

Cross-Cultural Ethnobiology in the Western Balkans: Medical Ethnobotany and Ethnozoology Among Albanians and Serbs in the Pešter Plateau, Sandžak, South-Western Serbia

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Abstract An ethnobiological study concerning the medical ethnobotany and ethnozoology of two neighbouring communities of Serbians and Albanians living in the Pešter plateau (south-western Serbia) was conducted, the latter representing a diasporic community that immigrated to the area approximately three centuries ago. Sixty-two botanical taxa used in 129 plant-based remedies and 204 folk plant uses were recorded. In addition, 31 animal-derived remedies and 27 mineral or non-indigenous products were also documented. Approximately half of the recorded phytotherapeutical uses have been recorded for the first time in the ethnobotany of the Western Balkans and more than one-third of these uses have no correlation with Western evidence-based phytotherapy. Moreover, while both communities use approximately the same number of medicinal plants, two-thirds of the botanical taxa, but only one-third of plant folk medical uses are found in common among the two communities. These findings demonstrate that the two communities, although having lived in close proximity to

each other during the past three centuries and in a relatively low biodiverse environment, have maintained or developed unique phytotherapeutical trajectories. The differences between the two folk medical biologies of these communities are reflective of the specific history of the Albanian diaspora, and of the complex processes of its cultural adaptation over the last three centuries.

Keywords Ethnobotany · Ethnozoology · Serbia · Pešter · Phytotherapy · Albanians

Introduction

Most of the ethnobiological studies conducted thus far in Europe have been focused on the documentation of traditional knowledge (TK) of plants of potential interest in ethnopharmacology, nutritional sciences, and intangible/tangible cultural heritage and biodiversity conservation strategies. This is especially true in those rural areas of Southern Europe where traditional knowledge systems, although eroded at present, also show a certain degree of resilience (for a recent partial overview see Pardo de Santayana *et al.* 2010). Only a few studies have contributed to our understanding of the overlaps and osmosis between folk medicinal plant knowledge of rural classes and the TK developed in “official” medical schools (Pollio *et al.* 2008; Leonti *et al.* 2009, 2010). Moreover, few studies have focused on the analysis of how agro-biodiversity is managed, i.e., in mountainous home-gardens (Agelet *et al.* 2000; Vogl-Lukasser 2003; Reyes-García *et al.* 2010). Some have proposed new areas of potential interest for the development of new speciality niche foods, herbal products, and eco-touristic activities (Heinrich

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et al. 2005; Pieroni *et al.* 2005a; Pieroni 2008; Pieroni and Giusti 2009). Other studies in this realm have contributed to the understanding of how plant uses change among migrant groups (Pieroni *et al.* 2005b, 2007, 2008; Sandhu and Heinrich 2005; Pieroni and Gray 2008; Ceuterick *et al.* 2008, 2011; Yöney *et al.* 2010; van Andel and Westers 2010).

The latter issue is crucial in human ecology too, since it underlines a fascinating scientific question in ethnobiology: how does folk plant knowledge change over space and time and by which key variables? In Europe, only a limited number of cross-cultural comparative field studies or meta-analyses focused on such dynamics during modern times have so far addressed this question (Leporatti and Ivancheva 2003; Pieroni and Quave 2005; Pieroni *et al.* 2006; Hadjichambis *et al.* 2008; González-Tejero *et al.* 2008; Leporatti and Ghedira 2009; Łuczaj 2008, 2010).

This study emerged from previous ethnobiological research conducted in a remote area in the upper Kelmend, Northern Albanian Alps. During our review of historical texts which documented the history of the Kelmend tribe, we came across a research report by Austrian consuls and scholars in the years 1861–1917 on the history of Northern Albanian tribes (Baxhaku and Kaser 1996:214). We discovered that members of this tribe had migrated at the end of the 17th century or the beginning of the 18th century into the Plav and Gusjnie area (modern day Montenegro), Kosovo and also to the Pešter plateau in Sandžak, in present day southwestern Serbia (with a partial migration back home in 1707 and 1711, as well as a partial further displacement into Northern Serbia in 1737). This occurred after being defeated by the Turks and/or possibly because of an increase in demographic pressure due, ultimately, to climatic changes (Kaser 1992:160–161).

Since the existence of an Albanian minority in this area of Serbia was hitherto unknown to us, we examined the declared ethnicity of the villages located in Pešter, according to the last *Serbian* censi (Statistical Office of the Republic of Serbia 2003) and further investigated this story via informal survey. We were able to confirm that Albanians of Muslim faith still live in a handful of villages in the Pešter plateau, surrounded by a majority of Muslim Bosniaks and a minority of Christian Orthodox Serbs.

On the other hand, apart from very few in-depth field studies conducted mainly in recent years (Milojević 1988; Pieroni *et al.* 2005a; Redžić 2006, 2007; Jarić *et al.* 2007; Pieroni 2008; Šarić-Kundalić 2010a, b, 2011; Menković *et al.* 2011), the Western Balkans have been seriously lacking in ethnobotanical studies, although they have been the arena in the past of remarkable ethnomedical and medico-anthropological accounts, mostly conducted by foreign scholars (Glück 1894; Kulinović 1900; Kemp 1935; Kerewski-Halpern and Foley 1978; Kerewski-Halpern 1985, 1989).

The aims of this study were therefore:

- to record folk medical practices within the Albanian and Serbian communities of Pešter;
- to compare the collected data with all of the ethnobotanical literature of the Western Balkans in order to highlight potentially new (previously undocumented) plant uses;
- to compare the Albanian and Serb medical ethnobiologies in order to investigate the degree of overlap in TK between the two communities;
- to compare the folk medical knowledge/medical ethnobotany of the Albanian community of the Pešter with the data that we gathered during a previous study among the Albanians nowadays living in the Kelmend, from whence the migration to Pešter originated three centuries ago, in order to analyse potential shifts in plant use paradigms;
- to extrapolate a few overall considerations from the aforementioned analysis in order to contribute to the current discourse on how TK changes over time and space and on the factors that may influence this process.

The Study Area

The Pešter is a karst plateau in southwestern Serbia, in the Muslim Sandžak region (Fig. 1). It lies at an altitude of 900–1,200 m and the territory of the plateau is mostly located in the municipality of Sjenica. The name of the region comes from the word “pešter” which is an old term for cave. It is considered to be the most elevated karst field on the Balkan Peninsula and its central part (Peštersko polje) represents a rare wet peatbog habitat. The plateau is surrounded by the mountains of Jadovnik (1,734 m), Zlatar (1,627 m), Ozren (1,680 m), Giljeva (1,617 m), Žilidar (1,616 m), Javor (1,520 m) and Golija (1,833 m).

These features create a unique microclimate which is temperate-continental but modified with elements of a



Fig. 1 The Pešter plateau

mountainous climate. The Pešter is in fact also called the “Balkan Siberia”, as winter temperatures are very harsh (the lowest temperature in Serbia since measurements were taken was -39°C and was measured in Karajukića Bunari village in the center of Pešter on 26 January 2006).

Pešter is home to a number of endangered plant species, such as *Fumana bonapartei* Maire & Petitm., *Halacsya sendtneri* (Boiss.) Dörf., *Linum tauricum* (Podp.) Petrova subsp. *serbicum*, *Potentilla visianii* Pancic, *Verbascum nicolai* Rohlena, *Orchis tridentata* Scop., *Orchis laxiflora* Lam., *Orchis coriophora* L., and *Dactylorhiza incarnata* (L.) Soó, and is the only nesting place of Montagu’s Harrier (*Circus pygargus*) in Serbia (Puzović *et al.* 2006). However, the biodiversity of such an environment is quite restricted and trees or even shrubs are almost completely absent except in the inhabited places and the areas bordering the plateau. In fact, the vascular flora of this region is limited to only ca. 350 species (Puzović *et al.* 2006). The landscape is largely one of pastures and meadows, with flocks of sheep and herds of cattle, many horses with saddlebags on their back and unique shepherds’ summer huts (*katun*), made of woodsticks sealed with mud and covered with grass, in which shepherds once lived, and where still nowadays dairy products—primarily the famous “Sjenica cheese” (*sjenički sir*)—are stored.

The population mostly consists of Muslim Bosniaks, together with a small number of Orthodox Serbian villages, and a handful of Albanian villages, inhabited by descendants of Catholic Kelmend and Rrugova tribes, which arrived in the area at the beginning of the 18th century. According to our informants, the Albanians of Ugao and Doliće arrived from the villages of Gusinje, Plav, Martinovič (in present day Montenegro, where in turn they arrived from Northern Albania) and Vukël (in present day Northern Albania), approximately 200 km south of Pešter, apparently due to blood feuds. They converted to Islam a few decades following this move.

The current population of the Albanian villages is partly “bosniakicised”, since in the last two generations a number of Albanian males began to intermarry with (Muslim) Bosniak women of Pešter. This is one of the reasons why locals in Ugao were declared to be “Bosniaks” in the last census of 2002, or, in Boroštica, to be simply “Muslims”, and in both cases abandoning the previous ethnic label of “Albanians”, which these villages used in the census conducted during “Yugoslavian” times.

A number of our informants confirmed that the self-attribution “Albanian” was purposely abandoned in order to avoid problems following the Yugoslav Wars and associated violent incursions of Serbian para-military forces in the area. The oldest generation of the villagers however are still fluent in a dialect of Ghegh Albanian, which appears to have been neglected by European linguists thus far. Additionally, the

presence of an Albanian minority in this area has never been brought to the attention of international stakeholders by either the former Yugoslav or the current Serbian authorities. According to our oldest informants, the Serbs of Boljare and Buđevo arrived in Pešter presumably a few centuries ago from surrounding Serbian villages geographically located in current day Montenegro.

Methods

Field Study

The field ethnobiological study was carried out in Pešter in the summer of 2010. Local informants ($n=42$), aged between 43 and 93, were selected using the snowball sampling technique and interviewed in-depth in the villages of Ugao (population of ca. 50 families, all Albanians, with a number of male members intermarried with Bosniak women), Boljare (six families, all Serbs), Buđevo (ca. 15 families, all Serbs), with seven additional interviews, which took place also amongst the Serbs of Karajukića Bunari (a village, which is mainly inhabited by Bosniaks) and among the Albanians of Doliće and Boroštica (Fig. 2).

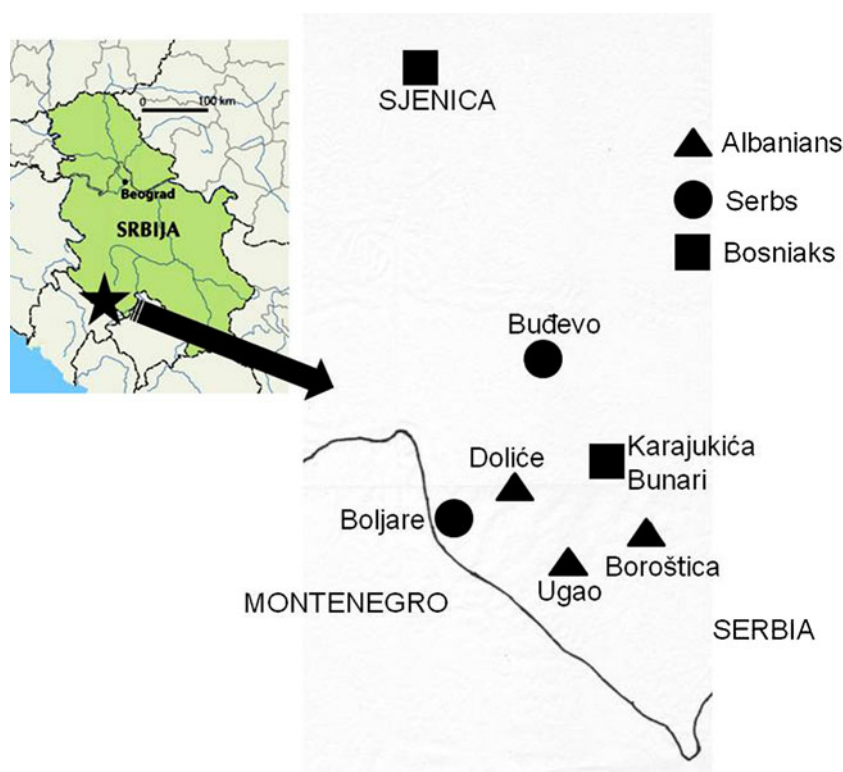
The focus of the interviews was on folk medical knowledge of local plant- and animal-based remedies. In this category, we included, as we have done in other field studies, also food-medicines (Pieroni *et al.* 2007) and remedies used in “magical” healing procedures which are of particular importance to the treatment of psychosomatic illness (Quave and Pieroni 2005). Prior informed consent (PIC) was obtained verbally before commencing each interview and the Code of Ethics of American Anthropological Association (AAA 1998) and the Italian Association for Ethno-Anthropological Sciences (AISEA 2000).

Questions about folk medicines were asked using free-listing, semi-structured, and open interview techniques, which focused always on remedies used to treat a specific list of etic and emic pathological categories (the latter elicited during preliminary interviews).

The wild plant species cited during interviews were collected, verified by our interviewees, identified according to Tutin *et al.*’s *Flora Europaea* (Flora Europaea Editorial Committee 2001) and later deposited at the Herbarium of the University of Gastronomic Sciences in Pollenzo.

The local folk plant names cited during interviews were recorded and transcribed in the Latin alphabet in Serbo-Croatian and, when available, in Albanian (please note that upon the Yugoslavian dissolution, the Serbo-Croatian language has been split into Croatian, Serbian, Bosnian/Bosniak, and Montenegrin—although this linguistic split is still disputed).

Fig. 2 Location of the study area and villages, with the municipality center of Sjenica



Data Analysis

The data collected during the field study were sorted in Microsoft® Excel.

Two in-depth comparisons were conducted:

- the first, with all other ethnobotanical studies previously conducted in the Western Balkans and available in English or in German (Glück 1894; Kemp 1935; Pieroni *et al.* 2003, 2005a, b, c; Redžić 2006, 2007; Jarić *et al.* 2007; Pieroni 2008; Pieroni and Giusti 2008; Šarić-Kundalić *et al.* 2010a, b), in order to point out previously undocumented medicinal plant uses;
- the second with the main handbooks of Western phytotherapy (Jänicke *et al.* 2003; Vanaclocha and Cañigueral 2003; Fintelmann and Weiss 2006; Barnes *et al.* 2007; Schilcher *et al.* 2007; Firenzuoli 2009; VIDAL 2010), in order to propose eventual new medicinal sources to be further evaluated by herbalists, pharmacologists, or phytotherapists.

Results and Discussion

Traditional Phytotherapy in Pešter

In Pešter, medicinal plants still represent the core of domestic medical practices, generally managed by the

oldest women in the family. It is very common in every household to observe a number of dried plants, which are stored in plastic or paper bags and often served to guests as different varieties of home-made wild plant-based “teas”.

Table 1 shows the medicinal plants used in Pešter as folk medicines: 62 identified botanical taxa and 129 plant-based preparations for 204 plant folk medical uses were recorded to be part of the Pešter’s phytomedicinal heritage. A conspicuous number ($n=68$) of the recorded phytotherapeutical uses have been recorded for the first time in the ethnobotany of the Western Balkans (these appear underlined in the table), according to all of the available literature published in English and German as described in the Methods section (Fig. 3).

More than one-third of these uses have no correspondence in the Western evidence-based modern phytotherapy. These findings show that folk medical knowledge in the region is alive and in use, and could be of interest for potential modern applications.

Albanian vs. Serbian TK of Plants

The degree of overlapping evident between the recorded Albanian and Serbian phytotherapy in Pešter is illustrated in Fig. 4.

Most quoted species (species quoted by more than two thirds of the informants) were identical in the two

Table 1 Local phytotherapeutics used in Pešter for treating human diseases

Botanical taxon/taxa and family	Local name(s) (the most quoted taxa are reported underlined)	Status	Used part(s)	Preparation and administration	Local medical use(s) or treated pathology(-ies) (first records in the Western Balkans are reported underlined)	Use recorded within the Albanian community	Use recorded within the Serbian community	Uses also suggested by the Western evidence-based phytotherapy (+, yes; -, no; +/-, partially)
<i>Achillea millefolium</i> L. (Asteraceae)	<u>Sporiš</u>	W	FAP, dried	I: tea	Appetizing, stomachache, digestive troubles, hepatoprotective, diarrhea, nausea/vomiting, sore throat, pancrea Nervous disturbances	X	X	+/-
<i>Alchemilla vulgaris</i> L. (Rosaceae)	<u>Firič</u>	W	FAP	I: tea				-
<i>Allium cepa</i> L. (Alliaceae)	<u>Crni luk</u>	C	Bu, fresh	E: crushed, mixed with salt, and externally applied	Bruises <u>Warts (40 days)</u>	X	X	-
<i>Allium sativum</i> L. (Alliaceae)	<u>Hundhurd^{AL}</u> <u>Bjeli luk</u>	C	Bu, fresh	I: eaten	Cold, hypertension, blood cleansing, preventing the Evil Eye and <u>eye inflammations</u>	X		+/-
<i>Arctium lappa</i> L. (Asteraceae)	<u>Čičak</u>	W	Le, fresh	E: one clove, as a talisman E: applied on the forehead E: mixed with oil and honey, externally applied on the chest E	Preventing the Evil Eye (<u>sysht^{AL}, urok</u>) Headache, fever <u>Cough</u>	X	X	-
<i>Armoracia rusticana</i> G. Gaern. B. Mey and Scherb (Brassicaceae)	<u>Hren</u>	C	Le, fresh	I: tea E: Mixed with salt, and directly applied, or squeezed and covered by a piece of cloth	Bruises, hair loss <u>Enuresis (children)</u> Bruises (especially to reduce swelling)	X	X	+
<i>Balsamita major</i> Desf. (Asteraceae)	<u>Vratič</u>	C	Le	E: mixed with bee's wax	<u>Sinusitis</u>		X	-
<i>Beta vulgaris</i> ssp. <i>vulgaris</i> var. <i>conditiva</i> (Betulaceae)	<u>Cvekla</u> <u>Breza</u>	C	Ro, fresh AP	I: consumed raw in salads or root juice, drunk E: "beaten" externally on the affected part I: rain, which has gone through a birch tree—collected and drunk I: rain, which has gone through a birch tree—collected and drunk	Galactagogue, vaginitis, blood cleansing <u>Bruises</u>	X	X	+/-
<i>Calendula officinalis</i> L. (Asteraceae)	<u>Žutel</u> <u>Žutak</u> <u>Neven</u>	W	Le Fl	I: tea	Kidney stones, prostatitis Kidney stones Hepatitis	X	X	+/-
<i>Carum carvi</i> L. (Apiaceae)	<u>Ljebarica</u>	W	Fl	E: mixed with wax, incense, alecost (<i>Balsamita major</i>), and resin in a poultice (<i>mehlem</i>) I: tea	Every skin disease	X		
<i>Castanea sativa</i> Mill. (Fagaceae)	<u>Gëshenjež^{AL}</u>	W	Fr+AP	I: tea	Diarrhea	X	X	+
<i>Centaureum erythraea</i> Rafn. (Gentianaceae)	<u>Kičica</u>	W	FAP	I: tea	Sore throat Stomachache, diarrhea	X	X	+
<i>Chenopodium album</i> L. (Chenopodiaceae)	<u>Laboda</u> <u>Loboda</u>	W	Le, fresh	I: filling of pies (<i>byrek/pita</i>)	"Healthy food"	X		-
<i>Chenopodium bonus-henricus</i> L. (Chenopodiaceae)	<u>Štir</u> <u>Štar</u>	W	Le, fresh	I: filling of pies (<i>byrek/pita</i>)	"Healthy food"	X	X	-

Table 1 (continued)

Botanical taxon/taxa and family	Local name(s) (the most quoted taxa are reported underlined)	Status	Used part(s)	Preparation and administration	Local medical use(s) or treated pathology(-ies) (first records in the Western Balkans are reported underlined)	Use recorded within the Albanian community	Use recorded within the Serbian community	Uses also suggested by the Western evidence-based phytotherapy (+, yes; -, no; +/-, partially)
<i>Cichorium intybus</i> L.		W	AP	I: tea	“Good for the bones” <u>Diarrhea</u>	X	X	+/-
<i>Cirsium vulgare</i> (Savi) Ten. (Asteraceae)	<u>Therra</u> ^{AL} <u>Trn</u>	W	Fc	I: tea	<u>Backache, hemorrhoids</u>	X		-
<i>Corylus avellana</i> L. (Betulaceae)	<u>Lefthia</u> ^{AL}	W	Kc Le	I: tea I: tea	<u>Sore throat</u> <u>Backache</u>	X	X	-
<i>Crataegus monogyna</i> Jacq. and <i>C. pentagyna</i> Waldst. & Kit. ex Willd. (Rosaceae)	<u>Glog</u>	W	FAP	I: tea	<u>Sore throat, “good for the heart”, hypertension, diuretic</u> <u>Bruises, fever</u>	X	X	+/-
<i>Daucus carota</i> L. (Apiaceae)		C	Ro, fresh	I: eaten ground	“Good for the eyes”	X		+
<i>Fragaria vesca</i> L. (Rosaceae)		W	Le, dried	I: tea	<u>Cold, female sterility (fertility aid)</u>	X		-
<i>Fragaria lutea</i> L. (Gentianaceae)	<u>Lincura</u> <u>Lincuro</u>	W	Ro	I: tea, or cold macerate in water (10 days), or in <i>raki/rakija</i>	<u>Digestive troubles, stomachache, diarrhea</u>	X	X	+/-
				I: tea	<u>Cough, cold</u>		X	
				I: cold macerate in water, drunk at least three weeks long	<u>Varicose veins</u>	X		
				Imacerate in <i>rakija</i> (40 days of maceration), to be drunk in the morning before eating	<u>Stomach ulcer</u>	X	X	
<i>Hypericum montanum</i> L. (Hypericaceae)	<u>Kantaron</u> <u>Hajdučka trava</u>	W	FAP	E: macerate in <i>raki</i> , in external applications I: tea	<u>Rheumatism</u> <u>Stomachache, digestive troubles, prostatitis</u>	X	X	+/-
				E: macerate in oil, in topical applications	<u>Cough</u>		X	
<i>Juniperus communis</i> L. (Cupressaceae)	<u>Kljeka</u>	W	Le+Co	I: tea	<u>Burns, warts, wounds</u>	X	X	
				I: lacto-fermented in water for one month	<u>Blood cleansing, diuretic, kidney stones, fever</u>	X		+/-
				I: tea or macerate in <i>rakija</i> (<i>kljekoval</i>)	<u>Panacea</u>	X		
<i>Inula helenium</i> L. (Asteraceae)	<u>Oman</u>	C	Le Ro, dried	I: tea E: dried slice of the root, as an amulet, in necklace (adults), or put under the pillow where the kid sleeps	<u>Panacea</u> <u>Cough</u> <u>For preventing the Evil Eye</u>	X	X	+
<i>Leucanthemum vulgare</i> L. (Asteraceae)	<u>Petrovaš</u>	W	FAP	I: tea	<u>To improve the memory</u>	X		-
<i>Linum usitatissimum</i> L. (Linaceae)	<u>Kučina</u>	C	St	E: fibers obtained from the stem (linen), mixed with eggs, applied on the affected body part	<u>Fractures</u>		X	-
<i>Malus sylvestris</i> (L.) Mill. (Rosaceae)	<u>Divija jabuk</u>	W	Fr	I: fermented in water approx. 40 days (cold place) to obtain home-made vinegar; vinegar is drunk	<u>Hypertension, “good for the circulation”</u>		X	-
				E: socks imbibed with vinegar, and dressed	<u>Fever (children)</u>		X	

<i>Matricaria recutita</i> L. (Asteraceae)	<u>Kamilica</u>	W	FT, fresh FAP	E: vinegar applied, tepid and diluted with water on the chest I: ingested I: tea	X	Fever (children)	X	+/-
<i>Melissa officinalis</i> L. (Lamiaceae)	<u>Matičnjak</u>	C	FAP	I: tea, gargles	X	Eye inflammations	X	+/-
<i>Mentha longifolia</i> (L.) Huds. and <i>M. spicata</i> L. (Lamiaceae)	<u>Nana</u>	W/C	FAP	E: tea, externally applied, with the help of a piece of cloth I: tea	X	Stomachache, nausea/vomiting, nervous disturbances	X	+/-
<i>Nepeta cataria</i> L. (Lamiaceae)	<u>Bari mače</u> ^{AL} <u>Žilte e mače</u> ^{AL} <u>Macina trava</u>	W	FAP, dried	I: tea	X	Sterility (for women to be drunk for 40 days, never in presence of an other women)	X	-
<i>Ononis spinosa</i> L. (Fabaceae)	<u>Gladaševina</u>	W	FAP	I: tea	X	To treat female sterility (fertility aid)	X	-
<i>Origanum vulgare</i> L.	<u>Čaj malit</u> ^{AL} <u>Čaj bieshke</u> ^{AL} <u>Planinski čaj</u>	W	FAP, dried	I: tea	X	Stomachache, digestive, vaginitis, panacea	X	+/-
<i>Petroselinum crispus</i> (Apiaceae)	<u>Persun</u>	C	AP	I: tea	X	Sore throat	X	+
<i>Picea abies</i> (L.) H. Karst. (Pinaceae)	<u>Smrča crna</u>	W	Wo	E: two or four small pieces of wood, externally applied in splints E: topically applied; see <i>Sambucus nigra</i>	X	Bone fracture—splinted by ad-hoc “folk doctors” (in the past)	X	-
<i>Plantago major</i> L. (Plantaginaceae)	<u>Bukvica</u>	W	Le, fresh	E: crashed, mixed with honey, and ingested E: tea, in gargles E: externally applied	X	Wounds, panacea	X	+/-
<i>Primula veris</i> L. (Primulaceae)	<u>Jagrika</u>	W	FAP	I: tea	X	Stomach tumors, cough	X	+
<i>Prunus cerasus</i> L. (Rosaceae)		C	Re	See <i>Sambucus nigra</i>	X	Wounds, toothache, headache	X	-
<i>Prunus domestica</i> L. (Rosaceae)	<u>Šljiva</u>	C	Fr	E: distilled in <i>rakija</i> , topically applied E: distilled in <i>rakija</i> , topically applied E: a piece of cloth soaked in <i>rakija</i> , externally applied on the chest I: <i>rakija</i> , drunk	X	Eye inflammations	X	-
<i>Prunus domestica</i> ssp. <i>insitita</i> (L.) Bonnier and	<u>Džeremika</u>	C	Fr	I: hot <i>rakija</i> , in fumigations I: fermented in water to obtain vinegar, drunk with sugar I: eaten	X	Fever, sore throat, to resist cold temperatures, diarrhea, heart tonic, panacea (except for hypertension) Sinusitis “Healthy beverage” Hypertension	X	-

Table 1 (continued)

Botanical taxon/taxa and family	Local name(s) (the most quoted taxa are reported underlined)	Status	Used part(s)	Preparation and administration	Local medical uses(s) or treated pathology(-ies) (first records in the Western Balkans are reported underlined)	Use recorded within the Albanian community	Use recorded within the Serbian community	Uses also suggested by the Western evidence-based phytotherapy (+; yes; -; no; +/-; partially)
<i>Layens</i>								
<i>Pyrus communis</i> L. (Rosaceae)	<i>Kruška</i>	C	Fr	I: distilled (<i>kruška rakija</i>), drunk	See <i>Prunus domestica</i>	X	X	-
<i>Pyrus pyraeaster</i> L. (Rosaceae)	<i>Divlja kruška</i>	W	Fr	See <i>Pyrus communis</i>	See <i>Prunus domestica</i>	X	X	-
<i>Ribes rubrum</i> L. (Grossulariaceae)	<i>Kača</i> ^{AL} <u><i>Spirak</i></u>	C	Le	I: fermented in water to obtain vinegar, drunk I: tea	<u>Hypertension</u> <u>Diabetes</u>	X	X	-
<i>Rosa canina</i> L. (Rosaceae)	<i>Kača</i> ^{AL} <u><i>Spirak</i></u> <i>Kupina</i>	W	Pf, dried	I: tea	<u>Nausea/vomiting, fever</u> <u>Sore throat, cough, cold</u>	X	X	+/-
<i>Rubus fruticosus</i> agg. L. (Rosaceae)	<i>Kupina</i>	W	Le	I: tea	<u>Diarrhea</u>	X	X	+
<i>Rumex patenitita</i> L. (Polygonaceae)	<i>Šaval</i>	W	Le, fresh	I: filling of pies (<i>byrek/pita</i>)	<u>"Healthy food"</u>	X	X	-
<i>Salix alba</i> L. (Salicaceae)	<u><i>Yrba</i></u>	W	Le	I: tea	<u>Blood cleansing</u> <u>Hair loss</u> <u>Rheumatisms</u>	X	X	+/-
<i>Sambucus nigra</i> L. (Adoxaceae)	<i>Zovka</i>	W	Le	E: tea, in external washed or leaves wrapped and externally applied E: tea, in gargles	<u>Toothache</u> <u>Evil Eye amulet</u>	X	X	-
<i>Sempervivum tectorum</i> L. (Crassulaceae)	<i>Rojsi i shtepis</i> ^{AL} <i>Čivarkače</i>	W/C	Br	E: hang on the house door on St. George's Day (6th May)	<u>Bronchitis, cold</u> <u>Wounds, bruises, panacea</u>	X	X	+/-
<i>Solanum tuberosum</i> L. (Solanaceae)	<i>Kompir</i>	C	Fl, fresh	E: mixed with butter or cream, resin, in poultice (<i>mehlem</i>) I: ingested E: juice instilled in the ear	<u>Hepatoprotective</u> <u>Earache</u> <u>Headache</u>	X	X	-
<i>Symphitum officinale</i> L. (Borraginaceae)	<i>Gavies</i>	W	Le, fresh	E: in slices, topically applied on the forehead E: in slices, topically applied on the chest	<u>Fever (children)</u>	X	X	+
<i>Tanacetum balsamita</i> L. (Asteraceae)	<i>Kaloper</i>	W	FAP	E: mixed with pork fat (poultice), in external applications E: mixed with wax, incense, pot marigold, and resin, in a poultice (<i>mehlem</i>)	<u>Rheumatisms, fractures, wounds</u> <u>Every skin disease</u>	X	X	-
<i>Taraxacum officinale</i> Weber (Asteraceae)	<i>Maslacak</i>	W	FL, fresh	E: topically applied I: tea	<u>Wounds</u> <u>Blood cleansing</u> <u>"Healthy food"/sweetener</u>	X	X	+/-
<i>Thymus pulegioides</i> L. (Lamiaceae)	<u><i>Majčina dušnica</i></u> <u><i>Majčina dušnica</i></u>	W	FAP	I: "honey" (sort of jam, prepared boiling flowers with sugar) I: tea	<u>Nervous troubles, panacea</u>	X	X	+/-
<i>Tilia</i> sp. (Malvaceae)	<i>Lipa</i>	W	Fl+Le	E: tea, externally applied	<u>Cold, cough, fever, stomachache</u>	X	X	-
<i>Tussilago farfara</i> L. (Asteraceae)	<i>Podbel</i>	W	Le	I: tea	<u>Eye inflammations</u> <u>Cough, tranquilizer</u> <u>Cough</u>	X	X	+
<i>Urtica dioica</i> L. (Urticaceae)	<i>Hilba</i> ^{AL} , <i>Hintha</i> ^{AL} <u><i>Kopriva</i></u>	W	St	I: tea	<u>Stomachache, hypertension</u> <u>"Health food"</u>	X	X	+/-
			Le, fresh	I: Soup, filling for pies (<i>byrek/pita</i>)		X	X	-

<i>Vaccinium myrtillus</i> L. (Ericaceae)	W	Le	E: tea, in external washes	Hair loss	X	
<i>Zea mais</i> L. (Poaceae)	FAP	FAP	I: tea	Blood cleansing	X	
<i>Not identified</i>	FT	FT	E: macerate in <i>raki</i> (20 days), and the resulting externally applied	Panacea	X	
<i>Not identified</i>	Fr	Fr	I: tea	Vein diseases	X	+/-
<i>Not identified</i>	C	Sg	E: macerate in <i>raki</i> , applied on the chest	"Good for the circulation", hemorrhoids, galactagogue	X	
<i>Not identified</i>	W	AP, fresh	E: externally applied	Pertussis (children)	X	
<i>Not identified</i>	W	Fl	I: tea	Headache	X	
<i>Not identified</i>	W	Le, fresh	E: tea, in external washes	Cough	X	
<i>Not identified</i>	W	Fl	E: juice instilled in the ear	Rheumatisms	X	
<i>Not identified</i>	W	Fl	E: directly applied	Earache	X	
<i>Not identified</i>	W	?	E: tea, externally applied	Wounds	X	
<i>Not identified</i>	W	?	E: tea, externally applied	Eye inflammations	X	
<i>miger</i> L., Solanaceae)	Wo	Wo	I: fumigation of ash and coal (put hot in a plate)	Evil Eye	X	
<i>Diverse tree species</i>			E: coal sign traced on the central part of the forehead	Protects babies from Evil Eye	X	

AL: recorded folk name in Albanian

C cultivated; W wild

E external use; I internal use

AP aerial parts; FAP flowering aerial parts; Br branches; Bu bulbs; Co cones; Fc floral capitula; Fl flowers; Fr fruits; FT flowering tops; Ke kernels; Le leaves; Pf pseudo-fruits; Re resin; Ro roots;

Sg stigma; St stems; wo wood

+: yes; -: no; +/-: partially



Fig. 3 Fresh leaves of burdock (*Arctium lappa*) are used in Pešter in external application for treating headaches

communities (see Table 1, 2nd column), with the exception only of *Origanum vulgare* (very much cited by Albanians, but much less by Serbs).

While both communities use the same number of medicinal plants, approximately two-thirds of the botanical taxa are used by both communities. However, only one-third of the plant folk medical uses are found in common (Fig. 5).

Interestingly, only a few Albanian phytonyms were quoted by the Albanian informants, and most of the plant names cited were in Serbo-Croatian, as among the Serbs. This finding shows that, despite a low degree of biodiversity in the Pešter area (i.e., a relatively low number of plant species at their disposal) and living in close proximity to each other with continuous contact, these two communities have either maintained or developed quite distinct phytotherapeutic trajectories over the span of the past three centuries. Moreover, it is likely that this continuous contact and inter-community dynamics also eventually led to the erosion of the original Albanian phytonomenclature.

These data reinforce the hypothesis that cultural components are crucial in determining how people use plants, although the interface between ethnic minorities and autochthonous populations in the perception and use of plants is always complex. This concept has also been

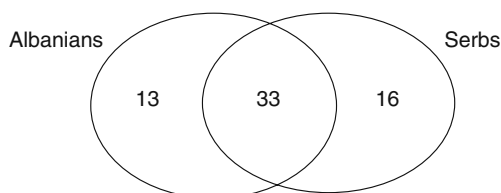


Fig. 4 Overlaps between the medicinal plants recorded among the Albanians and the Serbs in Pešter

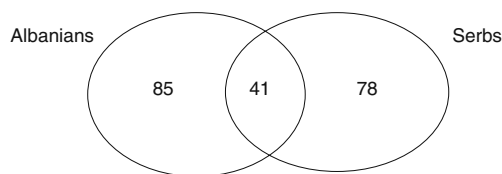


Fig. 5 Overlaps between the medicinal plant uses recorded among the Albanians and the Serbs in Pešter

underlined in other ethnobotanical works previously conducted in Southern Europe on ethnic/linguistic “enclaves” (Pieroni and Quave 2005; Nebel *et al.* 2006).

The Core of the Albanian Medical Ethnobotany

An interesting and crucial comparison between the top quoted medicinal taxa (i.e., the plants, which have been quoted in the free listing exercise by more than two-thirds of the interviewees, see underlined folk names in the 2nd column of Table 1) among the Albanians of Pešter and those of the Albanians living nowadays in Kelmend, Northern Albania (Pieroni *et al.* 2005a). *Chenopodium-bonus henricus*, *Gentiana lutea*, *Origanum vulgare*, *Hypericum* spp., *Rosa canina*, and *Urtica dioica*, which are mostly used in the same way and for the same folk medical purposes, may be viewed as the medicinal plants whose cultural salience—“measured” through the lens of quotations elicited during the free listing exercises—appears remarkable in both communities. These may then represent the basis of a sort of core “herbal cultural heritage” of the Albanian mountain populations.

This concept is even more apparent upon consideration of the example of wild oregano (*Origanum vulgare*, *caj malit*), which is the most quoted and used medicinal herb in Northern Albania and was also cited by every Albanian interviewee in Pešter, while its use is more sporadic among the Serbians.

Animal, Mineral and Non-indigenous Folk Remedies

Table 2 shows the animal-based folk remedies ($n=31$) that were recorded in the area. More than the number of remedies, it is interesting to point out that of the folk medical uses referred to by the Albanians, animal remedies are much more common here than among the Serbs. A similar trend can be observed in Table 3, which reports the mineral, environmental and other non-indigenous products ($n=27$) reported to be part of the local folk pharmacopoeia. In both of these tables, we report a number of unusual magical healing procedures for treating the Evil Eye based on animal or mineral products, which are astonishingly still in common practice, especially among the Muslim Albanian community (see Fig. 6 for a remarkable example).

Table 2 Animal-based folk remedies used in Pešter for treating human diseases

Remedy	Preparation and administration	Local medical use(s) or treated pathology(-ies)	Use recorded within the Albanian community	Use recorded within the Serbian community
Badger (<i>Meles meles, jazavac</i>)'s internal organs	E: topical applications of the fresh internal organs, immediately after the animal has been killed	Hemorrhoids	X	
Bee's wax	E: externally applied	Earache Bruises	X	X X
Butter and clarified butter	I: consumed E	Panacea Warts Chilblains Wounds	X X X	 X X
Cheese	I: consumed	Galactagogue	X	
Clotted cream (<i>kajmak</i>) and cream	I: consumed E	Reconstituent Emollient Chilblains	X X	 X
Cow/buffalo/sheep fat	E: mixed with bee's wax and honey, in a cream	Wounds	X	
Dairy products (all)	I: consumed	Prevention of bone fractures, panacea	X	X
Donkey's milk	I: drunk	Pertussis		X
Donkey's urine	E: instilled in the nose (urine has to come from young animals only)	Sinusitis	X	
Dog's saliva (lick)	E: lick given by young dogs	Warts	X	
Ewe's milk	E: a piece of cloth imbided with ewe's milk and put on child's abdomen	Antihelminthic	X	
Ewe's cheese (fresh)	I: consumed	"Good for the heart", diabetes, reconstituent	X	
Fat-based foods	I: consumed	Galactagogue	X	
Fox's veins	E: dried veins of a killed fox, put inside the ear	Earache	X	
Goat cheese	E	Wounds	X	
Goat milk	I: drunk	Cough		X
Goat or sheep skin	E: topically applied (warm) on the chest, (with a piece of paper to divide the human and goat skins)	Bronchitis	X	X
Honey	I: consumed E	Cough, sore throat, galactagogue, heart tonic, "good for the circulation", panacea Burns	X X	
Horse's hair	E: tied to the wart for two days	Warts	X	
Human urin	E	Skin burns, furuncles		X
<i>Jardum</i> (dairy product obtained by gently heating fresh ewe's milk—milked in July and August only—with salt)	I: consumed	Panacea	X	X
Milk (generally cow's milk)	I: boiled, drunk	Sore throats, fever, headache, hypertension, constipation, "healthy food" Galactagogue	X X	 X
Mare milk (milked after the mare has given the first birth)	I: drunk	Sore throats, cough, pertussis	X	X
Mother's lick	E: Mother licking in the central part of the front of the child, then simulating spitting three times on the right and three times on the left	Evil Eye	X	

Table 2 (continued)

Remedy	Preparation and administration	Local medical use(s) or treated pathology(-ies)	Use recorded within the Albanian community	Use recorded within the Serbian community
Pork lard	E: massages with lard, at the end with <i>rakija</i>	Wounds, chilblains, fever (children)		X
Snake	E: snake dried in the shadow of a juniper shrub, then the fat extracted and stored; snake fat, mixed with lemon balm tea and flour, to make a poultice (<i>mehlem</i>)	Every skin disease	X	
Stork (<i>Ciconia ciconia</i> , <i>leileku</i> ^{AL} / <i>roda</i>)'s beak or bone	E: a dried piece of stork—generally the beak or a bone—in a necklace, or sewn in the internal part of a cloth and dressed, as an amulet; alternatively, a stork's feather is boiled and the resulting water used in external washes	Evil Eye amulet	X	
Yogurt (<i>kos</i> ^{AL} , <i>kiselo mlijeko</i>)	I: drunk	Stomachache, hypertension, “good for the circulation”, “healthy food”, panacea	X	
Whey (<i>hirra</i> ^{AL} , <i>surutka</i>)	I: drunk	Digestive troubles, diabetes, obesity Cold, bronchitis	X	X
Wolf' tooth	E: in a necklace, as an amulet	Evil Eye amulet	X	
Woman milk	E	Earache, eye inflammations	X	
Wool	E	Chilblains	X	X
	E: warm wool clothes, dressed	Rheumatisms Fever	X X	X

Moreover, the Serbian informants confirmed to us that in the past—especially before the Yugoslav Wars—they commonly relied on the imams of the nearby Muslim villages to obtain specific amulets based on small pieces of paper transcribed with Qu'ranic Arabic scripts to be used for the prevention of the Evil Eye (Table 3). As clearly shown in Fig. 7, which reports the overlap of the total quoted *non plant-based folk medicines* recorded within the Serbs and Albanians, in this case the balance between the two communities is very asymmetric.

Three considerations could be formulated for explaining these findings:

1. The Albanian community descends from the Northern Albanian Catholic Kelmend tribe, which has been well known throughout the Balkans in the past for representing a classic example of nomadic pastoralism, which has differentiated it also from other Northern Albanian tribes (Baldacci 1930; Pieroni 2008, 2010). These descendants probably conserved a much more detailed knowledge of dairy products and also their related medicinal uses than the Orthodox Serbian community may have done.
2. The Muslim faith, which was adopted by the Albanian community shortly after they moved into Pešter, may have generated a more enthusiastic reliance on “magical” healing practices (see Table 3), as has happened in other Balkan areas (see, for example, the historical-anthropological considerations regarding folk medicines among the diverse ethnic groups in Sarajevo and Bosnia at the end of the 19th century published in Glück 1894).
3. The difficulties related to the experience of migration and cultural adaptation into a different linguistic and religious environment, which the Albanian community had to face, may have generated a much stronger attachment to healing procedures related to culture-bound syndromes and psychosomatic illness such as the Evil Eye. This trend has also been observed in other Albanian diasporas (Pieroni and Quave 2005; Quave and Pieroni 2005).

Folk Veterinary Medicine

Ethnoveterinary remedies, while cited by the informants, do not seem to be in use anymore (Table 4). All the interviewees pointed out that the provision of modern veterinary care

Table 3 Mineral, environmental, and non-indigenous products/remedies used in Pešter for treating human diseases

Remedy	Preparation and administration	Local medical use(s) or treated pathology(-ies)	Use recorded within the Albanian community	Use recorded within the Serbian community
Banana	I: eaten	Diarrhea		X
Black ribbon	E: tied on the right hand and left foot (or vice-versa)	Preventing the Evil Eye	X	
Cigarette's ash	E	Earache	X	
Clothes	E: dressing clothes backwards	Preventing the Evil Eye	X	
Coconut flour	I: ingested	Hypertension	X	
Coffee powder	I: ingested in spoons, with or without sugar	Diarrhea	X	X
Ice	E: applied on the forehead	Headache	X	
Incense (<i>tamjan</i>)	E: boiled in water, gargles	Toothache		X
Ink	E	Skin burns	X	X
Lemon	I: lemon juice, mixed with honey, ingested	Heart tonic	X	
Mud (collected where the cow rests, and mixed with rain)	E: topically applied	Warts	X	
Rice (<i>pirinač</i>)	I: water, in which rice has been boiled, drunk	Diarrhea	X	
Oil	I: drunk (a couple of spoonfuls)	Constipation	X	X
		Vaginitis	X	
	E: instilled in the ear, tepid	Earache	X	X
	E: tepid, mixed with milk, and a piece of cloth is soaked in the liquid then externally applied on the chest	Pertussis	X	
	E: as above, applied in massages on the abdomen	Digestive in babies	X	
	E: applied on a paper (presenting holes) to be put on the chest	Fever		X
Olive oil	I: drunk	Blood cleansing	X	
Paper	E: necklaces with pieces of paper reporting phrases from Quh'ran	Evil Eye	X	
	E: as above, but the papers (written in Arabic by the local Muslim imam) are secretly placed where the person (mainly the child) sleeps, where it remains for one year. At the end of a year, all is thrown in the fire.	Evil Eye		X
Petrol	I: one drop mixed with sugar and ingested	Sore throat		X
	E: applied on cut wart	Warts	X	
Plumb	E: melted on the fire, then thrown in water; the diagnosis is executed analyzing the final shape of the piece of plumb	Diagnosis of the Evil Eye	X	X, but the analysis is based upon the plumb color (a darker color is seen as a sign of the occurrence of the Evil Eye)
	I+E: melted on the fire, then thrown into water; a piece of cloth imbided with the resulting water is put on the forehead of the kid, while some water is also eventually given the kid to drink; alternatively, the kid has to dress a red scarf on the head	Evil Eye, fears (children)	X	X

Table 3 (continued)

Remedy	Preparation and administration	Local medical use(s) or treated pathology(-ies)	Use recorded within the Albanian community	Use recorded within the Serbian community
	and the resulting water has to be spread in three different places and drunk by the child, while whispering oral formulas E: as above, but the resulting water is thrown outside the house, while specific oral formulas are whispered	Evil Eye		X
Sal ammoniac (<i>nišador</i>)	I: chewed or tea	Cough	X	
Salt	I: dissolved in water, and drunk E: put on the head three times, then burned (while Qur'an phrases are chanted)	Nausea/vomiting Evil Eye	X X	
	E: mixed with water and imbibing a piece of clothes, to be topically applied	Wounds, bruises		X
Soap	E: externally applied	Constipation	X	
Socks	E: men's socks only are soaked with rain water, and then used for massages of the hands	Warts	X	
Sugar	I: burnt on the fire, then put in hot water, as a tea I: mixed with water and drunk	Sore throat, cough Heart tonic	X X	X X
Sunshine	E: exposure	Rheumatisms	X	
Stone	E: hot, put on the chest	Pertussis	X	
Tobacco	E	Wounds	X	
Water	E: wet cloth applied on the forehead E: water is boiled, then is made tepid by keeping it in the mouth, and finally instilled in the ear	Headache Earache	X X	
Wine	I: drunk hot, with or without sugar	Cough Bruises	 X	X

during the Yugoslavian times was very efficient. This may have led to a decreased reliance on folk practices for the care of livestock and thus an erosion of this area of TK.



Fig. 6 Pieces of stork bone and beak are used among the Albanians as amulets against the Evil Eye

Conclusions

This cross-cultural comparative study demonstrates that medicinal plant uses within the same biophysical environment can be heavily affected by cultural and religious components. In contrast to other previous ethnobotanical studies conducted among ethnic/linguistic “enclaves” in Croatia and Sardinia (Pieroni and Giusti 2008; Maxia *et al.*

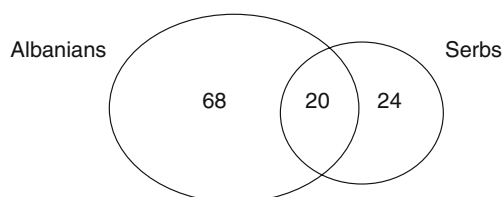


Fig. 7 Overlaps between the non plant-based folk medicines quoted by the Albanians and by the Serbs in Pešter

Table 4 Folk remedies used in Pešter for treating animal diseases

Recorded pathology or veterinary use	Remedy (incl. preparation and administration) within the Albanian community	Remedy (incl. preparation and administration) within the Serbian community
Rumination problems (cows and sheep)	Milk, whey, oil, and soda, mixed; given the animal to eat	
Parasites (<i>metil</i>) (lambs)	Willow (<i>Salix alba</i>) “ <i>vrba</i> ” leaves, mixed with wheat, and given to the animals as fodder	
Bone fractures (all animals)		Flax (<i>Linum usitatissimum</i>) “ <i>kučina</i> ” fibers (linen), mixed with eggs, and externally applied
Fever (all animals)	Boiled milk, given to drink	
Respiratory troubles (horses)	Barley (<i>Hordeum vulgare</i>) fruits, burnt, then letting the animal to inhale the vapors Outer parts of onions (<i>Allium cepa</i>) “ <i>bijeli luk</i> ” are burnt, letting the animal to breath the vapors	
Diarrhea (all animals)	Yarrow (<i>Achillea millefolium</i>) “ <i>sporiš</i> ” tea (flowering aerial parts)	Idem Hellebore (<i>Helleborus</i> sp.) “ <i>kukuriek</i> ” tea (whole plant)
Mastitis (cows)		Fresh eggs on the inflamed udder
Evil Eye (all animals)	Ash and coal, mixed with water and put on the head of the cow; if the cow shakes its head, this is seen as sign for the absence of the Evil Eye; if Evil Eye instead occurs Qur’an words are whispered, while sometimes ashes and water are thrown to the animals, chanting phrases from the Qur’an Qur’an words, whispered to the affected animal Necklaces with pieces of paper reporting phrases from Quh`ran A piece of burnt wood is tied to the cow’s tail, with the aim to confusing the eventual gazer, who could “create” the Evil Eye Garlic (<i>Allium sativum</i>) “ <i>hundhura</i> ” bulbs are crushed and applied in massage to the cow’s udder	Specific Arabic written scripts prepared by the local Muslim imam on March 14th (animals’ holy day), and then tied onto the animal’s tail (with a red ribbon) or hung on the animal’s horns
Unspecified diseases (sheep)	Ash, mixed with water, given to the animal to eat	
All diseases (cows and sheep)	The ear is cut and left to bleed	Burning the animal hairs on the back Daphne (<i>Daphne mezereum</i>) “ <i>prečica</i> ” flowers, given with salt to animals
All diseases (pigs and sheep)		The ear is cut and left to bleed, with or without <i>rakija</i> Hellebore (<i>Helleborus</i> sp.) “ <i>kukuriek</i> ” tea (whole plant) or the root is inserted in the ear wound (after cutting)

2008), this study shows how diasporic communities may cope with cultural change, within a given natural-cultural space, in a unique way, which differentiates them from the autochthonous populations in the TK of plants related to “emic” health seeking strategies.

Our data also show also how cultural adaptation in the domain of TK of plants among ancient migrant groups may go beyond the resilience of folk linguistic competence in naming plants.

However, one limitation of our study is the lack of existing data on the TK of Muslim Bosniak communities in the area. Although we may conclude that cultural resilience of the Albanian communities plays a large role in the distinction of their TK from that of the Serbs, we cannot discount the possibility that this paradigm is due instead to a

strong acculturation of the Albanian communities to the customs of the Muslim Bosniaks. Further study on the Bosniak TK of the Sandžak is therefore necessary.

Finally, this study suggests that the Western Balkan region is a fertile and inspiring ground for in-depth and systematic investigations on traditional phytotherapy via further ad hoc ethnobotanical studies, which are at the moment missing, with the partial exception of Bosnia Herzegovina.

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