

Notes on Economic Plants

Comfrey and Buttercup Eaters: Wild Vegetables of the Imereti Region in Western Georgia, Caucasus

ŁUKASZ ŁUCZAJ^{*,1}, BORIS TVALODZE², AND DAVID ZALKALIANI²

¹Department of Botany, Institute of Biotechnology, University of Rzeszów, Werynia 502, 36-100, Kolbuszowa, Poland

²Kutaisi Botanic Garden, #2 Leselidze St., 4600, Kutaisi, Georgia

*Corresponding author; e-mail: lukasz.luczaj@interia.pl

Introduction

The use of wild greens is an important issue in gastronomic ethnobotany as in some parts of the world, wild greens have been widely used to supplement human nutrition (Bharucha and Pretty 2010; Cruz-Garcia and Struik 2015; Johns 1990; Leonti 2012; Serrasolses et al. 2016; Turner et al. 2011). One of the places where the use of wild vegetables has been sparsely documented until recently, in spite of the incredible richness of their use, is the area of the Caucasus. Some uses of wild vegetables in this area are recorded by older Russian and Georgian sources (see for example Grossgejm 1952; Javakhishvili 1986) and a few general ethnobotanical studies were made recently (Bussmann et al. 2014, 2016a, b, 2017a, b; Hovsepyan et al. 2016), whereas Kaliszewska and Kołodziejska-Degórska (2015) studied the use of wild vegetables in Dagestan (North Caucasus, Russian Federation). However, no such studies have been conducted in the Imereti region. We document the use of all the wild greens, which are predominantly used in a dish called ფხალი—which according one of the Georgian transliteration rules (Romanization system for Georgian link 2017) is written pkhali (though in some texts it is also written pxali, phkhali, phali, or pchali). This dish is of great importance in the culinary tradition of Georgia, especially its western part, and is eaten almost on a daily basis. Pkhali is also made with cultivated vegetables such as cabbage (*Brassica oleracea* L.), beetroot (*Beta vulgaris* L.), or spinach (*Spinacia oleracea* L.), but the consumption of pkhali made of wild vegetables, so called *veluri pkhali* (wild pkhali) or *mindvris pkhali* (field pkhali), is equally common. Pkhali constitutes

the main form of consumption of wild greens in the area and is served as a side dish. The term *mkhali*, the literary version, is often used as well, while pkhali is its synonym in the local dialects of Imereti, Guria, and Racha (Lomtadze et al. 1962). As a large number of species are used in the dish, some of them of little known edibility, it is of scientific and economic importance to document the plants used.

Study Site

Imereti is a historical region of western Georgia located on the Colchic Plain, sandwiched between the Great and Lesser Caucasus Mountains. The climate is transitional between humid subtropical and warm temperate, with high rainfall throughout the year. Imereti is a plain with some low mountains surrounding it. The climate is transitional between humid subtropical and warm temperate, with high rainfall throughout the year (Kordzakhia 1971). The mean August temperature is 29 °C (the hottest month), and in January, it is 8 °C. In this climate, some wild vegetables may be collected virtually all year, as a clear drought period is not apparent. The native vegetation is composed of deciduous forests, and the dominant trees are *Quercus robur* spp. *imeretina* (Steven ex Woronow) Menitsky, *Zelkova carpiniifolia* (Pall.) K. Koch, *Carpinus betulus* L., *Castanea sativa* L., *Alnus glutinosa* ssp. *barbata* (C.A.Mey.) Yalt, *Corylus avellana* L., *Acer cappadocicum* Gled., *Fagus orientalis* Lipsky, *Ulmus glabra* Huds., *Buxus colchica* Pojark., and *Prunus laurocerasus* L. Large tracts of the Caucasian foothills are managed as wood pastures with freely roaming cattle and pigs, and many species of fruit trees are

interspersed between deciduous copses and pastures (Nakhutsrishvili 2012; Otte et al. 2011; Zazanashvili et al. 2000). The area is relatively densely populated. The local farmers plant a variety of annual crops, mainly maize, and there are multi-species orchards around each house.

Kutaisi is the largest town in Imereti (196,000 inhabitants) and the third most populated town

in Georgia. It has two large vegetable markets. The one in the center of the city is a retail market including wild vegetables, while the wholesale market is located outside the city center and hosts less wild vegetables. Single wild vegetable stalls may also be encountered in smaller towns, at least occasionally, particularly in Samtredia and Choni.

TABLE 1. SPECIES OF WILD PLANTS USED IN THE DISH KNOWN AS PKHALI

Latin name	Local name in Georgian	Local name in Latin transliteration	Number of interviews (N=41)	sold in the Kutaisi market	Voucher specimen number
<i>Urtica dioica</i> L. (Urticaceae)	ჯინჭარი, ჭინჭარი	jinch'ari, ch'inch'ari	40	commonly, separately and in mixes	WA0000052380
<i>Chenopodium album</i> L. (Amaranthaceae)	კათენაცერა, ნაცარქათამა	katanatsera, natsarqatama	30	occasionally	WA0000052376
<i>Malva sylvestris</i> L. & <i>M. neglecta</i> Wallr. (Malvaceae)	მოლოქა	moloka	29	commonly, separately and in mixes	WA0000052389 (syl), WA0000052422 (neg)
<i>Ornithogalum woronowii</i> Krasch. (Asparagaceae)	ჩიტისტავა, ჩილტავა	chit'istava, chiltava	28	commonly	WA0000052404
<i>Smilax excelsa</i> L. (Smilacaceae)	ეკალა	ek'ala	26	commonly, separately	WA0000052409
<i>Viola alba</i> Besser & <i>V. odorata</i> L. (Violaceae)	ია, იაია	ia, iaia	22	commonly	WA000005401 (al.), WA0000052404 (od)
<i>Lamium album</i> L. & <i>L. purpureum</i> L. (Lamiaceae)	ჯინჭრის დედა, ჭინჭრის დედა	jincharis deda, chinchris deda	19	commonly	WA0000052388
<i>Staphylea pinnata</i> L. (Staphyleaceae) *	ჯონჯოლი	jonjoli	19	commonly, separately (salted)	WA0000052406
<i>Symphytum grandiflorum</i> DC. (Boraginaceae)	ქალშავა	kalshava	19	commonly	WA0000052379
<i>Sonchus oleraceus</i> L. (Asteraceae)	ბურჩხალა	burchkhala	15	commonly	WA0000052396
<i>Rumex conglomeratus</i> Murray, <i>R. crispus</i> L. and <i>R. pulcher</i> L. (Polygonaceae)	ღვალი	ghvalo	13	commonly	WA0000052434 (con), WA0000052423 (cri), WA0000052390 (pul)
<i>Portulaca oleracea</i> L. (Portulacaceae)	დანდური, მსუქანა	danduri, msukana	12	occasionally, separately and in mixes	WA0000052377
<i>Primula woronowii</i> Losinsk. (Primulaceae)	ფურისულა, ფურუსულა	purisula, purusula	12	commonly	WA0000052397
<i>Allium</i> spp. (Amaryllidaceae)	კატაპრასა	k'tap'rasa	10	occasionally	WA0000052307, WA0000052318, WA0000052325

TABLE 1. (CONTINUED)

<i>Capsella bursa pastoris</i> (L.) Medik. (Brassicaceae)	ოდელია	odelia	9	commonly	WA0000052413
<i>Melandrium divaricatum</i> Fenzl. (Caryophyllaceae)	თიკნის ყურა, ბატკნიყურა, თხის ყურა	t'ik'nis qura, bat'k'niqura, tkhis qura (and similar names meaning sheep or goat ears)	9	occasionally	WA0000052416
<i>Ranunculus chius</i> DC, <i>R. georgicus</i> Kem.-Nath. & <i>R. sceleratus</i> L. (Ranunculaceae)	ქათმის ქონა, ნიახურა, ბაია	katmis kona, niakhura, baia	9	commonly	WA0000052411 (chi), WA0000052417 (geo), WA0000052399 (sce)
<i>Cardamine hirsuta</i> L. (Brassicaceae)	ტსიწმატურ, ველური ველური წიწმატი	tsitsmat'ura, veluri ts'its'mat'i	8	commonly	WA0000052400
<i>Cirsium arvense</i> (L.) Scop. (Asteraceae)	კახოურა, კახოურა	k'akhoura, k'akhoura	7	commonly, separately and in mixes	WA0000052385
<i>Athaea armeniaca</i> Ten. & <i>Alcea rugosa</i> Alef. (Malvaceae)	ტუხტი	t'ukht'i	5	no	-
<i>Ficaria verna</i> Huds. s.l. (Ranunculaceae)	ჩხიკვის თვალა, წკლის ბალახი, ლობიანა, პურკაკალა	chkhik'vis tvala, ts'klis balakhi, lobiana, purk'ak'ala	5	commonly	WA0000052395
<i>Taraxacum</i> spp. (Asteraceae)	ბაბუაწვერა	babuats'vera	5	occasionally	WA0000052381
<i>Foeniculum vulgare</i> L. (Apiaceae)	კამა	k'ama	4	occasionally	WA0000052393
<i>Geranium columbinum</i> L. & <i>G. rotundifolium</i> L. (Geraniaceae)	ზღვის მოლოქა, ოქრობეჭედა	zghvis moloka, okrobededa	4	occasionally	WA0000052420 (co) , WA0000052421 (ro)
<i>Rumex acetosa</i> L. (Polygonaceae)	მჟაუნა	mzhauna	4	commonly, separately, also cultivated	WA0000052450
<i>Centaurea iberica</i> Trevir. ex Spreng. (Asteraceae)	ჰარი ყბილა	hari qbila	4	occasionally	WA0000052391
<i>Allium ursinum</i> L. (Amaryllidaceae)	ღანძილი	ghandzili	3	no	-
<i>Stellaria media</i> L. (Caryophyllaceae)	ბოდოძუა, ბოწვა, ბიალუა	bodzodzua, bots'va, dzialua	3	no	WA0000052405
<i>Fragaria vesca</i> L. (Rosaceae)	მარწყვი	marts'qvi	2	no	WA0000052398
<i>Robinia pseudoacacia</i> L. (Fabaceae) **	აკაცია	ak'atsia	2	no	WA0000052386

Methods

We carried out 41 single and group interviews among knowledgeable informants (40 women, 13 men), selected mainly through contacts with village leaders and by the snowball technique between

March and June 2016. The informants were usually accompanied by their extended families who commented on the information and supplied specimens. The informants supplied data about wild vegetable use in the following towns and villages: Bagdati, Banoja, Cholebi, Geguti, Gelati, Gumbra,

TABLE 1. (CONTINUED)

<i>Arum orientale</i> M. Bieb. & <i>A. albispatham</i> Stev. (Araceae)	ქალა კოდა	kala k'oda	2	no	WA0000052415
<i>Bellis perennis</i> L. (Asteraceae)	მინდროს გვირილა	mindris gvirila	1	no	WA0000052403
<i>Erigeron canadensis</i> L. (Asteraceae)	ხბოს შუბლა	khbos shubla	1	no	WA0000052384
<i>Lactuca serriola</i> L. (Asteraceae)	-	-	1	no	WA0000052383
<i>Melissa officinalis</i> L. (Asteraceae)	ბარამბო	barambo	1	no	WA0000052394
<i>Plantago major</i> L. (Plantaginaceae)	მრავალპარღვა	mravaldzargva	1	no	WA0000052378
<i>Tilia rubra</i> subsp. <i>caucasica</i> (Rupr.) V. Engl. (syn. <i>Tilia caucasica</i> Rupr.) (Malvaceae)	ცაცხვი	tsatskhvi	1	no	WA0000052419
<i>Armoracia rusticana</i> P. Gaertn, B. Mey. & Scherb. (Brassicaceae)	ხრენ	khren	1	no, mainly cultivated for roots	-
<i>Cerastium ruderale</i> M. Bieb. (Caryophyllaceae)	-	-	1	no	-
<i>Clematis vitalba</i> L. (Ranunculaceae)	ციციბარდი	tsitsibaldi	1	no	-
<i>Humulus lupulus</i> L. (Cannabaceae)	შამყუტა	shashquta	1	no (but sold in other regions of Georgia)	-
<i>Lepidium ruderale</i> L. (Brassicaceae)	წიწმატულა	ts'its'mat'ula	1	no	-
<i>Scilla siberica</i> Haw. (Asparagaceae)	მწვათინელა	mts'vatanela	1	formerly	-

For most species, young leaves and shoots are used, unless marked by a letter

^aFlower buds

^bFlowers and very young leaf buds

Khoni, Kumistavi, Kutaisi, Maglaki, Meskheti, Mukhiani, Opshkviti, Partskhanakanevi, Rioni, Sakhulia, Samtredia, Simoneti, Sormoni, Tkibuli/Hresili, Vani, Vartsikhe, Zarati, and Zubi. The age of respondents ranged from 42 to 85 (mean 65, median 66 years). In the interviews, we asked which wild plants were added to the pkhali dish. We also asked interviewees to list other leaves, fruits, roots, or mushrooms used for food or herbal drinks in order to see wild vegetables in the context of all wild food. However, for this paper, we only list the numbers of species listed in other food categories without specifying the species. Voucher specimens were deposited in the herbarium of the Faculty of Biology, University of Warsaw in Poland (WA). The International Society of Ethnobiology Code of Ethics (2006) was followed (see website link).

Results

On average, respondents mentioned 10.4 species of wild greens per interview (compared to 6.9 species of fruits and 6.3 species of fungi). Altogether, 53 species of wild green vegetables were documented (Table 1). Vegetables for pkhali are boiled for 10 to 30 min, then strained and minced or finely chopped. They are added to crushed or minced walnuts and spiced with vinegar, dill (*Anethum graveolens* L.), coriander (*Coriandrum sativum* L.), pennyroyal (*Mentha pulegium* L.), celery (*Apium graveolens* L.), and parsley (*Petroselinum crispum* (Mill.) (Fuss)). Some more abundant wild vegetables are made as single-species dishes, but most species are used in a mix, and there is no general rule as to which species are served single

and which separately. A form of pkhali is also made without walnuts, in which the green mass is spiced by *tkemali*, a sauce made of green cherry plums (*Prunus cerasifera* Ehrh. s.l.) and spiced with similar herbs as the classic walnut pkhali. Mixed plants for pkhali are commonly sold in Kutaisi in the main city market, where 5 to 15 sellers may be encountered every day from the beginning of the year until late April, with a few still selling the plants until June.

Discussion

We recorded five species which are not listed in inventories of wild edible plants (e.g., Hedrick 1919; Tanaka 1976; Kunkel 1984; Plants for a Future 2017), nor are they listed in any ethnobotanical literature concerning wild foods. These are *Ranunculus chius* DC, *Ranunculus georgicus* Kem.-Nath., *Symphytum grandiflorum* DC, *Geranium columbinum* L., and *Geranium rotundifolium* L. It must be emphasized that the way wild vegetables are consumed in Georgia, i.e., with crushed walnuts, is very unique to this country. It is interesting that many toxic wild vegetables, such as buttercups *Ranunculus* spp. and comfrey *S. grandiflorum*, are used and sold in the market of Kutaisi. Raw buttercups contain protoanemonin, (Aslam and Ijaz 2012) which is very pungent, and *Symphytum* species contain pyrrolizidine (PA) alkaloids (e.g., Rode 2002; Roitman 1981). Prolonged cooking probably removes most of these toxins, but there is a lack of studies focused specifically on the alimentary use of comfrey after longer cooking.

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Compliance with Ethical Standards

The International Society of Ethnobiology Code of Ethics (2006) was followed (see website link).

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