Chapter 7
Medical Ethnobotanical Studies in Kosovo

Behxhet Mustafa and Avni Hajdari

7.1 Introduction

In recent years, the western Balkans have been the focus of an increasing number of field ethnobotanical studies (in Croatia: Pieroni et al. 2003; Pieroni and Giusti 2008; in Kosovo: Mustafa et al. 2011, 2012; in Bosnia and Herzegovina: Redžić 2006, 2007; Šaric-Kundalić et al. 2010a, b, 2011; in Serbia: Milojević 1988; Jarić et al. 2007; Pieroni et al. 2011; in Montenegro: Menković et al. 2011; in Albania: Pieroni et al. 2005; Pieroni 2008, 2010). This has happened for various reasons: the interest of the Western herbal market, which is partly dominated by the trade of medicinal plants originating from this area (Lange 1998; Kathe et al. 2003); the need for documenting the last remaining traces of traditional knowledge (TK) in areas, which also because of their recent political histories have been often labeled as "marginal" and/or even "isolated" in Europe; the increasing economic trends in these countries to develop ecotourism and other sustainable rural activities based upon local biocultural heritage; and, finally, the fact that this area is also considered to be crucial by ethnobiologists as a unique case study for its tremendous biological and cultural/ethnic diversity.

In Kosovo, apart from a review on botanical folk names in diverse Albanian-speaking areas in southeastern and southern Europe (Sejdiu 1984), with the exception of a very recent work carried out by our research group in the Gollak (Mustafa et al. 2011) area and Albanian Alps (Mustafa et al. 2012), no proper ethnobotanical investigations have been conducted thus far. Previous ethnobotanical studies show that medicinal plants still play a crucial role in the sphere of human health in Kosovo, especially in isolated rural areas. Oftentimes, these mountainous com-

A. Hajdari (✉) · B. Mustafa
Department of Biology, University of Prishtina, St. Nëna Terezë, Prishtinë 10000, Kosovo
e-mail: behxhetm@yahoo.com

A. Hajdari
e-mail: avni.hajdari@uni-pr.edu

A. Pieroni, C. L. Quave (eds.), *Ethnobotany and Biocultural Diversities in the Balkans,*
DOI 10.1007/978-1-4939-1492-0_7

munities have limited or nonexistent access to Western biomedical modalities, and are instead self-reliant on their TK. The local flora is, thus, incredibly important to provide the first health care within the households.

Moreover, the biodiversity richness and unique biocultural heritage of the local people here is something to be highly valued. TK-dependent activities such as sustainable gathering of wild medicinal taxa, their small-scale trade, and production of local high-quality plant-based foods and dairy products can all contribute to the growing ecotourism initiatives. Thus, TK is a critical component to success in the future economic development and biocultural conservation efforts of the region.

7.1.1 Geographic Characteristics of Kosovo

Kosovo is located in the central part of the Balkans and covers an area of 10,887 km^2, bounded by Macedonia, Albania, Serbia, and Montenegro. The relief of Kosovo is variable, constituted by mountains (41 %); 54 % is agriculture land and 5 % for other uses. Topographically, it is a basin enclosed by mountain ranges and hills. The Sharr Mountains are located in the south and southeast side, bordering the Republic of Macedonia. To the west, the Albanian Alps are shared with Montenegro and Albania. In the northern part of Kosovo are the Kopaunik Mountains. The eastern part of Kosovo is mainly hilly, which is part of the Rhodope Mountains. The central region of Kosovo is a hilly ridge running from north to south that divides the territory of Kosovo into two plains, Dukagjini plain "Rrafshi i Dukagjinit" and Kosovo plain "Rrafshi i Kosovës." The Dukagjini plain is located in the southwestern part of Kosovo, whereas the Kosovo plain occupies the northeastern part. These plains are surrounded by the high mountains (Fig. 7.1). Kosovo varies in elevation from 265 (Drini i Bardhë, at the border to Albania) to 2656 meters above sea level (m.a.s.l.). The highest point above sea level is in the south of Kosovo—Gjeravica, with approximately 77 % of its area lying between 500 and 1500 m.a.s.l. Mountainous areas that characterize the Kosovo territory played an important role in preservation of TK, as oftentimes these mountainous areas were isolated with limited access to the centers, so primary care of these communities was based on their TK.

7.1.2 Botanical Diversity of Kosovo

Due to its favorable and characteristic geographic position, Kosovo has a specific climate and hydrology regime, and is geologically very diverse, with volcanic, metamorphic, and sedimentary rocks of varying ages and origins. Moreover, the soils are generally rich with nutrients, providing a good growth medium for plants resulting in a rich level of biodiversity. The actual total flora of Kosovo is estimated to comprise more than 2500 plant species (Krasniqi 1998). There are currently around 1800 plant species known to make up the flora of Kosovo, and these are deposited at the Herbarium of the Faculty of Mathematical and Natural Science of the Uni-

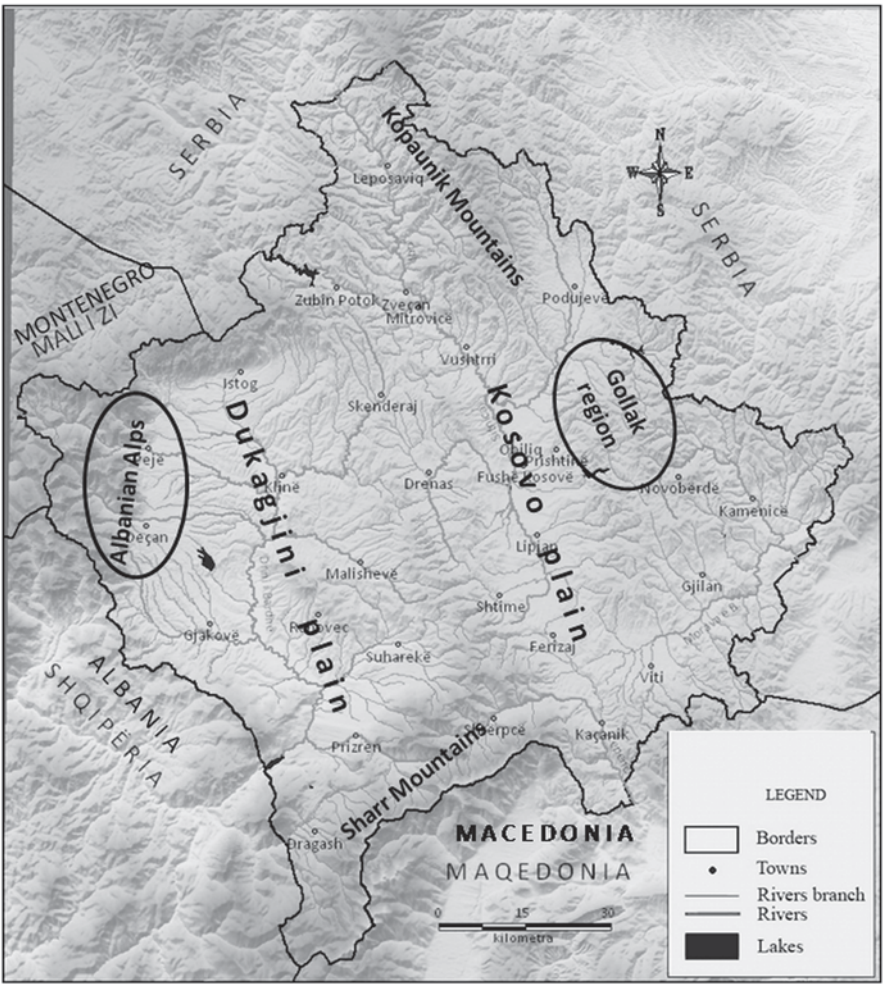

Fig. 7.1 Kosovo relief

versity of Prishtina, which accounts for about 30% of the entire Balkan flora and 16% of the European flora, although Kosovo covers only 2.3% of the Balkan land area (Mustafa 1998). Despite a small surface area, Kosovo is characterized by a rich biodiversity. Two main centers of biodiversity are the Sharri and the Bjeshkët e Nemuna mountains (Stevanovic 1995). About 200 species that occur in Kosovo are Balkan endemics, while 13 are specific Kosovo endemics (Krasniqi 1998). Biodiversity richness is an important factor, which contributes to the high level of TK in Kosovo.

7.1.3 Historical Background

Since the Middle Ages, Kosovo has been known by many names that changed several times and often coincided with continuous historical changes in the borders. The administrative territory named Kosovo was determined in 1877, when the Ottoman Empire established the Kosovo Vilayet, which included the current territory of Kosovo, large parts of Republic of Macedonia, and parts of Serbia and Montenegro. In the beginning, the central Vilayet was Pristina, but later Skopje became the central of Vilayet (Jens Schmitt 2012).

Over two millennia, Kosovo has continuously been occupied and was part of three great empires (Roman, Byzantine, and Ottoman). In the intervals between the decline of one emperor and empowerment of another, Kosovo was occupied mainly by Bulgarians and Serbs. According to Jens Schmitt (2012), when Romans arrived in the Kosovar territory, they were faced with various Illyrian tribes, the best known, most organized, and most powerful of which were the Dardans.[1] The ancient geographers and historians described the Dardans as brave and rebellious. Their rebellions in AD 279 forced the Romans to establish the Dardania province. The Dardania, which included the current territory of Kosovo as well as a part of Republic of Macedonia, had a boom in cultural, urban, and economic development, while in late antiquity its population became mainly Christian. Penetration of Slavic tribes during the seventh century resulted in the destruction of economic values and cultural and urban status of the Albanians. In spite of this widespread destruction, the evacuation of autochthonous populations and tremendous pressures, Albanians preserved their language, culture, and identity.

Byzantine and Slavic invasion led to a significant proportion of indigenous Albanian Catholic population, despite a great resistance to the acceptance of Orthodox religion. The Ottoman occupation for about five centuries resulted in a 70 % conversion to Islam as the dominant religion. Albanians constituted the dominant political and cultural group in Kosovo, but the Ottomans persistently refused to open schools in Albanian and to establish a national state (Islami 1990).

Although the Albanian people were occupied for about 2 millennia by various invaders, they never lost their language, culture, tradition, and identity. Under the control of the Ottoman regime, the Orthodox Church retained certain autonomy and the Slavic–Orthodox population of Kosovo was subject to church judgment, but they followed Christian lessons, too (Jens Schmitt 2012). In Kosovo, for centuries, Albanians, Serbs, Turks, Bosniaks, and Gorani lived in close proximity, which resulted in inevitable mutual cultural influences.

7.1.4 Population of Kosovo

According to the population census (2011), the total number of residents in Kosovo was about 1.8 million, excluding four municipalities in northern Kosovo (Leposav-

[1] The Dardanians were an Illyrian tribe (Albanian ancestor) that lived in the current territory of Kosovo.

iq, Zubin Potok, Zveçan, and Mitrovica North). This figure does not include the estimated 600,000 Albanians who were displaced during the 1990s as a result of Milosevic regime and the 100,000 Serbs and Romani displaced in 1999. It is one of the most densely populated countries in Europe, with an average population density of 177.4 inhabitants per km^2. With a gross domestic product (GDP) of US$ 6.445 billion, Kosovo is one of the poorest countries in Europe (http://www.worldbank.org/en/country/kosovo; Islami 1990).

Population numbers and the ethnic structure have fluctuated over history due to natural growth and the mechanical movements of the population. The intercultural mixing of various communities (Albanians, Serbs, Turkish, Bosnian, and Romani) in the same area has resulted in a dynamic form of TK, with the impact of one traditional culture on another illustrated in both the uses and names of useful plants in the local flora.

7.1.5 Population Migration

This region has been inhabited since ancient times. Recently, the area has been badly affected by migration, due to displacement and a harsh economic climate that impacts the local residents' ability to subsist. Prishtina is the main center in Kosovo, and has the highest concentration of the population, with nearly 11 % of inhabitants now living in Pristina stating that they were born in other regions of Kosovo (or abroad). Recent migrations are happening due to economic crises. The most common directions of migrations in Kosovo are the movement of people from rural areas to urban areas and migration abroad. Migration patterns contribute to the rapid decline of TK of plant species used as medicine, edible products, and handicrafts, as well as to decline in oral transmission of TK from one generation to another.

7.1.6 Medical History

Before the Second World War, health care in Kosovo was almost entirely based on traditional medicine, and these traditions continued after the war as well. Health care was commonly addressed within family, and all physical and mental illnesses were treated with traditional medicines and rituals. These folk-medical traditions continue even now, especially in mountainous and isolated areas. These practices are necessary due to a number of reasons, such as lack of medical institutions and infrastructure in isolated places, which are located far from health-care centers, marginalization of Albanian communities in the former Yugoslavia, etc. After the Second World War, Kosovo had a few health, social, educational, and cultural institutions administrated usually from Yugoslav authorities, where the Albanian language was unofficial. In such conditions, these institutions were unfamiliar to the Albanian community. After 1970, the health-care system improved rapidly, and usually health care was oriented towards modern allopathic medicine; however, this

system was disintegrated after 1990, when the autonomy of Kosovo was taken away by Serbia. From 1990 to 1998, all health-care institutions were administrated by Serbs, and the Serbian language was the only official language. From 1998 to 1999, the health-care system collapsed because of the war. After 1999, the health-care system was reorganized, and this was accompanied by a lot of problems. Except for some private insurance companies, which are very expensive, Kosovo still does not have a health insurance plan covering care from general practitioners. Because of this history, primary health care in Kosovo is still based on traditional medicine, especially for people living in the isolated mountains. Furthermore, people living in such areas are likely to buy nonprescription drugs when ill. Another serious barrier to health-care services is the form of unofficial payments to health-care providers for services that are supposed to be provided at no charge to the patient. Factors promoting these informal payments include perceived low salaries of health staff, a belief that good health is worth paying for, the desire to get better service, the fear of being denied treatment, to reduce waiting times, to maintain good relations for future health care, and giving gifts to express gratitude (Hodgetts 2012).

7.2 Medical Ethnobotany of the Albanian Alps in Kosovo

The Albanian Alps[2] extend within a triangle among the Dinaric Mountains in the northwest, the Sharri (Šar) Mountains in the southeast, and the Rhodope Mountains in the east and northeast. This covers a very pristine and sometimes remote area of ca. 3500 km^2, which is geopolitically divided among the sovereign states of Albania, Kosovo, and Montenegro. About 1000 km^2 of these mountains belong to the Kosovo territory. The Albanian Alps system consists of 24 groups of mountains with 152 peaks higher than 2000 m.a.s.l.,[3] with a large number of gorges, canyons, and valleys, which make them among the most inaccessible (Petrović 1985) but also magnificent areas of the Balkans (Mustafa 1998).

Due to the rich levels of biodiversity characteristic to this region, four national parks were established in the Albanian Alps: one in Montenegro (Prokletije National Park), two others in Albania (Theth and Valbona National Parks), and another one in Kosovo (Bjeshket e Nemuna National Park). Furthermore, Kosovo, Albania, and Montenegro are planning to join these parks and to create the cross-border Balkan Peace Park (Balkans Peace Park Project, http://www.balkanspeacepark.org/). Recent studies on the Albanian, Kosovar, and Montenegrin sides of the Albanian Alps have reported findings on TEK of wild medicinal and food plants (Jarić et al. 2007; Pieroni 2008, 2010; Mustafa et al. 2012).

These unique features are reflected in the high plant biodiversity, which includes 1609 taxa and ca. 150 vegetation units (Amidžić 1999). The most representative

[2] In Albanian, the Albanian Alps are known as Bjeshkët e Nemuna or Alpet Shqipëtare; in Serbo-Croatian, they are known as Prokletije.

[3] The highest altitude in the Kosovo territory is reached by Maja e Gjeravicës at 2656 m.a.s.l.

vegetation units are oriental hornbeam forest (*Carpinetum orientalis scardicu*), hop hornbeam mixed and with oriental hornbeam forest (*Ostryo-Carpinion orientalis*), thermophilous oak forests community (*Quercus frainetto* Ten., *Quercetum frainetto-cerris scardicum,* and *Quercetum petraeae-cerris*), chestnut forests (*Castanetum sativae*), beech forests (*Fagetum montanum*), and pine forests (*Pinetum heldreichii typicum*, *Pinetum heldreichii thalictretum, Pinetum peucis,* and *Pinetum mughi typicum*; Rexhepi 1994; Krasniqi 1972).

People have withstood the extreme conditions of these areas for centuries, including very harsh winters. Until the very recent decades, limitations in infrastructure and communication forced local residents to be self-sufficient in the provision of their health care. As a result, their primary pharmacopoeia consisted of local medicinal plants. Ethnobotanical field research was conducted in 36 villages belonging to the municipalities of Pejë and Deçan, located close to the Koprivnik and Strellc mountains, and which represent the central group of the Albanian Alps located in the western part of Kosovo. The summary of the results collected from communities located in the Albanian Alps of Kosovo (Mustafa et al. 2012) revealed that 98 species (belonging to 39 families) are employed in the traditional medicine of the area. This includes 3 fern species, 3 gymnosperms, and 92 angiosperms (84 dicotyledonous and 8 monocotyledons); 74 taxa are wild. Of these species, *Achillea millefolium* L., *Cornus mas* L., *Hypericum perforatum* L., *Juglans regia* L., *Juniperus communis* L., *Malus sylvestris* Mill. *Plantago major* L., and *Sambucus nigra* L. were cited by more than 30% of the informants. From 98 species presented in Table 7.1, 23 species are also included in the official pharmacopoeia of Europe (European Pharmacopoeia 2007).

The predominantly quoted botanical families were Rosaceae (12%), Asteraceae (10%), and Lamiaceae (5%). These same three "top" families were also found to be predominant among the wild medicinal taxa used in the folk medicine of the Alps in Montenegro, Albania, and in the Gollak region in Kosovo (Mustafa et al. 2011; Pieroni 2005; Pieroni 2008, 2010; Menković et al. 2011).

The most frequently quoted manner of preparation of medicinal plants was represented by decoctions (51%) and infusions (26%). The most frequently cited medicinal uses referred to gastrointestinal (26%) and respiratory (19%) troubles, and illnesses affecting the urogenital system (12%). The first two categories were also the most frequently quoted in the ethnobotanical studies conducted on the Montenegrin and Albanian sides (Pieroni et al. 2005; Pieroni 2008, 2010; Menković et al. 2011).

7.2.1 Most Uncommon Medicinal Plants

Upon analysis of the biopharmacological literature on the quoted medicinal species available on PubMed, we found that it could be worthwhile to further investigate the following reports:

1. The internal use of cold water macerates of the inflorescences of *Carduus nutans* L. in the treatment of eczema (this taxon is scarcely known in the phytochemical

Table 7.1 The most commonly used plant for medicine on the Kosovar side of the Albanian Alps and Gollaku region

Botanical taxon, botanical family, and voucher specimen code	Folk name(s) quoted by respondents	English name	Part(s) used	Administration	TK in the Albanian Alps
Achillea millefolium L. (Asteraceae) 03/DE/10	Hajdukati	Yarrow	Areal parts	Infusion	Antidiarrheal Stomach pain Antidiabetic Eczema
				Tincture topical used in wound	Antibacterial
Aesculus hippocastanum L. (Sapindaceae) 06/DE/10	Gështenja e egër	Horse chestnut	Leaves	Infusion	Expectorant Antirheumatic
			Fruits	Decoction	Antitussive Antihypertensive
				Tincture	Antirheumatic
Allium cepa L. (Amaryllidaceae) 11/DE/10	Qepa	Onion	Leaves	Decoction	To treat influenza
			Bulb	Extracted with cold mineral water	Antihypertensive
Allium sativum L. (Amaryllidaceae) 10/DE/10	Hudhra	Garlic	Bulb Leaves	Tincture	Improve blood circulation Antidiabetic Antibacterial Antihypertensive
				Decoction	Toothache
Althaea officinalis L. (Malvaceae) 07/DE/10	Mëllaga e bardhë	Marshmallow	Roots	Extracted with cold water	Expectorant
				Decoction	To treat lung disorders Oral cavity antiseptic Expectorant
Centaurium erythraea Rafin. (Gentianaceae) 21/De/10	Kiçica	Common centaury	Areal parts	Extracted with cold water	Stomach disorders Urinary system infections
				Decoction	Antihemorrhoid Antidiabetic Lithontriptic Fever
			Stem	Decoction	Lithontriptic
Cornus mas L. (Cornaceae) 24/DE/10	Thana	Dogwood	Fruits	Decoction	Antidiabetic

Table 7.1 (continued)

Botanical taxon, botanical family, and voucher specimen code	Folk name(s) quoted by respondents	English name	Part(s) used	Administration	TK in the Albanian Alps
				Tincture	Stomach disorders Antirheumatic
				Consumed	Eaten raw
				Decoction	Antianemic
Crataegus monogyna Jacq. (Rosaceae) 19/DE/10	Murrizi	Oneseed	Areal parts	Infusion	Heart rhythm regulator Antihypertensive
			Fruits	Decoction	Antihypertensive
			Flowers	Decoction	Antihypertensive Insomnia
Gentiana lutea L. (Gentianaceae) 44/DE/10	Sanëza		Roots	Tincture	Improve the blood circulation Bronchitis Stomach disorders Antihypertensive Antiasthmatic Antirheumatic Antidiabetic
Hypericum perforatum L. (Hypericaceae) 47/DE/10	Kantarioni	St. John's wort	Flowers	Decoction	Stomach pain
			Whole plant	Decoction	Respiratory disorders
			Areal parts	Extracted with olive oil	Stomach pain Skin infections To treat skin after sunburn or thermal burn Antitussive Antihemorrhoidal Respiratory infections Anticholesterolemic Eczemas
Juglans regia L. (Juglandaceae) 52/DE/10	Arra	Common walnut	Roots	Extracted for 1 month with sunflower oil and then liquid mixed with honey	Lung inflammations Antiasthmatic Bronchitis
			Fruits	Decoction	Antitussive
				Honey (1 kg) mixed with fruits (1 kg) extracted for 1 month	Lung inflammations Antiasthmatic Antianemic

Table 7.1 (continued)

Botanical taxon, botanical family, and voucher specimen code	Folk name(s) quoted by respondents	English name	Part(s) used	Administration	TK in the Albanian Alps
				Extracted with cold water	Anticholesterolemic
				Tincture	Stomach disorders
			Leaves	Infusion	Antihemorrhoidal
Juniperus communis L. (Cupressaceae) 51/DE/10	Gllia	Juniper	Fruits	Decoction	Back pains
				Extracted for ten days in cold water mixed with lemons	Kidney inflammations Antirheumatic
				Decoction	Respiratory inflammations
				Decoction	Stomach disorders
Malus sylvestris Mill. (Rosaceae) 61/DE10	Molla e pyllit Molla e egër	European wild apple	Areal parts	Infusion	Antitussive Expectorant
			Fruits	Extracted with cold water then fruit juice mixed sugar	Antihypertensive Anticholesterolemic
			Fruits	Decoction	Antidiabetic
			Leaves	Applied topically in wound	Wound infections
Matricaria recutita L. (Asteraceae) 59/DE/10	Kamomili	Chamomile	Areal parts	Infusion	Stomachache Oral cavity inflammations Gingivitis Urinary system infections
			Flowers Flowers	Infusion	Oral inflammations Urinary system infections
				Decoction	Constipation
			Areal parts	Infusion	Drunk as a tea
Pinus sylvestris L. (Pinaceae) 69/DE/10	Çetina	Scots pine	Cones	40 cones mixed with honey (1 kg) eaten after one month	Bronchitis
				Decoction	Antitussive Antiasthmatic Bronchitis

Table 7.1 (continued)

Botanical taxon, botanical family, and voucher specimen code	Folk name(s) quoted by respondents	English name	Part(s) used	Administration	TK in the Albanian Alps
Plantago lanceolata L. (Plantaginaceae) 73/DE/10	Dejzi heshtor	Narrowleaf plantain	Leaves	Fresh leaves applied topically in wound	Wound infections
Plantago major L. (Plantaginaceae) 67/DE/10	Dejzi gjethegjerë	Common plantain	Leaves	Infusion	Back pains
				Eaten squeezed juice mixed with honey	Bronchitis Antihemorrhoid Stomachache
				Applied topically in wound	Wound infections
Sambucus nigra L. (Adoxaceae) 85/DE/10	Shtogu	Elderberry	Stem cortex	Extracted with sunflower oil	To treat sunburns
				Boiled with butter milk	To treat thermal burns
			Flowers	Infusion mixed with lemon and sugar	Antiasthmatic Bronchitis
				Infusion	Antitussive
			Fruits	Drunk with fruit juice	Antianemic
			Areal parts	Decoction	Antiallergic
Thymus spp. (Lamiaceae) 93/DE/10	Shpirti i nënës	Wild thyme	Areal parts	Decoction	Respiratory inflammations Expectorant
			Whole plant	Infusion	Bronchitis Antitussive Expectorant
			Areal parts	Infusion	Lung inflammations Expectorant
Urtica dioica L. (Urticaceae) 97/DE/10	Hithi	Common nettle	Leaves	Eaten fresh	Antianemic
			Leaves and stem	Tincture	Improve blood circulation
			Roots and leaves	Decoction	Alopecia
			Roots	Decoction	Antihemorrhoidal

and pharmacological literature). In 2000, a Turkish research group pointed out the hepatoprotective effects of extracts from this plant (Aktay et al. 2000).
2. The internal use of decoction of the roots of *Echinops bannaticus* Rochel ex Schrad. for kidney stones (despite a few studies on other species of the genus *Echinops*, this Balkan species is largely underinvestigated).
3. The internal use of decoctions of aerial parts of *Orlaya grandiflora* Hoffm. for its laxative effects (the plant is completely unknown in the phytopharmacological literature).

7.2.2 Comparison with the Albanian and Montenegrin Alpine Ethnobotanical Literature

The cross-cultural analysis of data gathered in the Kosovar part of Albanian Alps (number of participants = 91; Mustafa et al. 2012) with those in northern Albanian Alps (number of participants = 62) and Prokletije Mountains—Montenegro (number of participants = 75)—are presented in Fig. 7.2. This illustrates the similarity between the wild medicinal plants used and recorded in the Kosovar Albanian Alps

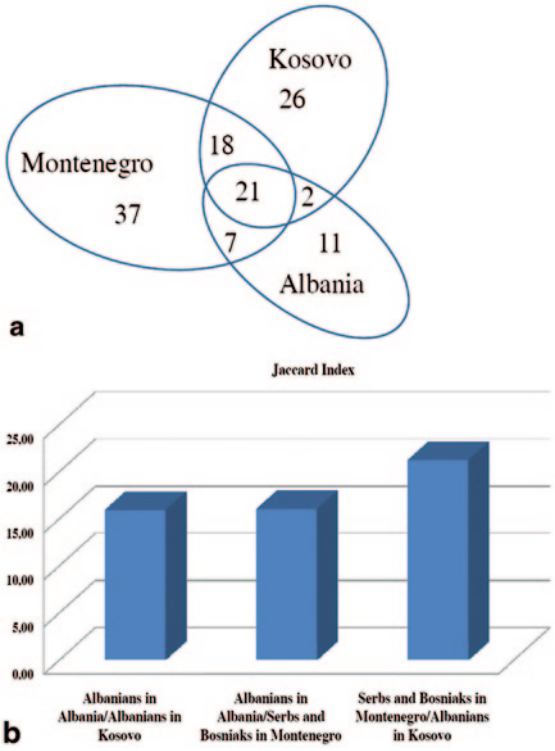

Fig. 7.2 **a** Representation of the commonalities among the wild medicinal species quoted on the Kosovar, Montenegrin, and Albanian sides of the Albanian Alps. **b** Jaccard similarity index of the wild medicinal plants used in the Kosovar, Albanian, and Montenegrin sides of the Albanian Alps

with those recorded in the Montenegrin and Albanian sides of the same Albanian Alps.

The link between the medical ethnobotany of the Montenegrin and Kosovar sides of the Alps—despite the different ethnicity/language of the local populations—appears stronger than the link between the ethnobotany of these two locations and the ethnobotany of Albania.

This apparent paradox could be explained in a number of ways:

1. Different sampling techniques may have been adopted during the field survey in the three locations or the socioeconomic background of the interviewees could have been different. For example, on the Albanian side of the Alps, the previous ethnobotanical studies selected local informants from very remote areas, which remained quite isolated during Communist times and with very limited access to urban environments and culture. It could be especially worthwhile to further assess the influence of the popular phytotherapeutical literature on folk medicine in Montenegro and Kosovo, since during the Yugoslavian time this kind of popularized knowledge was said to be "en-vogue." For example, this is very evident in the Montenegrin data, where a number of possible "modern" uses of local medicinal plants (i.e., *Hypericum perforatum* used as an antidepressant) were recorded.
2. The study sites chosen in Kosovo and Montenegro are, on average, located at lower elevations than the sites selected in northern Albania, thus resulting in a partially different ecological setting and availability of certain species in the environments.
3. Both the Montenegrin and Kosovar sides of the Albanian Alps have had a common history for most of the twentieth century, since belonging to the same country (former Yugoslavia). This may have "homogenized" eventual preexisting differences in plant perceptions/uses between the Albanian and Slav communities. Moreover, a few South-Slav communities (i.e., Bosniaks: Redžić 2006, 2007; Redzic 2010; Šaric-Kundalić et al. 2010, 2011) could be surely considered much more "herbophilic" than the Albanian ones, and this may have influenced folk medicine of the Kosovar population to a certain degree during the last century, because Kosovars have always lived in contact with the Slavs.
4. The Montenegrin study included self-declaring Serbian and Bosniak communities. However, a large part of the Bosniak community living in the Gusinje area is represented also by "bosniakized" Albanians, whose Catholic tribes settled on this side of the Albanian Alps and converted to Islam a couple of centuries ago (Baxhaku and Kaser 1996). This could mean that the ethnobotanical data of Montenegro and Kosovo may actually refer to the same core of Muslim Albanians.

Despite the commonalities found on the quoted medicinal plants, results show the different uses of the wild taxa, which have been most quoted on all three sides of the Alps (Mustafa et al. 2012). It is interesting to underline that the folk uses of the wild medicinal taxa recorded in Kosovo often include both the uses recorded in Albania and those in Montenegro. It would then appear that the medico-ethnobot-

any of Kosovo—because of its history in the last century and the exposure to the South-Slavic ethnobotanical traditions—has possibly incorporated both Albanian and Slavic plant uses (Mustafa et al. 2012).

7.3 An Ethnobotanical Survey of the Gollak Region, Kosovo

The Gollak region is located in the eastern part of Kosovo (see Fig. 7.1). This region is dominated by forests and pastures, with altitudes ranging from 800 to 1260 m.a.s.l. (Çavolli 1997). The climate of the Gollak region is influenced by continental air masses. For this reason, it has cold winters and hot summers. The average temperature was 12.6 °C, whereas the average temperature under zero was −5.8 °C. This area is characterized by total annual precipitation of 667 mm/year.

The diversity in climate and geological and soil composition provides an interesting source of diversity of flora and vegetation of this region. Since the flora of Kosovo belongs in different biogeographic zones (Eurosiberic, North American region, Mediterranean, and Alpine-Nordic regions), the mountainous terrain contributes to a great diversity in flora (Mustafa 1998). Differences in altitude and diversity of other ecological factors have supported the establishment of different vegetation zones on its vertical profile, which is dominated by forest plant communities: *Quercetum farnetto-cerris scardicum, Querceto-Carpinetum orientalis, Quercetum montanum,* and *Fagetum moesiacae montanum* (Krasniqi 1972), and herbaceous plant community: *Trifolio festucetum vallesiaceae* and *Inulo danthonietum alpinae* (Rexhepi 1994).

7.3.1 Wild Food and Medicinal Plant Uses

An ethnobotanical field study focused on traditional uses of medicinal plants, wild food plants, and mushrooms was conducted in 37 villages in the Gollak region of eastern Kosovo. Interviews with 66 elderly informants were conducted using standard ethnobotanical methods. The results of the field survey for most quoted taxa are presented in Table 7.2, arranged in alphabetical order by genus. We found that 98 taxa (belonging to 47 families) are employed in the traditional foods and medicines of the area. This includes 6 mushroom species, 3 gymnosperms, and 92 angiosperms (76 dicotyledonous and 6 monocotyledons). The predominant families were Rosaceae (21 %), Asteraceae (7 %), Lamiaceae (5 %), and Alliaceae (4 %). Approximately two thirds of the recorded medicinal species were wild.

Most wild plants collected in the villages of Gollak were used for medicinal purposes, while a few (16 %) were used food; some other taxa were gathered for sale in the local markets. The most frequently cited medicinal uses referred to respiratory system illnesses (18 %), skin inflammations (16 %), gastrointestinal troubles (14 %),

Table 7.2 The most commonly used plants for medicine in the Gollak region. (Source: Adapted from Mustafa et al. 2011)

Botanical taxon, botanical family, and voucher specimen code	Albanian folk name(s)	English name	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
Achillea millefolium L. (Asteraceae) 79/GO/09	Barëpezmi Bari për pezmatim Lule e bardhë	Yarrow	Flowering aerial parts	Decoction	Fever Stomach disorders Hepatic disorders
			Flowers	Decoction, externally	Skin irritations Acnes
			Leaves	Fresh leaves, topically applied	Wounds
Allium cepa L. (Alliaceae)	Qepa	Onion	Bulb	Boiled with soap and after cooling applied on the nail	Nail infections
				Decoction of onion bulbs mixed with squeezed lemons.	Antitussive
				Decoction	Sore throat Antitussive
				Boiled in milk	Antitussive
Allium sativum L. (Alliaceae)	Hudhëra, Hudra	Garlic	Bulb	Rubbed on the warts Bulb juice applied into the ear	To treat the warts Earache
				Eaten fresh	Antihypertensive
				Boiled in milk (four to five cloves) and drunk as tea	To "disinfect" the intestine
Cornus mas L. (Cornaceae) 35/GO/09	Thana	Dogwood	Fruits	Decoction	Antidiarrheal
				Infusion	To improve the blood circulation Antihypertensive Antidiarrheal Antidiabetic
			Bark	Decoction	Antieczema
			Fruits	Decoction	Antihemorrhoid

Table 7.2 (continued)

Botanical taxon, botanical family, and voucher specimen code	Albanian folk name(s)	English name	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
Corylus avellana L. (Betulaceae) 15/GO/09	Lajthia	Hazel	Fruits	Eaten	Antidiarrheal
				Mixed with honey	Aphrodisiac
			Leaves	Infusion	Antidiabetic Antianemic
Crataegus monogyna Jacq. (Rosaceae) 48/GO/09	Murrizi	Oneseed hawthorn	Flowers	Infusion	Neurorelaxant
			Fruits	Infusion	Antihypertensive Antidiabetic Heart pulse regulator Vasoconstrictor Used to treat fever
Hypericum perforatum L. (Hypericaceae) 32/GO/09	Balsami Bari i zojave Kantarioni Lulë balsami	St. John's wort	Flowers	Infusion	Stomach disorders Genital infections
			Aerial parts	Infusion	Urinary system infections Stomach disorders Antidiabetic
				Mixed with olive oil, used after 40 days, topically applied	Antihemorrhoid
Juglans regia L. (Juglandaceae) 22/GO/09	Arra	Common walnut	Fruits	Fruit cortex, topically applied	Warts
			Leaves	Infusion	Anticholesterolemic Antidiabetic
				Tincture	Antirheumatic
Juniperus communis L. (Cupressaceae). 12/GO/09	Gllija, Kllija	Juniper	Cones	Mixed with thyme, chamomile and St. John's Wort and olive oil	Sinusitis Antiasthmatic Kidney pain
			Cones and young branches	Infusion	Lithontriptic Menstrual pains

Table 7.2 (continued)

Botanical taxon, botanical family, and voucher specimen code	Albanian folk name(s)	English name	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
Malus sylvestris Mill. (Rosaceae) 59/GO/09	Molla e egër	European wild apple	Fruit	Squeezed, externally applied	Warts
				two to three drops of fruit juice applied in ear	Earache
				Decoction	Headache
				Infusion	Antihypertensive Antidiarrheal
			Flowering areal parts	Infusion	Mucolithic
Matricaria chamomilla L. (Asteraceae) 99/GO/09	Kamomila Kamelicë	Chamomile	Flowering areal parts	Decoction	Sinusitis Stomach pain Skin spots Antirheumatic
			Leaves	Boiled in milk, applied in neck	Tonsillitis
Plantago lanceolata L. (Plantaginaceae) 03/GO/09	Dejzi me gjethe të ngushta	Narrowleaf plantain	Leaves	Fresh leaves are topically applied	Skin inflammations
				Boiled with soap and topically applied	Nail infection
Plantago major L. (Plantaginaceae) 04/GO/09	Bari me dejzi, Bari me fije, Dejzi femror	Common plantain	Leaves	Mixed with milk cream, topically applied	Nail infections Skin ulcers
				Infusion	Urogenital infections
				Fresh leaves, topically applied	Antivenom
				Macerated fresh leaves, topically applied in breast	Stimulating lactation
Primula veris Huds. (Primulaceae) 30/GO/09	Aguliçja	Cowslip	Flowers	Infusion	Antitussive
Prunus spinosa L. (Rosaceae) 49/GO/09	Kulumria	Blackthorn	Fruits	Infusion	Antihypertensive Angina pectoris

Table 7.2 (continued)

Botanical taxon, botanical family, and voucher specimen code	Albanian folk name(s)	English name	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
Rosa canina L. (Rosaceae) 50/GO/09	Kaça	Dog rose	Fruits	Infusion	Lithontriptic Renal pain Sour throat Antitussive Antidiarrheal Used as tea
Sambucus nigra L. (Caprifoliaceae) 26/GO/09	Shtogu	Elderberry	Flower	Infusion	Antiasthmatic Appetizing Antidiarrheal Respiratory inflammations (bronchitis) Improving blood circulation Sore throats
			Stem	Boiled with milk cream	Skin inflammations Eczemas
Stachys officinalis (L.) Trev. (Lamiaceae) 76/GO/09	Sarushë	Wood betony	Leaves	Fresh leaves are topically applied	Skin infection
				Two to three drops applied in the ear Infusion, topically applied	Earache Menstrual pain; to stop bleeding wounds
Taraxacum officinale Web. (Asteraceae) 77/GO/09	Lulëpipëze, Luleshurdh Lulëpipëze Pipilia	Dandelion	Flower	Infusion	Stomach pain Urinary system inflammations Menstrual pain Respiratory inflammation
				Infusion, added lemon	Anticholesterolemic
			Leaves	Leaves chew for several minutes	Toothaches
			Leaves	Infusion	Lung disorders
Thymus longicaulis Presl. (Lamiaceae) 75/GO/09	Lule bjeshke Timusi		Herb, dried	Infusion	Digestive
			Flowers	Infusion	Mucolithic
Thymus serpyllum L. (Lamiaceae) 67/GO/09	Tymusi	Breckland thyme	Flowers	Infusion	Sedative Influenza

Table 7.2 (continued)

Botanical taxon, botanical family, and voucher specimen code	Albanian folk name(s)	English name	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
Tilia cordata Mill. (Tiliaceae) 05/GO/09	Bliri me gjethe të vogla	Small-leaved lime	Flowers	Infusion	Antibronchitis Insomnia
Urtica dioica L. (Urticaceae) 21/GO/09	Hithi	Nettle	Flowering areal parts	Infusion, used to wash hair	Antidandruff
				Directly applied on the knee	Antirheumatic
			Leaves	Infusion	Antidiabetic Antianemic Antihypertensive

heart diseases (11%), and urinary and genital system (10%). Various vegetative organs, such as leaves, flowers, root, fruits, rhizome, bark, bulbs, tubers, etc., were used. The most frequently quoted manner of preparation of medicinal plants was represented by infusions (42%) and decoctions (25%).

7.3.2 Comparison of Gollak Ethnobotany with the Surrounding Western Balkan Regions

If the proportion of quoted wild medicinal plant genera, which have been quoted both in Gollak and in other regions (especially in Eastern Serbia, southwestern Serbia and in the Albanian Alps), is remarkable, no significant commonalities can be found instead in the actual, specific medicinal wild plant applications. This demonstrates that, despite the examined areas being part of a macroregion, which have had for many centuries common historical trajectories, the local medico-botanical knowledge remains pretty specific to each single area (Mustafa et al. 2011).

These findings confirm that conducting rigorous field ethnobotanical studies with extensive sampling of the interviewees within a cross-cultural perspective does still represent a crucial starting point for an in-depth understanding of how plant knowledge changes across geographies and cultures. It also provides a way to examine to what degree such knowledge is intertwined with plant knowledge coming from other sources (i.e., ancient herbals, popular phytotherapeutical books, and/or new media; Mustafa et al. 2011).

7.4 Future Perspectives

Medicinal plants play a substantial role in the life support systems of local communities in mountain areas in Kosovo. Thus, the TK that we recorded are demonstrative of a remarkable intangible cultural heritage in the area. However, the traditional use of plants is declining due to economic factors such as displacement and urbanization processes, changing lifestyles, social transformations, etc. The ethnobotanical data recorded provide an interesting basis for further phytotherapeutical researches, for fostering sustainable uses of plant resources, and also for promoting local biocultural diversity through ecotourism initiatives. The use of plants and several aspects of folk medicines could be a good starting point for projects concerning the ecosustainable uses of medicinal plants, involving biological conservation and the conservation of local culture heritage.

The biodiversity richness and unique biocultural heritage of the local people of Kosovo is countered by the need for documentation of missing information concerning traditional plant use in understudied areas of Kosovo. Future ethnobotanical work in this arena is urgent and necessary, and should include cross-cultural comparative investigations of field studies conducted among ethnic groups and among neighboring countries in the western Balkans.

Acknowledgments Special thanks are due to all Albanian Alps and Gollak inhabitants who participated in this study.

References

Aktay G, Deliorman D, Ergun E et al (2000) Hepatoprotective effects of Turkish folk remedies on experimental liver injury. J Ethnopharmacol 73:121–129

Amidžić L (1999) Visokoplaninska flora i vegetacija. U: Nacionalni Park "Prokletije"—Nucne i strucne, osnove za zastitu planinskog masiva Prokletija. Arhiv Zavoda za zaštitu prirode Srbije, Belgrade

Balkans Peace Park Project (2012). http://balkanspeacepark.org/. Accessed Sept 2012

Baxhaku F, Kaser K (1996) Die stammesgesellschaften nordalbaniens. berichte und forschungen österreichischer konsuln und gelehrter. Böhlau Verlag, Vienna, pp. 1861–1917

Çavolli R (1997) Gjeografia regjionale e Kosovës. Enti i Teksteve dhe i Mjeteve Mësimore i Kosovës, Prishtinë

European Pharmacopoeia (2007) Council of Europe, 6th edn. Brussels, Belgium

Hodgetts A (2012) Investigation into public health care in Kosovo. Balkan Policy Institute (IPOL)

Islami H (1990) Kosova dhe shqiptarët-çështje demografike. Pena, Prishtina, Kosovo, Prishtinë

Jarić Z, Popović Z, Mačukanović-Jocić M et al (2007) An ethnobotanical study on the usage of wild medicinal herbs from Kopaonik Mountain (Central Serbia). J Ethnopharmacol 111:160–175

Jens Schmitt O (2012) Kosova- histori e shkurtër e një treve qendrore ballkanike. Koha, Prishtinë

Kathe W, Honnef S, Heym A (2003) Medicinal and aromatic plants in Albania, Bosnia-Herzegovina, Bulgaria, Croatia and Romania. BfN, Bonn

Krasniqi F (1972) shumska vegetavija brdskoc regiona kosova. Studime nr. 27, Prishtina, Kosovo

Krasniqi F (1998) Veçoritë e florës dhe të vegjetacionit të Kosovës dhe problemi i mbrojtjes së tyre. Kërkime. ASHAK 6:51–66

Lange D (1998) Europe's medicinal and aromatic plants: their use, trade and conservation. TRAFFIC International, Cambridge
Menković N, Šavikin K, Tasić S et al (2011) Ethnobotanical study on traditional uses of wild medicinal plants in Prokletije Mountains (Montenegro). J Ethnopharmacol 133:97–107
Milojević B (1988) The use of plants in the folk life in the region of Rtanj in the east Serbia. Lek Sirov 7:89–109 (in Serbian)
Mustafa B (1998) Basic characteristic of flora and vegetation of Kosovo and danger of their disappearance. Albanian J Nat Tech Sci 5:115–121
Mustafa B, Hajdari A, Pajazita Q et al (2011) An ethnobotanical survey of the Gollak region, Kosovo. Genet Resour Crop Evol 16:1–16
Mustafa B, Hajdari A, Krasniqi F et al (2012) Medical ethnobotany of the Albanian Alps in Kosovo. J Ethnobiol Ethnomed 8:6
Petrović J (1985) Zagađivanje kraških voda u Metohiji. Priroda Kosova 6:53–59
Pieroni A (2008) Local plant resources in the ethnobotany of Theth, a village in the northern Albanian Alps. Genet Resour Crop Evol 55:1197–1214
Pieroni A (2010) People and plants in Lëpushë. Traditional medicine, local foods, and post- communism in a north Albanian village. In: Pardo de Santayana M, Pieroni A, Puri R (eds) Ethnobotany in the new Europe. People, health and wild plant resources. Berghahn, Oxford, pp 16–50
Pieroni A, Giusti ME (2008) The remedies of the folk medicine of the Croatians living in Čičarija, Northern Istria. Coll Anthrop 32:623–627
Pieroni A, Giusti ME, Münz H et al (2003) Ethnobotanical knowledge of the Istro-Romanians of Žejane in Croatia. Fitoterapia 74:710–719
Pieroni A, Dibra B, Grishaj G et al (2005) Traditional phytotherapy of the Albanians of Lepushe, northern Albanians Alps. Fitoterapia 76:379–399
Pieroni A, Giusti ME, Quave CL (2011) Cross-cultural ethnobiology in the western Balkans: medical ethnobotany and ethnozoology among Albanians and Serbs in the Pešter plateau, Sandžak, south-western Serbia. Hum Ecol 39:333–349
Redžić S (2006) Wild edible plants and their traditional use in the human nutrition in Bosnia-Herzegovina. Ecol Food Nutr 45:189–232
Redžić S (2007) The ecological aspect of ethnobotany and ethnopharmacology of population in Bosnia and Herzegovina. Coll Anthrop 31:869–890
Redzic S (2010) Wild medicinal plants and their usage in traditional human therapy (Southern Bosnia and Herzegovina, W. Balkan). J Med Plants Res 4:1003–1027
Rexhepi F (1994) Vegjetacioni i Kosovës. FSHMN, Universiteti i Prishtinës, Prishtina
Šaric-Kundalić B, Dobeš C, Klatte-Asselmeyer V et al (2010a) Ethnobotanical study on medicinal use of wild and cultivated plants in middle, south and west Bosnia and Herzegovina. J Ethnopharmacol 131:33–55
Šaric-Kundalić B, Fritz E, Dobeš C et al (2010b) Traditional medicine in the pristine village of Prokoško Lake on Vranica Mountain, Bosnia and Herzegovina. Scientia Pharm 78:275–290
Šaric-Kundalić B, Dobeš C, Klatte-Asselmeyer V et al (2011) Ethnobotanical survey of traditionally used plants in human therapy of east, north and north-east Bosnia and Herzegovina. J Ethnopharmacol 133:1051–1076
Sejdiu S (1984) Fjalorth etnobotanik i shqipes. Rilindja, Prishtina
Stevanovic V (1995) Biodiversity of Yugoslavia-with list of international importance. University of Belgrade, Belgrade