
Helianthus annuus L.	C	-	Common sunflower	0.055	Se ed Oil	Dermatological (pediatric): Rubbed onto rashes	2
						Dermatological: Topically applied to skin infections (in children)	2
						Veterinary care: Rubbed onto coat of livestock as insect repellent	1
Helichrysum sp.	W	Smilje[GO]		0.022	AP	Women's Health: Tea drunk to help women undergoing difficult childbirth	1
						Respiratory: Tea drunk to treat asthma	1
Matricaria recutita L.	W	Kamelica[BO, GO, SR]	German Chamomile	0.286	Fl	Gastrointestinal: Tea drunk for disorders of the digestive tract, including diarrhea	3
						Food: Tea	4
						Dermatological: Infusion used to rinse and cleanse the skin as antiseptic	5
						Oral health: Infusions used as mouth rinse for oral infection	5
						Dermatological: Infusion used to rinse skin inflammations (and infections) in children	2
						Ophthalmological: Infusion used to rinse/cleanse eyes (for conjunctivitis)	1
						Dermatological: Mixed with cow fat and applied to burns	1
					AP	Respiratory: Infusion drunk as antitussive	3
						Respiratory: Infusion drunk to treat respiratory tract infections	1
						Food: Tea	1
Taraxacum officinale F.H. Wigg BP-053 PB - 003 PB - 002	W	Maslačak[GO,SR] Vertikuške[SR] Maslač[BO] Matičnjak[BO] Mlečica[BO]	Common dandelion	0.110	Fl	General Health: Make a decoction of 400 Fl, 2 kg sugar, 1 kg lemons and 2 L water and boil until reduces to a honey-like syrup. Drink for health promotion.	3
						Cardiovascular: Tea is drunk as cardiotonic.	1
					L	Endocrine: Eaten fresh, in salad to manage diabetes.	5
Tussilago farfara L.	W	Podbel[GO]	Coltsfoot	0.011	L	Dermatological: Topically applied to contusions	1
Betulaceae							
Betula pendula Roth PB-011	W	Breza[BO,GO, SR, Srebrne breze[BO],	European white birch	0.077	L	General Health: An infusion of the leaves in cold water is drunk to improve health.	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
		Bradavicama breze[BO]					
						Dermatological: Liquid is expressed and used as a shampoo to fortify the hair	2
					Inf & L	Urological: Mixed with juniper berries and prepared as an infusion, drunk to treat kidney disorders.	1
					Ba	Neuromuscular: Decoction of bark is prepared, a cloth is soaked in the liquid and then wrapped around the feet to treat rheumatic pain	1
					Ba, L	Dermatological: Decoction of bark and leaves used in a hair wash to fortify the hair	1
					Wo	Dermatological: Wood is pounded with a metal tool to create a poultice that is topically applied to treat warts	1
Corylus avellana L. BP-061	W	Lešnik[BO]	Common filbert	0.022	L	Food: Tea	1
					Fr & L	Food: Tea	1
Boraginaceae							
Borago officinalis L.	W	Burdžuroina[BO]	Common borage	0.011	L	Food: Cooked in vegetable pies and eaten.	1
Brassicaceae							
Brassica oleracea L.	C	Kupus[BO, GO, SR]	Cabbage	0.242	L	Gastrointestinal: Lactofermented and the resulting brine solution (*juva* or *rasol*) is drunk to treat stomachache	8
						General Health: Lactofermented and the resulting brine solution (*juva* or *rasol*) is drunk to promote immune system function	8
						Food: Lactofermented, sometimes with *Beta vulgaris* to give it a red color, eaten.	5
						Dermatological: Topically applied to burn injuries	1
Brassica oleracea var. *botrytis*	C	Karfiol[GO]	Broccoli	0.011	AP	Food: Lactofermented and eaten.	1
Caryophyllaceae							
Silene vulgaris (Moench) Garcke	W	Čkripec[BO]	Bladder campion	0.044	AP	Food: Vegetable pie	3
						Gastrointestinal: Tea for diarrhea	1
Celastraceae							
Euonymus europaeus L.	W	--	European	0.022	FrB	Cardiovascular: Tea as cardiotonic	2

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
			spindle		r		
Cornaceae							
Cornus mas L. BP-058 AH-001 AH-023	W	Thana[AL] Dren[BO,SR] Dreni[BO,SR] Drenile[BO,SR] Drenine[BO,SR] Drenina[BO, GO, SR]	Cornelian cherry	0.231	Fr	Respiratory: Decoction (1kg fruit + 1kg sugar boiled and reduced to 1L) drunk to treat colds	3
						Respiratory: Decoction (1kg fruit + 1kg sugar boiled and reduced to 1L) drunk as antitussive	1
						Food: Decoction (1kg fruit + 1kg sugar boiled and reduced to 1L) drunk as refreshing beverage	6
						Food: Tea	1
						Gastrointestinal: Tea to treat diarrhea	2
						Cardiovascular: Tea to treat anemia	1
						Food: Infusion enjoyed as beverage	6
						Cardiovascular: Infusion drunk to treat high cholesterol	1
Crassulaceae							
Sedum spectabile Boreau BP-015	W	Debela koka[SR]	Ice plant	0.011	L	Ophthalmological: Top epidermis of leaf is removed to reveal a fleshy tissue that is topically applied to the eye to treat conjunctivitis	1
Sempervivum tectorum L. BP-034 BP-035 BP-065 PB-008 BP-021	C	Čuvar kuče[SR] Stražar kuče[SR] Čuvar kuča[BO] Mučenica[BO]	Common houseleek	0.110	L	Women's Health: Decoction for women during menopause	1
						Gastrointestinal: Eaten raw to treat stomach pains	3
						Otolaryngological: Liquid is expressed from the leaf and dropped into the ear canal to treat ear infection	2
						Dermatological: Whole leaves are topically applied to treat hyperhidrosis of the feet	1
Sempervivum spp.	S C	Kasel[BO] Simičika[BO]	-	0.033	L	Otolaryngological: Liquid is expressed from the leaf and dropped into the ear canal to treat ear infection	2
						Dermatological: Liquid is expressed and topically applied	1
Cucurbitaceae							
Citrullus lanatus (Thunb.)	C	Lubenica[BO]	Watermelo	0.044	Fr	Food: Marmalade	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
Matsum. & Nakai			n				
						Otolaryngological: Juice is expressed and dropped into the ear canal to treat ear infection	2
					UF r	Food: Lactofermented in brine to make pickles	1
Cucumis melo L.	C	Dinja [BO]	Cantaloupe	0.011	Fr	Food: Lactofermented in brine to make pickles	1
Cucumis sativus L.	C	Kastravac[BO, GO]	Garden cucumber	0.077	Fr	Food: Lactofermented in brine to make pickles	4
						Dermatological: Sliced and topically applied to the eye area to reduce inflammation and treat wrinkles	3
Cucurbita pepo L.	C	Tikva[BO]	Field pumpkin	0.022	Fr	Food: Vegetable pie	2
Cupressaceae							
Juniperus communis L. AH-047 BP-001	W	Kleka[BO, GO] Smreka[BO, GO] Smekulka[BO] Smerkinka[BO]	Common juniper	0.132	Fr	Gastrointestinal: Mixed with *Salep* tubers (*Orchis* spp.) and milk and drunk for stomach disorders	1
						Urological: Infusion drunk for urinary tract disorders	4
						Food: Ingredient in lactofermented foods	1
						Food: Lactofermented as a healthy beverage	1
						Gastrointestinal: Infusion drunk for stomachache	1
						Cardiovascular: Infusion mixed with honey and drunk for hypertension	1
						Respiratory: Infusion mixed with honey and drunk for asthma	1
						Food: Spice for various dishes	1
					AP	Food: Spice for smoking meat	1
Ericaceae							
Vaccinium myrtillus L. AH-042 BP-007 BP-049 AH-003 AH-022	W	Boronica[AL] Čeršune[BO, GO] Borovnica[BO, GO] Divija čeršini[BO, GO]	European blueberry	0.363	L	Endocrine: Infusion drunk for diabetes, sometimes mixed with flowers of *Rosa canina*	4
					Fr	Food: Cold water macerate, sometimes lightly fermented	2
						Cardiovascular: Infusion drunk for anemia	2

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						General Health: Infusion drunk to promote health	1
						Gastrointestinal: Infusion drunk for stomach disorders	1
						Endocrine: Tea drink for diabetes	2
						Food: Tea	3
						Food: 1 kg of fruits and 1 kg sugar are boiled and reduced to 1L volume, then drunk as beverage	5
						General Health: 1 kg of fruits and 1 kg sugar are boiled and reduced to 1L volume, then drunk to promote immunity and health	2
						Cardiovascular: 1 kg of fruits and 1 kg sugar are boiled and reduced to 1L volume, then drunk for anemia and disorders of the spleen	6
						Respiratory: 1 kg of fruits and 1 kg sugar are boiled and reduced to 1L volume, then drunk for respiratory afflictions	1
						General Health: 1 kg of fruits and 1 kg sugar are boiled and reduced to 1L volume, then drunk to promote healing after surgery	1
						Food: Jam	1
						Food: Boiled and remaining juice used as beverage	2
Vaccinium vitis-idaea L.	W	Brusnica[BO, SR]	Lingonberry	0.044	AP	Cardiovascular: Infusion drunk for hypertension	2
						Urological: Infusion drunk as diuretic	2
Equisetaceae							
Equisetum arvense L. AH-013 BP-029 BP-022	W	Rastavič[BO,SR] Konjski rep[BO,SR]	Field horsetail	0.077	AP	Urological: Infusion drunk to cleanse the urinary tract and kidneys	4
						Food: Tea	1
						Dermatological: Infusion topically applied to skin infections	2
Fabaceae							
Cassia angustifolia Vahl	C	Sena bilka[BO]	Senna	0.011	Fr	Gastronintestinal: Tea for constipation	1
Lathyrus sativus L.	C	Grah[GO]	White pea	0.011	Fr	Dermatological: Rubbed onto wound of dog bite	1
Phaseolus vulgaris L.	C	-	Common bean	0.022	Se	Dermatological: Topically applied to wound of dog bite	2
Robinia pseudoacacia L.	W	Bagrem[BO]	Black locust	0.011	L	General Health: Tea for infections	1
Trifolium sp.	W	Ceverna detelia[BO] Detelina[BO]		0.011	AP	Ophthalmological: Prepared as decoction and used to rinse the eyes for conjunctivitis	1
Fagaceae							

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
Fagus sylvatica L.	W	Bukva[BO]	European beech	0.011	Se	Food: Eaten raw, as snack	1
Gentianaceae							
Centaurium erythraea Rafn AH-020 BP-039 PB-012	W	Cerveni kantarion[BO]	European centaury	0.044	Inf	General Health: Infusion drunk (sometimes with honey) as a general febrifuge or for malarial fever	2
					AP	Gastrointestinal: Infusion drunk as appetite stimulant	1
						Gastrointestinal: Infusion drunk for stomach disorders	1
						Cardiovascular: Infusion for anemia	1
Gentiana lutea L. BP-045 AH-049 AH-015 PB - 004 BP-003 AH-67	W	Čičak[GO] Raven[GO] Čemerika[BO] Lincura[SR]	Yellow gentian	0.297	L, St	Urological: Infusion drunk for urinary tract infections	1
					Ro	Gastrointestinal: Shade dried root is prepared as an infusion and drunk for stomachache, for hemorrhoids and as an appetite stimulant	16
						Food: Tea	2
						Endocrine: Cold macerate drunk for diabetes	1
						Gastrointenstinal: Prepared as a tincture or tea; drunk for digestive disorders, to stimulate appetite, for hemorrhoids and for stomachache	3
						Neuromuscular: Tincture or tea drunk as neuro-relaxant	3
						Dermatological: Infusion used as shampoo to strengthen the hair root and treat alopecia	1
Hypericaceae							
Hypericum perforatum L. PB-005 BP-002 BP-014 BP-028 BP-044 AH-006 AH-021 AH-030 AH-046	W	Kantarion[BO, GO, SR] Kantoria[BO]	St. John's Wort	2.560	AP (in Fl)	Gastrointestinal: Infusion for stomach ulcers and stomachache	8
						Urological: Infusion for urinary tract and kidney disorders	3
						Cardiovascular: Infusion for hemorrhoids	1
						Respiratory: Infusion as antitussive	6
						General health: Infusion to stop internal bleeding	2
						Veterinary: Flowering aerial parts extracted in olive oil or sunflower oil in the sun for 40 days, and then the blood red oleolite can be used. Topically applied to wounds in livestock	3
						Dermatological: Oleolite (see above) topically applied to skin injuries to promote wound healing	42

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						Dermatological: Oleolite (see above) topically applied to burn injuries	40
						Dermatological: Oleolite (see above) topically applied to skin infections	40
						Dermatological: Oleolite (see above) topically applied to skin inflammations (eczema)	40
						Dermatological: Oleolite (see above) topically applied to soften the skin	40
						Dermatological: Oleolite (see above) topically applied to treat variola	1
						Dermatological: Oleolite (see above) topically applied to treat Athlete's foot (fungal infection of the feet)	1
						Women's health: Oleolite (see above) topically applied to affected area (genitals) for postpartum infection	1
						Dermatological: Dermatological: Oleolite (see above) topically applied to treat acne	1
						Dermatological: Oleolite (see above) mixed with the powder scraped off of a brick, and then massaged into the skin to treat skin inflammation	1
						Dermatological: Oleolite (see above) mixed with iodine and topically applied to treat skin infections	1
						Dermatological: Flowering aerial parts combined with flowers of *Calendula officinalis* and extracted in olive or sunflower oil for 40 days in the sun to yield a blood red oleolite, which is then used for topical applications for healing skin injuries	1
						Cardiovascular: Oleolite prepared with *C. officinalis* flowers (see above) topically applied to areas affected by varicose veins	1
Juglandaceae							
Juglans regia L. BP-067	C	Orasi[BO]	English walnut	0.055	Fr	Food: Added to spirits (*rakkia*) to impart flavor	1
						Dermatological: Decoction of the green shells used in wash to strengthen hair	1
					L	Cardiovascular: Infusion for the heart	1
						Respiratory: Infusion for bronchitis	1
						Dermatological: Apply fresh leaf to wart	1
Lamiaceae							
Glechoma hederacea L.	W	Dobričica bilka[BO]	Ground ivy	0.011	AP (Fl)	Neuromuscular: Tea for headache	1
Lavandula officinalis Chaix	C	Lavanda[BO]	English lavender	0.011	AP	Ophthalmological (Pediatric): Prepared as a tea and used to rinse the eyes for inflammation and conjunctivitis	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
Marrubium vulgare L.	W	Očajnica[BO]	White horehound	0.011	AP	Women's Health: Infusion drunk to treat infertility.	1
Melissa officinalis L. BP-026 BP-027	W	Matučina[SR] Matičnjak[SR] Matorka[GO] Čaj melisa[BO] Matičnjak[BO]	Lemon balm	0.0143	AP	General Health: Infusion drunk to promote health.	2
						Gastrointestinal: Infusion drunk to treat stomachache and diarrhea	2
						Cardiovascular: Infusion drunk as cardiotonic	1
						Endocrine: Infusion drunk to manage diabetes	1
						Neuromuscular: Infusion drunk for nerves and stress	2
						Food: Tea	3
					L	Neuromuscular: Infusion drunk as neuro-relaxant, calming agent	2
Mentha longifolia (L.) Huds. BP-062 AH-026 PB - 006 AH-64	W	Nana[AL] Divla nana[SR] Divlja menta[BO,GO] Divlja nana[BO,GO] Nana[BO,GO]	Wild mint	0.088	AP	Gastrointestinal: Infusion drunk to treat stomach pain and stomach disorders	4
						Respiratory: Infusion drunk to treat respiratory infections	2
						Food: Tea	1
					L	General Health: Infusion drunk for general health promotion	1
Mentha piperita L. BP-026 BP-006 PB-007	W	Menta[BO,GO] Nana[BO,GO]	Peppermint	0.143	AP	Respiratory: Infusion drunk for respiratory disorders	4
						Neuromuscular: Infusion drunk for headache	1
						Women's Health: Tea drunk as galactagogue	1
						Food: Tea	7
Nepeta cataria L. BP-042	W	Strashnica[GO]	Catnip	0.044	L	Psychiatric: Infusion drunk to treat fear, anti-stress and for insomnia	1
						Psychiatric: Infusion used to wash body and relieve stress, fear, anxiety, insomnia	3
Ocimum basilicum L. PB-009 BP-041 BP-064	C	Bosilak[SR] Domače nana[SR]	Sweet basil	0.055	L	Respiratory: Infusion drunk to treat cough	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
		Bosilok[BO] Basilik[GO]					
						Food: Tea	1
						Food: Cold water macerate beverage	1
					AP	Ophthalmological: Topically applied to eye are to treat conjunctivitis	1
						Women's health: Infusion mixed with sugar and used as a genital wash for feminine hygiene	1
Origanum vulgare L. AH-009 BP-027 PB -008 AH-24 PB - 010 BP-005 AH-045	W	Kamski[SR] Kamski čaj[BO] Planinski čaj[BO] Šumski čaj[BO, GO]	Oregano	0.264	AP	Food: Tea	12
						Respiratory: Infusion drunk for respiratory disorders	3
						Gastrointestinal: Infusion drunk as a digestive aid	3
						Neuromuscular: Infusion drunk as neurorelaxant	3
						Dermatological (Pediatric): Infusion for skin inflammations in infants	3
Salvia officinalis L.	C	Žalfija[SR] Zalfia[BO,GO]	Common sage	0.099	AP	Food: Tea	3
						Respiratory: Tea for cough	3
						Dermatological: Boil dried leaves and flowers until oil is released (or leave the mix in the sun for 24 h). Apply the liquid topically to the affected area for general skin disease	1
						Dermatological: Prepare as above, apply topically to acne	1
						Dermatological: Prepare as above, apply topically to psoriasis	1
Salvia verticillata L. PB-017	W	Govnarika[GO]	Lilac sage	0.033	L	Dermatological: Topically applied as a hemostatic to skin injuries	3
Sideritis scardica Griseb.	W	Šarplanski[GO]	Ironwort	0.011	AP	Food: Tea	1
Teucrium chamaedrys L. PB- 011 AH-011	W	Podubica[BO,GO]	Wall germander	0.033	Inf	Cardiovascular: Infusion for hemorrhoids	1
						Respiratory: Infusion drunk for respiratory disorders	1
						Gastrointestinal: Infusion drunk to treat diarrhea	1
Teucrium montanum L.	W	Iva[BO]	Mountain germander	0.011	AP	Food: Tea	1
Teucrium polium L. AH-017	W	Čubrica[BO]	Felty germander	0.022	AP	Food: Dried and applied as a spice in preparation of meats and lactofermented foods	2

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
Thymus serpyllum L. BP-008 PB - 007 BP-048 AH-041 AH-031 BP-063PB - 011 BP-023 AH-61	W	Majčina dušica[SR,GO] Babina dušica[BO] Planinski čaj[BO]	Breckland thyme	0.495	AP	Neuromuscular: Infusion drunk as calming beverage; to treat stress and act as a neurorelaxant	4
						General Health: Infusion drunk to promote general wellness	3
						Neuromuscular: Infusion drunk to treat headaches	1
						Women's Health: Infusion drunk for gynecological disorders	4
						Respiratory: Infusion drunk to treat respiratory infections	5
						Gastrointestinal: Infusion drunk as appetite stimulant and to relieve stomachache	6
						Urological: Infusion drunk for kidney disorders	1
						Neuromuscular: Infusion drunk to treat insomnia	3
						Food: Tea	14
						Women's health: Infusion used to rinse the genitals for treatment of various female genital disorders	4
Malvaceae							
Althaea officinalis L. AH-012	W	Beli sles[BO,GO]	Common marshmallow	0.055	AP	Respiratory: Infusion drunk as antitussive	2
						Respiratory: Infusion drunk as expectorant	1
						Food: Tea	2
Malva sylvestris L.	W	Cerni slez[BO,SR]	Common mallow	0.022	AP Fl	Gastrointestinal: Infusion drunk as anti-emetic	1
						Respiratory: Infusion to treat respiratory tract infections	1
Tilia platyphyllos Scop.	S C	Lipa[BO] Lipa čaj[BO]	Large-leaved linden	0.055	Fl	Food: Tea	2
						Neuromuscular: Infusion for nerves, insomnia	2
						Respiratory: Infusion for nasal and chest decongestion	1
Oleaceae							
Fraxinus ornus L.	W	Jasen[SR]	Flowering ash	0.022	Ba	Dermatological: Mixed with bees wax and topically applied to burn injuries	1
						Dermatological: Mixed with bees wax and topically applied to infected	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						wounds	
Olea europaea L.	P	Maslina[GO]	Olive	0.011	Oil	Dermatological (Pediatric): Topically applied to skin rashes and inflammations	1
Orobanchaceae							
Euphrasia officinalis L.	W	Vidač[GO]	Eyebright	0.044	AP	Ophthalmological: Tea used to rinse the eyes in treatment of conjunctivitis	2
						Dermatological: Tea is topically applied to burn injuries	2
Papaveraceae							
Chelidonium majus L. BP-030	W	Mlečnik[BO] Rusa bilka[BO]	Celandine	0.132	L	Cardiovascular: Infusion drunk to “cleanse” the blood	1
						Ophthalmological: Leaves topically applied to the eye area, sometimes mixed with butter; for conjunctivitis	3
						Dermatological: Leaves topically applied to skin inflammations and eczema, sometimes mixed with butter	3
					La	Dermatological: Yellow latex topically applied to warts	5
Pinaceae							
Pinus nigra J.F. Arnold AH-004 AH-005	W	Jeva[BO] Crni bor[BO] Grah[BO]	Black pine	0.022	Ysb	Respiratory: Mixed with Ysb of *Pinus sylvestris* L., boiled for 4 hours slowly, add some sugar, lemon, and honey; drunk for bronchitis and respiratory disease	1
					Re	Dermatological: Topically applied to skin infections	1
Plantaginaceae							
Plantago major L. AH-018 BP-011 PB - 001 AH-018	W	Shtavell[SR] Bogvica[SR] Živolog[SR] Gumnarika[BO] Zhivollok[BO]	Broadleaf plantain	0.418	L	General health: Infusion	1
						Respiratory: Infusion for colds in children	2
						Ophthalmological: Mixed with *Achillea millefolium* aerial parts and topically applied to eye area to treat conjunctivitis	1
						Dermatological: Topically applied to skin injuries or wounds	8
						Dermatological: Topically applied to skin infections	8
						Dermatological: Topically applied to warts	8
						Ophthalmological: Topically applied to eye area for conjunctivitis	8
						Ophthalmological: Mixed with *Achillea millefolium* and topically applied to eye area for conjunctivitis	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						Cardiovascular: Mixed with *Achillea millefolium* and topically applied to venous ulcers	1
Poaceae							
Avena sativa L.	C	Bjada[GO]	Common oat	0.011	Fr	Food: Grains are used to make bread	1
Hordeum vulgare L.	C	Ječmen[GO]	Common barley	0.011	Fr	Food: Grains cooked	1
Secale cereale L.	C	Erš[GO]	Rye	0.011	Fr	Food: Grains are used to make bread	1
Triticum aestivum L.	C	Peshnica[GO]	Common wheat	0.022	Fr	Food: Grains are used to make bread	1
						Food: Grains are used to make noodles (*jufka*)	1
Zea mays L.	C	Zmin[BO] Kukurus[BO]	Maize	0.022	Fr	Cardiovacular: Decocion drunk for hemorrhoids	1
						Food: Corn flour baked as bread	1
Polygonaceae							
Polygonum bistorta L. BO-046	W	Srčanik[GO]	European bistort	0.011	St	Food: Added to alcoholic beverages as a flavoring agent	1
Rumex acetosa L. BP-047	W	Kiselica[SR,GO] Kiselice[BO] Štavel[BO]	Garden sorrel	0.154	L	Food: Vegetable Pie	12
						Food: Tea	1
						Cardiovascular: Infusion drunk for edema	1
Rumex crispus L. BP-055	W	Ren[BO]	Curly dock	0.011	Ro	Neuromuscular: Prepared as an oleolite and used to massage the affected rheumatic area	1
Rumex patientia L.	W	Štavel[BO,GO]	Garden patience	0.033	L	Food: Vegetable Pie	3
Primulaceae							
Primula veris L. BP-019 AH-019 BP-050	W	Jagliča[BO] Goročevina[BO] Goro cveče [BO,] Jagorčenina[BO,GO] Gorolja[SR,GO] Jaglika[GO] Gorolja [GO]	Cowslip	0.099	Ro	Respiratory: Infusion drunk for respiratory disorders	4

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
					AP	Respiratory: Infusion drunk for respiratory disorders in children	1
					Fl	Respiratory: Infusion drunk as antitussive	3
						Dermatological: Decoction topically applied to treat dry skin	1
Ranunculaceae							
Adonis vernalis L.	W	Gorocvet[BO]	Spring pheasant's eye	0.044	AP	Urological: Infusion drunk as an anti-diuretic	2
						Respiratory: Infusion drunk as anti-tussive	2
Caltha palustris L.	W	Matučina[BO]	Yellow marsh marigold	0.011	AP	Psychiatric: Infusion drunk for nerves; calming	1
Rosaceae							
Aronia sp.	C	Aronia[GO]	-	0.011	F	General Health: Infusion is drunk as cancer preventive and to recover from sports injuries	1
Crataegus monogyna Jacq.	W	Gllok[BO] Glog[BO, GO,SR]	Hawthorn	0.121	Ba	Cardiovascular: Infusion drunk to improve circulation	1
						Respiratory: Infusion as anti-tussive	1
					AP	Cardiovascular: Infusion drunk for hypertension	2
					L Ysb & Fl	Respiratory: Infusion sun extracted (exposed to sunshine for 6 hours on the roof) and drunk for colds and cough	1
					L	Respiratory: Infusion for colds	1
					Fr & Fl	Cardiovascular: Infusion for hypertension	2
					Fr	Cardiovascular: Infusion for heart disorders	1
						Cardiovascular: Decoction (boiled until turns red in color) and then drunk to treat hypertension	1
						Food: Tea	1
Cydonia oblonga Mill.	C	Dunja[BO]	Quince	0.022	Fr	Food: Added as spice or colorant (yellow) ingredient when lacto-fermenting other species to make pickles	1
						Gastrointestinal: Eaten to treat diarrhea	1
Fragaria vesca L. BP-012	W	Divlja jagoda[BO,GO]	Woodland strawberry	0.055	Fr	Food: Boiled and canned, juice drunk as beverage	4

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
		Jagoda[BO,GO]					
						Cardiovascular: Strengthen the blood	1
Geum sp.	W	Luta trava[BO] Polski lutia[BO]	-	0.033	L	Neuromuscular: Infusion drunk for rheumatism	1
						Dermatological: Liquid expressed from leaves and topically applied to psoriasis	2
Malus sylvestris Mill. AH-016	W	Jabuka[SR] Divlja jabuka[BO] Divljačka[BO] Jabuka[BO] Jabuke[BO]	European crab apple	0.209	Fr	Respiratory: Tea, drunk as antitussive	4
						General Health: Vinegar (fruit is cut in small pieces, put into a jug of water and left to ferment for 1 month, and then filtered at completion of acetic acid process) is drunk to promote weight loss and to "cleanse" the body	5
						Urological: Vinegar drunk to treat kidney stones	4
						Food: Alcoholic fermentation, alcohol used as beverage	1
						Food: Cut into small pieces and dried; boiled in water and drunk as beverage	1
						Food: Marmalade	1
						Food: Pie	1
						Neuromuscular: Infusion drunk to treat headache	1
						Dermatological: Mix with sodium carbonate and apply to face for skin (facial) rejuvenation	1
Mespilus germanica L.	C	--	Common medlar	0.011	L	Respiratory: Infusion drunk as antitussive	1
Prunus avium (L.) L.	C	Trešnja[BO,GO]	Sweet cherry	0.033	Fr	Food: Cold macerated (lightly fermented) beverage	3
Prunus cerasus L.	C	Višnja[GO]	Sour cherry	0.011	Le	Ophthalmological: Whole fresh leaf applied to the eye for conjunctivitis	1
Prunus domestica L.	C	Šliva[SR] Divija šlive[BO,GO] Šliva[BO,GO]	Common plum	0.110	Fr	Food: Dried and eaten (*Oshaf*)	2
						Food: Decoction is drunk	3
						Food: Prepared with sugar to make a jam	1
						Gastrointestinal: Decoction of fruits drunk to relieve constipation	2

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						Food: Fermented and distilled to create *raki*, an alcoholic beverage	2
Prunus spinosa L.	W	Terlinka[BO,GO,SR] Ternina[BO,GO,SR] Trnjine[BO,GO,SR]	Blackthorn	0.066	Fr	Gastrointestinal: Eat the fresh fruit or drink an infusion of the dry fruit to treat constipation	2
						Women's Health: Eat the fresh fruit or drink an infusion of the dry fruit as a galactagogue	2
						Food: Cold macerated (sometimes lightly fermented) beverage	1
						Food: Juice is drunk	1
Prunus spp.	C/W	Rakia[BO] (spirits made from plums)	-	0.022	Fr	Dermatological: Alcoholic spirits made from wild or cultivated plums are used to cleanse the skin or wounds as an antiseptic	2
Pyrus communis L.	C	Kruška[BO,SR] Kruške[BO,SR] Hruška[GO]	European pear	0.055	Fr	Food: Lactofermented and eaten as pickles	2
						Food: Dried (*Oshaf*) and eaten	1
						Food: Alcoholic fermented beverage	3
Pyrus pyraster (L.) Burgsd.	W	Divlja hruška[SR,GO] Kruška[BO]	European wild pear	0.055	Fr	Food: Boiled and drunk	1
						Food: Cold macerated (lightly fermented) beverage	3
						Dermatological: Infusion of fruits used as shampoo to clean hair	1
Rosa canina L.	W	Šhipinski caj[BO] Šipinka[BO] Šipnkine[BO] Šipunka[BO] Šipurak[BO] Šipurka[BO] Sllatca[BO] Šipun[GO]	Dog rose	0.253	Fr	General Health: Infusion is drunk to promote wellness	2
						Respiratory: Infusion is drunk to treat respiratory disorders (bronchitis and cough)	7
						Food: Marmalade	6
						Food: Tea	6
						Food: Cold macerated (lightly fermented) beverage	2

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
Rosa × *damascena* Mill.	C	Divlja ruža[BO,GO] Trendafil šoje[BO]	Damask rose	0.022	Fl	Food: Cold macerated (lightly fermented) beverage	2
Rubus fruticosus L. AH-002	W	Kupina[BO,GO] Kopine[BO,GO] Cerniče[BO,GO]	Blackberry	0.099	Fr	Food: Cold macerated (lightly fermented) beverage	1
						Food: Tea	1
						Respiratory: Infusion drunk as antitussive	2
						Food: 1 kg sugar and 1 kg fruit boiled until concentrated to 1 L in volume. Drunk as refreshing beverage	2
						Cardiovascular: 1 kg sugar and 1 kg fruit boiled until concentrated to 1 L in volume. Drunk to treat anemia	1
						General Health: 1 kg sugar and 1 kg fruit boiled until concentrated to 1 L in volume. Drunk to promote health	1
						Food: Jam	1
Rubus idaeus L. BP-010 BP-018	W	Malina[BO,GO]	Red raspberry	0.044	Fr	Food: Marmalade	1
						Food: Decoction is drunk as beverage	1
						Respiratory: Infusion drunk as antitussive	1
						Cardiovascular: Infusion drunk for anemia	1
Rutaceae							
Citrus limon (L.) Osbeck	C	Limoni[BO]	Lemon	0.033	Fr	Food: Fruit cut into small pieces, dried, and then made in decoction with sugar to create a beverage	2
						Dermatological: Topically applied to reduce wrinkles	1
Salicaceae							
Salix spp.	W	Verba[BO,GO]	Willow	0.022	Ba	Dermatological: Bark scraped from tree and topically applied to warts	2
Scrophulariaceae							
Verbascum sp. BP-038	W	Divizma[BO]	-	0.011	L	Urological: Infusion for urinary tract disorders	1
Solanaceae							
Capsicum annuum L.	C	Speca[AL] Saprika[BO,SR] Lutike[GO,SR]	Sweet pepper	0.132	Fr	Food: Lactofermented and eaten	10

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						Food: Ground and boiled (*Ajvar*)	1
						Food: Roasted and eaten	1
Nicotiana tabacum L.	P	Cigaretu[BO,GO]	Tobacco	0.033	L	Dermatological: Leaf material removed from cigarette and topically applied to wounds	1
						Dermatological: Leaf material removed from cigarette and topically applied as hemostatic to lacerations	1
						Dermatological: Leaf material removed from cigarette, mixed with sugar and topically applied to fungal infections of hands or feet	1
Solanum lycopersicum L.	C	Paradajs[BO] Paradise[BO] Patlidžan[BO,GO]	Tomato	0.088	Fr	Food: Lactofermented to pickle and then eat	8
Solanum tuberosum L.	C	Kompir[BO]	Potato	0.143	Tu	Neuromuscular: Slice a piece of the potato tuber and tie in place on forehead to treat headache or fever	6
						General health: Cut a slice of potato and apply to forehead to reduce fever	6
						Dermatological: Applied topically for facial ski rejuvenation	1
Urticaceae							
Urtica dioica L. BP-031 BP-032 AH-014 PB-016 AH-040	W	Hithi[AL] Kopriva[SR] Kopriva[BO]	Common nettle	0.692	AP	Urological: Infusion drunk to treat urinary tract infections	1
						General Health: Infusion drunk to boost immune system function and general health	8
						Cardiovascular: Infusion drunk to treat anemia	10
						Cardiovascular: Infusion drunk as anti-hemorrhagic	1
						Neuromuscular: Infusion drunk for rheumatism	1
						Endocrine: Infusion drunk for diabetes	2
						Food: Vegetable pie and soup ingredient	9
						Food: Tea	3
						Dermatological: Fresh materials are used to sting the skin at the affected area for psoriasis (rheumatic)	1
						Dermatological: Infusion is used to wash and treat hands and feet impacted by fungal skin infection	2
						Dermatological: Infusion is used to wash the affected area for seborrheic dermatitis	1
					Fl	Endocrine: Cold water infusion is drunk for diabetes	1

Taxa & Voucher Code	St	Local Name	English Common Name	UV_c	PU	Local preparation and use	U_{is}
						Dermatological: Boil flowers (and stem) in milk and boil. Pour the milk (while as hot as can be tolerated) on the area affected by scabies	1
					Se	Endocrine: A glass of water and 1 spoon of seeds is mixed and drunk every morning for diabetes	2
					L	Dermatological: Rub on the blister such that the nettles “attract the fluid”, and then use a sterile needle to pierce and drain the blister	1
						Dermatological: Infusion is used to wash the scalp and hair to fortify the hair root	9
						Dermatological: Infusion is used as a shampoo	9
					Ro	Dermatological: Decoction applied to scalp to treat alopecia, strengthen hair roots	1
Violaceae							
Viola odorata L.	W	Ljubičica[BO]	Sweet violet	0.033	L	General Health: Infusion as antipyretic	1
						Gastrointestinal: Infusion for diarrhea	1
					AP	Gastrointestinal (Pediatric): Infusion for diarrhea	1
Vitaceae							
Vitis vinifera L.	P	Otok[BO] (refers to the remedy name)	Wine + bread crust	0.011	Fr	Dermatological: To treat bruises or hematomas, the crust of bread in soaked in wine, and then applied topically to the affected area.	1
Xanthorrhoeaceae							
Aloe vera (L.) Burm. f.	C	Komarika[GO]	Aloe	0.022	L	Dermatological: Topically applied to treat contusions	1
						Dermatological: Liquid is expressed directly into wounds to promote wound healing	1

Appendix II. Ethnomedical uses of animals and their byproducts (zootherapeutic formulae)

Legend: St: Status. D: domesticated. W: Wild. Category of Use: D: Dermatological; O: Otolaryngolical; P: Psychiatric; R: Respiratory; V: Veterinary care
Local Name: "-" indicates that no local name was recorded
U_{is}: Number of individual use citation reports by informants.
UV_c: Use-value Index. This index measures the relative importance of each species based on its reported use by informants.
FL: Fidelity Level %. This measure is useful for highlighting the central role of each taxa. Any taxa with ≤3 total use citations is excluded from this analysis due to limitations of this tool, and is denoted with –

Type of Animal	St	Local Name of Remedy	English Name of Remedy	UV_c	Cat. of Use	Use and Preparation	U_{is}
Bear	W	-	Bear fat	0.011	D	Wound healing: Topically applied to heal lacerations	1
Bee	D	Vosak ćelijeSR	Bees wax	0.033	D	Wound healing: Melt the wax and once cool, apply to wounds or lacerations to promote healing	1
		Matiqni mlek[GO]	Royal jelly		D	Wound healing: Mixed with fat and applied topically	1
					D	Skincare: Mixed with fat and applied as an emollient, especially to the hands	1
Cow	D	Mlijeko[GO]	Cow milk	0.110	D	Cleansing: Used to rinse and clean the eyes	1
		Krave mlijeko masti[BO]	Milk fat		D	Burns: Topically applied to affected skin; soothing	1
		Tele mesa[BO]	Veal meat		D	Bruises: A piece of veal is topically applied to the affected area	1
		-	Cow's saliva		D	Warts: The cowl licks the wart affected skin	1
		-	Cow's Fat		D	Emollient: Topically applied to dry skin (usually warmed a bit prior to application)	4
					D	General skin care: mixed with mercury and heated over fire, then topically applied	2
		Kiselo mleko[BO,GO]	Yogurt	0.077	D	Burns: Topically applied to skin burns	3
					D	General skin care: Topically applied	3
					D	Warts: Mixed with copper sulfate and topically applied	1

Type of Animal	St	Local Name of Remedy	English Name of Remedy	UV_c	Cat. of Use	Use and Preparation	U_{is}
Crow	W	Karne[BO,GO]	Crow's meat	0.022	D	Bruises: Topically applied to affected area	1
					D	Laceration: Topically applied as a hemostatic	1
Goat	D	-	Goat meat	0.011	D	Skin infections: Topically applied to affected area	1
Human	-	Majčino mlijeko[BO,GO,SR]	Breast milk	0.088	O	Ear infection: A few drops are applied into the ear	1
					D	Cleansing: Used to rinse and clean the eyes	3
		Mokra[BO,GO]	Urine		D	Laceration: Used to clean the cut as an antiseptic	2
					O	Earache: Instilled into the ear canal	1
					D	Scabies: For rinsing the affected area	1
Mouse	W	Novorođenih miševa[BO]	Newborn mice (stored in olive or sunflower oil)	0.011	D	Wound healing: The mouse-oil infusion is topically applied to wounds	1
Pig	D	Svinski mast[BO,GO,SR]	Pig fat	0.044	D	Wound healing: Topically applied to treat skin injuries	1
					V	Wound healing (ethnoveterinary): Boiled pig fat is rubbed onto skin injuries in livestock	2
					D	Warts: Applied topically to warts and covered with bandage; treatment continued until wart is cured	1
Rabbit	W	-	Rabbit fat	0.011	D	Wound healing: Topically applied to injured skin and tissues; especially used by soldiers	1
Sheep	D	Mlijeko[BO]	Ewe milk	0.132	D	Cleansing: Used to rinse and clean the eyes	1
		Sirište[BO]	Lamb's gallbladder bile		D	Skin infections: The dried gallbladder contents are topically applied to treat skin infections and wounds	1
		Sfež jagniče koža[BO] Ovčija koža [GO]	Lamb's skin		D	Bruises: Wrap the affected (hematoma/bruise) area in the skin	2
		Ovaca masti[BO,GO]	Sheep's fat		D	Emollient: Topically applied to dry skin (usually warmed a bit prior to application)	4
					R	Bronchitis: Fat is warmed and rubbed onto the chest	1

Type of Animal	St	Local Name of Remedy	English Name of Remedy	UV_c	Cat. of Use	Use and Preparation	U_{is}
					D	Skin injuries: Topically applied to wounds	1
		Ovaca fečeš[BO,GO]	Sheep's feces		D	Ringworm: Fresh feces topically applied to the affected area	1
					D	Psoriasis: Fresh feces topically applied to the affected area	1
Silk worm	W	Insekt mrež [GO]	Silk worm (whole insect)	0.022	D	Warts: Mixed with salt and topically applied to wart	1
					D	Warts: topically applied to wart	1
Snail	W	Pužimuž[BO,GO]	Snail mucous	0.044	D	Acne: Snail mucous topically applied to affected skin	4
Snake	W	Zmija[BO,GO]	Snake (whole live animal)	0.022	P	Fear/anxiety: Remove the snake venom and surprise person by putting the snake on them (the goal being to scare the fear away from the affected person)	2

Appendix III. Ethnomedical applications of minerals, industrial products and other materials

Legend: St: Status. P: purchased. H: homemade. W: wild. Category of Use: D: Dermatological; O: Otolaryngolical; V: Veterinary care
Local Name: "-" indicates that no local name was recorded
Uis: Number of individual use citation reports by informants.
UVc: Use-value Index. This index measures the relative importance of each species based on its reported use by informants.
FL: Fidelity Level %. This measure is useful for highlighting the central role of each taxa. Any taxa with ≤3 total use citations is excluded from this analysis due to limitations of this tool, and is denoted with --

Type of Material	St	Local Name of Remedy	UV_c	Cat. of Use	Use and Preparation	U_{is}
Ash	H	Pepeo[BO,GO]	0.033	D	Diaper rash: The black ash is scraped from the chimney, mixed with warm soil and topically applied	1
				D	Eczema: Ash is mixed with salt and water, then applied topically to the affected area	1
				D	Psoriasis: Ash is mixed with salt and water, then applied topically to the affected area	1
Copper sulfate	P	-	0.011	V	Skin & tissue injuries (ethnoveterinary): Topically applied to legs and hooves of livestock with difficulty walking	1
Kerosene	P	Kamena ulja[GO] Kameno ule[GO]	0.011	D	Ringworm: Kerosene is mixed with sunflower oil and heated until thick, topically applied to the affected area	1
Needle	P	Igla[BO] Igle[SR]	0.022	D	Psoriasis: Needle is used to puncture the skin around the site of inflammation	2
Salt	P	Sol[GO]	0.011	D	Warts: Topically applied to remove warts	1
Seawater	W	Voda more[GO]	0.011	D	Psoriasis: Topically applied to skin	1
Sodium bicarbonate	P	-	0.011	D	Athlete's foot: Mixed with water and used to soak feet affected by fungal infection	1
Soap	P	Sapun[BO]	0.011	D	Insect sting: Topically applied to site of sting	1
Starch	P	Nišatar[BO]	0.011	D	Scabies: Topically applied to the affected area	1
Stone	W	-	0.011	D	Warts: Rubbed on the wart	1
Sugar	P	Šerbet[BO]	0.033	O	Conjunctivitis: Mixed with water and used to rinse the eyes	2
				D	Insect sting: Mixed with water and topically applied to mosquito bites	1
Toothpaste	P	-	0.011	D	Burns: Topically applied to the affected area	1
Turkish delight (Dessert)	P or H	Lokum[BO,GO]	0.022	D	Infections/ suppurative: Topically applied to draw out pus	2
Water	W		0.022	D	Warts: This water is collected from fallen logs in the woods, and then used to rinse the affected skin	2