

An ethnobotanical survey of the Gollak region, Kosovo

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Abstract 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 uses of 92 vascular plants and 6 mushrooms species belonging to 47 different families were recorded. Mainly infusions and decoctions were quoted as folk medicinal preparations and the most commonly quoted plant medicinal uses referred to diseases of the respiratory system, skin, and gastrointestinal tract. Comparison of the collected data with the ethnobotanical findings of previously conducted studies in the surrounding Western Balkan areas showed that, even if more than the half of Gollak's wild botanical genera quoted as medicines used are the same in Serbia and in Northern Albania, commonalities between the actual medicinal plant applications recorded in the present

study and those reported for the other areas are extremely scarce. This may confirm the richness of the bio-cultural heritage of the Western Balkan region and the urgent need to conduct cross-cultural comparative field ethnobiological studies.

Keywords Albanians · Ethnobotany · Gollak · Kosovo · Medicinal plants

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 and Pieroni and Giusti 2008; in Bosnia and Herzegovina: Redžić 2006, 2007; Šarić-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 medicinal plants traded from this area (Lange 1998; Kathe et al. 2003); the need for documenting the last remaining traces of Traditional Knowledge in areas, which—also because of their recent political histories—have been often labelled as “marginal” and/or even “isolated” in Europe; the increasing economic trends in these countries to develop eco-

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tourism and other sustainable rural activities based upon local bio-cultural 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.

Nevertheless, not much has been done so far in European terms of cross-cultural comparative ethnobotanical studies (Leporatti and Ivancheva 2003; Pieroni and Quave 2005; Pieroni et al. 2006; Ghirardini et al. 2007; Pardo-de-Santayana et al. 2007; Hadjichambis et al. 2008; González-Tejero et al. 2008; Leporatti and Ghedira 2009; Pieroni et al. 2011) and/or studies, which consider also historical or folkloric sources on herbal or wild food plant uses (Pieroni 2000; Łuczaj 2008, 2010a, b; Pollio et al. 2008; De Natale et al. 2009; Gentili et al. 2009; Leonti et al. 2009, 2010; Péntek and Szabó 1985; Tagarelli et al. 2010).

In Kosovo, apart from a review on botanical folk names in diverse Albanian-speaking areas in South-Eastern and Southern Europe (Sejdiu 1984), no proper ethnobotanical investigations have been conducted thus far. On the other hand, Kosovo retains a great biological, ecological and landscape diversity. There are currently around 1,800 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 University of Prishtina. About 200 species that occur in Kosovo are Balkan endemics, while 13 are specific Kosovo endemics (Krasniqi 1998). However, the actual total flora of Kosovo is estimated to comprise more than 2,500 plant species (Krasniqi 1998), 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).

The Gollak region is a mountainous area located in the eastern part of Kosovo (Fig. 1) with several isolated villages and it is rich in plant biodiversity (Krasniqi 1982, 1998; Rexhepi 1994; Mustafa 1998). It is for this reason that we selected this area for an ethnobotanical study focused on wild food and medicinal plant uses.

The Gollak is dominated by forests and pastures, with altitudes ranging from 800 to 1,260 m a.s.l. (Çavolli 1997). The climate is influenced by continental air masses; for this reason, it has cold winters and hot summers. The average temperature is 12.6°C, whereas the average temperature under zero is

−5.8°C. This area is characterised by total annual precipitation of 667 mm per year.

Climate, geological and soil composition diversity provide 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 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).

This region has been inhabited since ancient times. The native residents are ethnic Albanians, who speak Gegë varieties of the Albanian language. The exact population is currently unknown, as no population census has been conducted in Kosovo since 1981. 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.

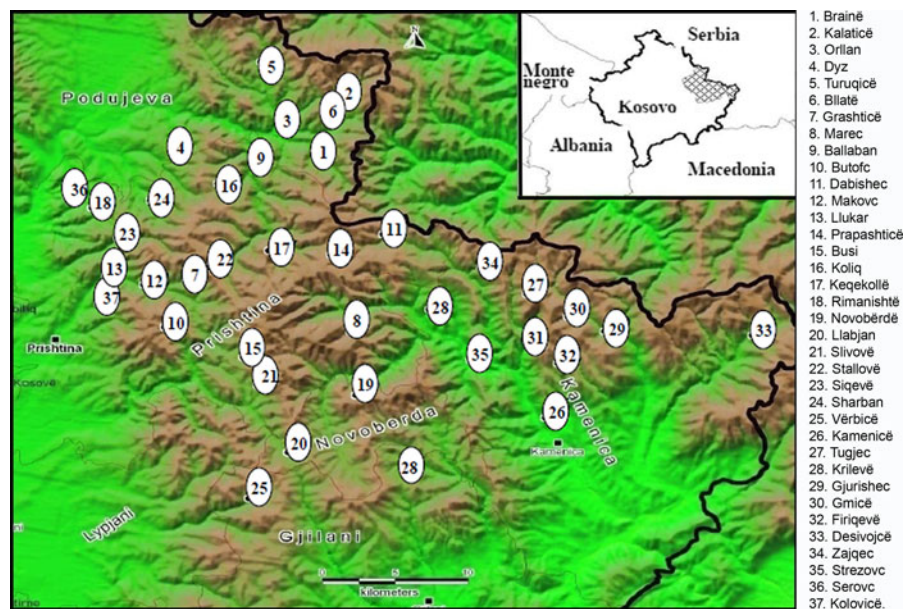
The aims of this study were twofold: (1) to document all of the ethnobotanical knowledge related to the use of plants in local folk medical practices and of wild plants in the diet and (2) to compare the resulting data with the few field ethnobotanical studies carried out in recent years in Serbia, Montenegro, and Albania.

Methodology

Field study

Field research was conducted from May to October 2009. Traditional botanical knowledge was recorded using interviews and an administrated questionnaire. In particular, we sought the following information:

- respondent name and the location;
- local botanical names;
- plant part(s) used;
- local preparation/administration;
- local folk medicinal and/or food uses.

Fig. 1 Map of the study area

Data were collected from 66 informants (30 male and 36 female) older than 50 years, living in 37 villages (Fig. 1) belonging to five municipalities (Prishtina, Podujeva, Kamenica, Gjilan and Novo Bërd), and who are mainly engaged in agricultural activities. The participants were selected using the snowball sampling method (Bernard 2002), and was particularly focused on people who regularly use plants for medicinal purposes. Prior informed consent was obtained prior to conducting interviews and researchers adhered to the ethical guidelines of the International Society of Ethnobiology (ISE 2006). In most cases, informants had inherited their ethnobotanical knowledge from their direct ancestors (parents, grandparents). During the interviews, fresh plants were collected to create voucher specimens for the herbarium and the informants were followed into the field to show us the quoted species. Most plant species were collected while in flower. Taxonomic identification was conducted by Dr. Qazim Pajazita, through use of the relevant standard botanical literature of the area, such as Papparisto et al. (1988–2000) and Jordanov (1963–1979). Plant nomenclature largely follows the *Flora Europaea* (Tutin et al. 1964). Plant family assignments follow the current Angiosperm Phylogeny Group guidelines (Stevens 2011). Voucher specimens of the wild taxa were deposited at the Department of Biology (Herbarium code GO/09), University of Prishtina.

Data analysis

A consensus index, based on the frequency of citation by the different study participants, was created and is reported in Table 1.

Despite the fact that is always problematic to compare ethnobotanical data coming from studies conducted via very different field methods and at different times, we also attempted to compare the wild medical plant uses recorded in Gollak with those recorded in previously conducted ethnobotanical studies in surrounding Western Balkan areas (Fig. 2): (Milojević 1988; Jarić et al. 2007; Pieroni et al. 2005, 2011; Pieroni 2007; Menković et al. 2011).

Results and discussion

Gallak's wild food and medicinal plant uses

The results of the field survey are presented in Table 1; plants are arranged in alphabetical order by genus. For each species, the botanical name and family, local names, English name, botanical status, preparation/administration and folk medical or food uses are presented. We found that 98 taxa (belonging to 47 families) are employed in the traditional foods and medicines of the area. This includes six

Table 1 Medicinal plant and wild food botanical and mushroom uses recorded in the Gollak region

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Achillea millefolium</i> L. (Asteraceae) 79/GO/09	Barëpezmi	Yarrow	W	++	Flowering aerial parts	Decoction	Fever Stomach disorders Hepatic disorders
	Bari për pezmatim				Flowers	Decoction, externally	Skin irritations Acnes
	Lule e bardhë				Leaves	Fresh leaves, topically applied	Wounds
<i>Aesculus hippocastanum</i> L. (Sapindaceae) 29/GO/09	Gështenja e egër	Horse chestnut	W	+	Fruits	Decoction, drunk for one week	Anti-haemorrhoidal
<i>Agaricus</i> sp. (Agaricaceae)	“Lisiqarka”, Shampinjone	Meadow mushrooms	W/C	++	Fruiting body	Consumed	Food and seasoning
<i>Allium cepa</i> L. (Alliaceae)	Qepa	Onion	C	+++	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
<i>Allium porrum</i> L. (Alliaceae)	Purrini, Presh	Garden leek	C	++	Leaf juice	Drunk	Anti-diabetic
<i>Allium sativum</i> L. (Alliaceae)	Hudhëra, Hudra	Garlic	C	++	Bulb	Rubbed on the warts	To treat the warts
						Bulb juice applied into the ear	Ear-ache
						Eaten fresh Boiled in milk (4–5 cloves) and drunk as tea	Anti-hypertensive To “disinfect” the intestine
<i>Allium</i> sp.(Alliaceae) 36/GO/09	Hudra e egër Hudhëra e egër	Wild garlic	W	+	Leaves	Eaten fresh	Anti-anaemic
<i>Amanita cesarea</i> (Fr.) Pers. (Amanitaceae)	Kërpudhat patligjane	Caeser’s mushroom	W	+	Fruiting body	Consumed	Food Seasoning

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Armoracia rusticana</i> Gaertn., Mey. et Scherb. (Brassicaceae) 68/GO/ 09	Bari për gjë	Horseradish	W	+	Leaves	Applied on the breast during the night Fresh leaves topically applied on the wounds	Breast oedema Breast and skin inflammations
<i>Artemisia absinthium</i> L. (Asteraceae) 78/GO/ 09	Fshisa, Pelini	Wormwood	W	+	Flowers	Infusion	Expectorant Appetizing
<i>Artemisia annua</i> L. (Asteraceae) 80/GO/ 09	Bajsilegu	Sweet wormwood	W	+	Whole plant	Decoction	Nail infection
<i>Bellis perennis</i> L. (Asteraceae) 94/GO/ 09	Lulet e bardha	Common daisy	W	+	Whole plants	Decoction	Skin infection
<i>Betula pendula</i> Roth. (Betulaceae) 94/GO/ 09	Mështekna	Silver birch	W	+	Bark	Infusion	Lithontriptic
<i>Boletus edulis</i> Bull. (Boletaceae)	Kërpudhat vergan	Porcini mushroom	W	+	Fruiting body	Consumed	Food Appetizing Seasoning
<i>Bryonia</i> sp. (Cucurbitaceae) 64/GO/09	Kungëlli i egër	Bryony	W	+	Root juice	Squeezed and topically applied to the painful area	Anti-rheumatic
<i>Cantharellus cibarius</i> Fr. (Cantharellaceae)	Kërpudhat e dhelprës	Chanterelle	W	+	Fruiting body	Consumed	Food Seasoning
<i>Centaurium erythraea</i> Rafn. (Gentianaceae) 07/GO/09	Bari i etheve	Common centaury	W	+	Flowering aerial parts	Infusion	Fever
<i>Chelidonium majus</i> L. (Papaveraceae) 96/GO/09	Latrapeci	Tetterwort	W	+	Latex	Topically applied or ingested	Warts Liver disorders
<i>Cichorium intybus</i> L. (Asteraceae) 83/GO/ 09	Çikoreja	Common chicory	W	+	Root	Infusion	Hart disorders Atherosclerosis
<i>Citrus limon</i> Burm. f. (Rutaceae) 27/GO/09	Limoni	Lemon	C	++	Fruit juice Fruits	Mixed with olive and ingested Lemon (1 kg), honey(1 kg), walnut (1/ 2 kg) and garlic mixed and eaten Topically applied	Kidney stones Respiratory inflammations Oedemas

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Conium maculatum</i> L. (Apiaceae) 37/GO/09	Kakuda	Hemlock	W	+	Roots	Boiled in milk	Anti ulcers
<i>Cornus mas</i> L. (Cornaceae) 35/GO/09	Thana	Dogwood	W	+++	Fruits	Decoction Infusion	Anti-diarrhoeal To improve the blood circulation Anti-hypertensive Anti-diarrhoeal Anti-diabetic
<i>Corylus avellana</i> L. (Betulaceae) 15/GO/ 09	Lajthia	Hazel	W	++	Bark	Decoction	Anti eczema
					Fruits	Decoction	Anti haemorrhoid
<i>Crataegus monogyna</i> Jacq. (Rosaceae) 48/GO/09	Murrizi	Oneseed hawthorn	W	+++	Fruits	Eaten Mixed with honey	Anti-diarrhoeal Aphrodisiac
					Leaves	Infusion	Anti-diabetic Anti-anaemic
<i>Cucurbita pepo</i> L. (Cucurbitaceae) 66/GO/09	Kungulli	Pumpkin	C		Fruits	Boiled in milk, applied externally placed in neck	Parotitis
					Fruit juice	Drunk	Stomach inflammations
<i>Dipsacus fullonum</i> L. (Dipsacaceae) 39/GO/ 09	Bari për hemoroide	Teasel	W	+	Flowers	Infusion	Sour throat Antitussive Kidney inflammations Intestine infections Anti-diarrhoeal
							Anti-haemorrhoid
<i>Equisetum arvense</i> L. (Equisetaceae) 40/GO/ 09	Hithecaku, Bishtmini	Horsetail	W	++	Aerial parts	Macerated plant, topically applied	Anti-rheumatic

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Euphorbia amygdaloides</i> L. (Euphorbiaceae) 19/GO/09	Bari për kimzi Tamelqoku	Wood spurge	W	+	Whole plant	Fresh plant mixed with honey and milk cream, extracted for 1 week	Nail infections
<i>Euphorbia cyparissias</i> L. (Euphorbiaceae) 18/GO/09	Tamëlqoku	Cypress spurge	W	+	Latex	Latex placed directly in warts	Warts
<i>Fragaria vesca</i> L. (Rosaceae) 47/GO/09	Dredh. e egra Dredhëza mali	Strawberry	W	+++	Aerial parts	Mixed with honey, ingested	Heart disorders
<i>Gentiana cruciata</i> L. (Gentianaceae) 08/GO/09	Bari për kimzi	Star gentian	W	+	Flowering aerial parts	Mixed with honey and a small amount of copper sulphate, topically applied	Nail infections
<i>Geranium lucidum</i> L. (Geraniaceae) 97/GO/09	Bari për skuqje të këmbëve	Shining cranesbill	W	+	Whole plants	Macerated and mixed with olive oil, then topically applied	Eczema
<i>Geum urbanum</i> L. (Rosaceae) 60/GO/09	Shtërëguesi	Wood avens	W	+	Roots	Infusion	Anti-haemorrhoid
<i>Handkea utrifomis</i> (Bull.) Kreisel (Lycoperdaceae)	Pufkat	Mosaic puffball	W	+	Fruiting body	Topically applied to the wound	Haemostatic
<i>Hedera helix</i> L. (Araliaceae) 41/GO/09	Hedera	Ivy	W	+	Leaves	Tincture	Warts
<i>Helianthus tuberosus</i> L. (Asteraceae) 82/GO/09	Mollë e dheut	Sunroot	W	+	Tubers	Boiled in milk, externally applied or eaten	Wounds Anti-diabetic
<i>Hieracium</i> sp. (Asteraceae) 81/GO/09	Bari i majasilit të lëkurës	Hawkweed	W	+	Whole plant	Fresh plant mixed with cream milk and honey, topically applied	Eczema

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Hypericum perforatum</i> L. (Hypericaceae) 32/GO/09	Balsami	St. John's wort	W	+++	Flowers	Infusion	Stomach disorders Genital infections
	Bari i zojave Kantarioni Lulë balsami				Aerial parts	Infusion	Urinary system infections Stomach disorders Anti-diabetic Anti-haemorrhoid
<i>Juglans regia</i> L. (Juglandaceae) 22/GO/09	Arra	Common walnut	C	++	Fruits	Fruit cortex, topically applied	Warts
					Leaves	Infusion	Anticholesterolemic Anti diabetic Anti-rheumatic
<i>Juniperus communis</i> L. (Cupressaceae). 12/GO/09	Gllija, Kllija	Juniper	W	++	Cones	Tincture Mixed with thyme, chamomile and St. John's Wort and olive oil	Sinusitis Anti-asthmatic Kidney pain
					Cones and young branches	Infusion	Lithontriptic Menstrual pains
<i>Lactarius deliciosus</i> (L.) S.F. Gray (Russulaceae)	Kërpudhat e vjeshtës	Saffron milk cap		+	Fruiting body	Consumed	Food Seasoning
<i>Lagenaria siceraria</i> (Molina) Standl. (Cucurbitaceae) 65/GO/ 09	Pocërrka	Bottle gourd	W	+	Fruits	Fruits opened and filled with water and then water used to flush the nose	Sinusitis
<i>Ligustrum vulgare</i> L. (Oleaceae) 10/GO/09	Shemëshir	Common Privet	W/C	+	Stem, leaves	Decoction	Lithontriptic
<i>Lycopersicon esculentum</i> L. (Solanaceae)	Patligjani Domatja	Tomato	W	++	Fruit	Topically applied	Skin inflammation and ulcers
<i>Malus dasyphylla</i> Borkh. (Rosaceae)	Mollat e ëmbëla Mollat verore	Apple	C	++	Fruit	Decoction	Anti-diarrhoeal Anti-constipation

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Malus sylvestris</i> Mill. (Rosaceae) 59/GO/09	Molla e egër	European wild apple	W	+++	Fruit	Squeezed, externally applied	Warts
						2–3 drops of fruit juice applied in ear	Earache
						Decoction	Headache
						Infusion	Anti hypertensive Anti-diarrhoeal
					Flowering areal parts	Infusion	Mucolithic
<i>Malva sylvestris</i> L. (Malvaceae) 90/GO/ 09	Mëllaga	Common mallow	W	+	Leaves and flowers	Infusion	Mucolithic
<i>Matricaria chamomilla</i> L. (Asteraceae) 99/GO/09	Kamomila Kamelicë	Chamomile	W	+++	Flowering areal parts	Decoction	Sinusitis Stomach pain Skin spots Anti rheumatic
					Leaves	Boiled in milk, applied in neck	Tonsillitis
<i>Morus nigra</i> L. (Moraceae) 01/GO/09	“Dudi i zi”	Black mulberry	C	+	Leaves	Infusion	Anti diabetic
					Fruit juice	Eaten	Oral mucusal inflammation
<i>Ononis spinosa</i> L. (Fabaceae) 61/GO/09	Therrë leपुरi	Spiny rest harrow	W	+	Flowers	Infusion	Anti-diabetic Renal disorders Lithonthopic Anti-diarrhoeal
<i>Orchis morio</i> L. (Orchidaceae). 24/GO/ 09	Salepi	Wilde orchid	W	+	Tuber	Infusion	Anti-diarrhoeal
<i>Origanum vulgare</i> L. (Lamiaceae) 74/GO/ 09	Çaj mali, Rigoni	Oregano	W	+++	Flowering aerial parts	Infusion	Sedative
<i>Papaver rhoeas</i> L. (Papaveraceae) 14/GO/09	Lulëkuja	Red poppy	W	+	Flowers	Infusion	Insomnia Antitussive
<i>Pelargonium zonale</i> L. (Geraniaceae) 17/GO/ 09	Lule sardani	Garden geranium	W	+	Stem	Placed directly in rectum	Constipation
<i>Pyrus pyraster</i> (L.)Burgsd. (Rosaceae) 45/GO/09	Dardha e egër	Wild pear	W	++	Fruits	Decoction	Constipation

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Plantago lanceolata</i> L. (Plantaginaceae) 03/GO/09	Dejzi me gjethe të ngushta	Narrowleaf plantain	W	+	Leaves	Fresh leaves are topically applied Boiled with soap and topically applied	Skin inflammations Nail infection
<i>Plantago major</i> L. (Plantaginaceae) 04/GO/09	Bari me dejzi, Bari me fije, Dejzi femror	Common plantain	W	+++	Leaves	Mixed with milk cream, topically applied Infusion Fresh leaves, topically applied Macerated fresh leaves, topically applied in breast	Nail infections Skin ulcers Urogenital infections Anti-venom Stimulating lactation
<i>Polygonum bistorta</i> L. (Polygonaceae) 69/GO/09	Uflat e leprit	Meadow bistort	W	+	Flowering aerial parts	Consumed	Pite (pie) stuffing
<i>Populus nigra</i> L. (Salicaceae) 16/GO/09	Plepi	Lombardy poplar	W	+	Leaves	Infusion	Anti tuberculosis
<i>Primula veris</i> Huds. (Primulaceae) 30/GO/09	Aguliçja	Cowslip	W	++	Flowers	Infusion	Antitussive
<i>Prunus cerasifera</i> Ehrh. (Rosaceae) 51/GO/09	Kojsi e egër, Kajsi	Cherry plum	W	+	Fruits	Consumed	Eaten raw
<i>Prunus cerasus</i> L. (Rosaceae) 54/GO/09	Vishnjet	Sour cherry	C	+++	Fruits	Decoction	Antihypertensive
<i>Prunus persica</i> (L.) Batsch. (Rosaceae) 45/GO/09	Zerzelia Pjeshka	Peach	C	+++	Unripe fruits	Decoction	Anti-diabetic
<i>Prunus spinosa</i> L. (Rosaceae) 49/GO/09	Kulumria	Blackthorn	W	++	Fruits	Infusion	Antihypertensive Angina pectoris
<i>Quercus cerris</i> L. (Fagaceae) 98/GO/09	Qarri	Turkey oak	W	+	Cortex	Boiled and its vapour applied in the back	Sciatica Spinal column pain
<i>Ribes grossularia</i> L. (Grossulariaceae) 23/GO/09	Ribizlla	Gooseberry	W	+	Fruits	Fresh fruits	Anti-anemic Eaten raw

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Robinia pseudacacia</i> L. (Fabaceae) 62/GO/09	Bagremi Bagreri	Black locust	W	++	Flowering areal parts	Infusion	Respiratory inflammations
<i>Rosa canina</i> L. (Rosaceae) 50/GO/09	Kaçà	Dog rose	W	++	Fruits	Infusion	Lithonriptic Renal pain Sour throat Antitussive Anti-diarrhoeal Used as tea
<i>Rubus caesius</i> L. (Rosaceae) 44/GO/09	Manaferra e kaltër	Dewberry	W	++	Roots Fruits	Infusion Fresh fruits	Used to treat lung cancer Eaten raw
<i>Rubus fruticosus</i> L. (Rosaceae) 43/GO/09	Manat, Mani i malit	Blackberry	W	++	Roots Fruits	Decoction Consumed fresh or in jam	Appendicitis Eaten raw or in jams
<i>Rubus idaeus</i> L. (Rosaceae)	Medra Mjedra	Raspberry	W	+++	Fruits	Consumed	Eaten raw
<i>Rumex rugosus</i> Campd. (Polygonaceae) 72/GO/ 09	Ufllat e livadheve	Garden sorrel	W	+	Leaves	Fresh leaves	Anti-diabetic
<i>Rumex acetosella</i> L. (Polygonaceae) 71/GO/09	Ufllat e tharpta	Sheep sorrel	W	+	Leaves	Fresh leaves	Pite (pie) stuffing
<i>Rumex crispus</i> L. (Polygonaceae) 70/GO/09	Lakër e egra	Curly dock	W	+	Leaves	Fresh leaves	Used to make salad
<i>Sambucus nigra</i> L. (Caprifoliaceae) 26/GO/09	Shtogu	Elderberry	W	++	Flower Stem	Infusion Boiled with milk cream	Anti asthmatic Appetizing Anti-diarrhoeal Respiratory inflammations (bronchitis) Improving blood circulation Sore throats Skin inflammations Eczemas
<i>Sambucus ebulus</i> L. (Caprifoliaceae) 28/GO/09	Kinla	Dwarf elderberry	W	+	Flowers	Decoction	Anti-rheumatic
<i>Sempervivum tectorum</i> L. (Crassulaceae) 34/GO/09	Lule veshi	Houseleek	W	+	Leaves juice Leaves	2–3 drop applied in ear Fresh leaves	Ear-ache Anti-anemic

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Sinapis arvensis</i> L. (Brassicaceae) 67/GO/09	Sinapi Spinaqi i egër	Charlock mustard	W	++	Flowering aerial parts	Boiled with milk applied externally to wash the body	Antiparalytic
<i>Solanum tuberosum</i> L. (Solanaceae)	Patate	Potato	C	+	Tuber	Boiled with milk, applied externally in chest	Fevers
<i>Sorbus torminalis</i> (L.) Crantz (Rosaceae)	Breki	Wild service-tree	W	++	Fruits	Fresh fruits	Eaten raw
<i>Stachys officinalis</i> (L.) Trev. (Lamiaceae) 76/GO/09	Sarushë	Wood betony	W	++	Leaves	Fresh leaves are topically applied 2–3 drops applied in the ear Infusion, topically applied	Skin infection Earache Menstrual pain, to stop bleeding Wounds
<i>Syringa vulgaris</i> L. (Oleaceae) 09/GO/09	Lule jargavani	Common lilac	C	+	Flowers	Mixed with olive oil, used for massage	Spinal column pain
<i>Tamus communis</i> L. (Dioscoreaceae) 38/GO/09	Bari për reumë	Black bryony	W	+	Rhizome	Juice used for massages	Anti-rheumatic
<i>Taraxacum officinale</i> Web. (Asteraceae) 77/GO/09	Lulëpipëze, Luleshurdh Lulëpipëze Pipilia	Dandelion	W		Flower	Infusion	Stomach pain Urinary system inflammations Menstrual pain Respiratory inflammation
					Leaves	Infusion, added lemon Leaves chew for several minutes	Anti-cholesterolemic Toothaches
					Leaves	Infusion	Lung disorders
<i>Teucrium chamaedrys</i> L. (Lamiaceae) 73/GO/09	Lule mali Çaj mali	Wall germander	W	+	Flowering aerial parts	Infusion	Respiratory inflammation
<i>Thuja orientalis</i> L. (Cupressaceae) 11/GO/09	Selvi	Oriental arborvitae	C	+	Cones	Infusion, used to wash hair	Alopecia
<i>Thymus longicaulis</i> Presl (Lamiaceae) 75/GO/09	Lule bjeshke Timusi		W	++	Herb, dried Flowers	Infusion Infusion	Digestive Mucolithic

Table 1 continued

Botanical taxon, botanical family and voucher specimen code	Albanian folk name(s)	English name	Status	Quotation frequency	Part(s) used	Administration	Treated disease(s) or medical/food uses(s) in Gollak
<i>Thymus serpyllum</i> L. (Lamiaceae) 67/GO/09	Tymusi	Breckland thyme	W	+	Flowers	Infusion	Sedative Influenza
<i>Tilia cordata</i> Mill. (Tiliaceae) 05/GO/09	Bliri me gjethe të vogla	Small-leaved lime	W	+	Flowers	Infusion	Anti-bronchitis Insomnia
<i>Tilia platyphyllos</i> Scop. (Tiliaceae) 06/GO/09	Bliri	Largeleaf linden	W	+	Flowers	Infusion	Lung disorders Used as tea
<i>Trifolium pratense</i> L. (Fabaceae) 63/GO/09	Tërfili	Red clover	W	++	Flowers	Infusion	Oral cavity antiseptic Anti-rheumatic Appetizing
<i>Urtica dioica</i> L. (Urticaceae) 21/GO/09	Hithi	Nettle	W	+++	Flowering areal parts	Infusion, used to wash hair Directly applied on the knee	Lung disorders Antitussive Anti-dandruff
					Leaves	Infusion	Anti-rheumatic Anti-diabetic Anti-anemic Anti-hypertensive
<i>Valeriana officinalis</i> (Valerianaceae) 20/GO/09	Bari për gji	Valerian	W	+	Leaves	Macerated leaves are mixed with yogurt and topically applied	Breast inflammations
<i>Verbascum</i> sp. (Scrophulariaceae) 25/GO/09	“Nevestra”, Sarushë		W	+	Flowers	Infusion	Anti-haemorrhoid
<i>Viola odorata</i> L. (Violaceae) 33/GO/09	Lulëvjollce Manushaqe	Sweet violet	W	+	Flowers	Infusion	Antitussive
<i>Zea mays</i> L. (Poaceae) 14/GO/09	Kallamoçi, Misri	Corn	C	+	Fruits	Infusion	Lithontriptic Renal pains

+ quoted by less than 10% of the participants; ++ quoted by more than 10% and less than 40% of the participants; +++ quoted by more than 40% of the participants

mushroom species, three 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, whereas some other plant species were gathered for sale in the local markets. The most frequently cited medicinal uses referred to respiratory system illnesses (18%), skin inflammations (16%),

Fig. 2 Location of the Western Balkan areas considered in the comparative analysis



Table 2 Comparison between the wild medicinal plant uses recorded in Gollak and those recorded in previously conducted ethnobotanical field studies in surrounding Western Balkan regions

Area and country	Ethnicity	Year(s) when the field studies were conducted	Number of study participants	Number of recorded wild medicinal taxa	% of wild medicinal botanical genera also quoted in Gollak (%)	Number of recorded wild medicinal plant reports	% of wild medicinal plant reports also recorded in Gollak	Reference(s)
Gollak, Kosovo	Albanians	2009	66	73		115		
Pešter plateau, Serbia	“Bosniakised” Albanians and Serbs	2010	42	40	65	107	16%	Pieroni et al. (2011)
Kopaonik mountain, Serbia	Serbs	2002–2005	60	83	37	385	7%	Jarić et al. (2007)
Rtani region, Serbia	Serbs	Before 1988	N/A	52	48	N/A	N/A	Milojević (1988)
Prokletije mountains, Montenegro	Bosniaks and Serbs	2006, 2007	75	135	24	327	7%	Menković et al. (2011)
Northern Albanian Alps, Albania	Albanians	2004, 2007	62	45	53	71	16%	Pieroni et al. (2005), (2007)

gastrointestinal troubles (14%), 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%).

Comparison of Gollak’s ethnobotany with the available ethnobotanical data of surrounding Western Balkan regions

The wild medicinal plant uses recorded in Gollak, which are in common with those of other previously investigated Western Balkan areas, are reported in Table 2.

If the proportion of quoted wild medicinal plant genera, which have been quoted both in Gollak and in other regions (especially in Eastern Serbia, South-Western 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 macro-region, which have had for many centuries common historical trajectories—the local medico-botanical knowledge remains pretty specific to each single area.

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 which degree such knowledge is intertwined with plant knowledge coming from other sources (i.e. ancient herbals, popular phytotherapeutic books and/or new media).

Future perspectives

The traditional knowledge that we recorded is 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. The ethnobotanical data recorded provide an interesting basis for further phytotherapeutic researches, for fostering sustainable uses of plant resources and also for promoting local biocultural diversity through ecotourism initiatives.

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