Edible wild herbs and mushrooms of Tusheti (the eastern Greater Caucasus), Georgia

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Ethnobotany Research and Applications 29:60 (2024) - http://dx.doi.org/10.32859/era.29.60.1-13
Manuscript received: 18/11/2024 – Revised manuscript received: 28/11/2024 - Published: 29/11/2024

Research

Abstract

Background: Wild herbs were traditionally widely used in everyday diet of the population of alpine areas of Georgia. Ethnography has a long history of research in the country, and along with the results particularly intensified ethnobotanical and ethnomycological studies of the recent decades, it is interesting to synthesize the data scattered in the Georgian ethnographic sources, an attempt of which is the present paper.

Methods: The review paper is based on the Georgian ethnographic literature sources deposited at the National Parliamentary Library of Georgia (NLPG). Literature searches were performed through the NLPG catalog (https://www.nplg.¬gov.ge/geo/Catalogues) with the major keyword "Tusheti". Dictionaries of the Georgian language and specifically those of plant names were also consulted.

Results: Seventy-three species and eight genera of vascular plants (the latter without particular species as only respective generic local names were found) mentioned in the ethnographic literature sources issues before recent ethnobotanical studies (Bussmann *et al*. 2016, 2017) as well as 26 species of mushrooms mostly revealed during interviews collected in the recent decades are listed with their local names used in Tusheti. The paper presents both Latin-Georgian (Tushetian) and Georgian (Tushetian)-Latin name lists of plants and mushrooms to ease the use of the material. Methods of preparation of traditional meals of the wild herbs and mushroom are described. Plants given in various literature sources under certain local names (13 in total) were not identified.

Conclusions: The ethnographic sources on Tusheti published in the period from 1933-2007 and dictionaries of the Georgian language containing plant names and those focused on Georgian plants names from 1884-2005 present rich ethnobotanical and enthomycological material including linguistic data, which together with results of the recent studies gives comprehensive picture of human-plant interactions in the extreme eastern part of the Georgian Great Caucasus inhabitants.

Key words: Edible plants, edible mushrooms, Tusheti, Georgia, the Caucasus.

Background

Flora of Georgia contains a large number of species of "mkhaleuli", plants with edible leaves and sprouts. In the past the edible wild plants were important food source for Georgians. In the traditional diet cultivated and edible wild plants were the primary food in spring and summer. "Mkhaleuli" plants were available earlier in spring than cultivated vegetables were even sown.

As described in the Georgian dictionary of the XVIII century "mkhali" is any green sown by a man for food" (Orbeliani 1991). The word "mkhali" is found in the oldest known literary source of the Georgian language "The martyrdom of St. Shushaniki" (V c. A. D.): "She used to take only juice of mkhali and even that in small amount" (Siradze 1987). Thus, "mkhali" was called a plant used to make juicy meal for fasting.

Giorgi Merchule, a Georgian writer of the X century wrote in "The life of St. Gregory of Khandzta": "Field mkhali plants are innumerable in Tao-Klarjeti" [Tao-Klarjeti was the historical southern part of Georgia, now on the territory of Turkey] (Siradze 1987). Here "mkahli" means wild herbs.

According to the XXI century Medical book by Kananeli (1940), "mkhali is a food plant".

"The Georgian dictionary" (Chubinashvili 1961) defines "mkhali (or "balakhi", which means "herb") as "a vegetable or wild herb boiled to be eaten".

As narrated by Giorgi Mtatsmindeli (XI century), during the Great Lent the brethren of the Monastery "used to put bread and dry fruit juice and pickles and other meals alike on a table but on Mondays, Wednesdays and Fridays ate only field pea [**khnduri**, *Pisum arvense* L.] and raw mkhali and pickles, if they had, and soaked peas [**tsetrsvi**, *Pisum sativum* L.]" (Siradze 1987).

Thus, "mkhali" (also "pkhali") is a term with a long history meaning an essential component of seasonal nutrition and fasting, and owing to its usefulness in healthy diets is still traditionally used at the same time enriching the national cuisine. In Georgian language the word "mkhali" is used to indicate both an herb and a meal cooked of it (Gotsiridze 2007). According to the same author, wild plants collected in field and forest (herbs, wild fruit and berries, etc.) made up an important part of everyday diets along with cultivated plant, which had both economic and historical reasons. Poor people were often compelled to find their food in forests; during wars population fled to mountains and was dependent on wild plant resources. Besides, edible wild plants have high nutritional value being rich in vitamins and microelements. Many contain aromatic substances and give special flavor to meals.

"Kumelia-q'va" made of roasted barley was one of the major meals throughout a year in alpine areas, as it is Tusheti; besides barley cultivated in these areas other cereals such as wheat, corn, rye, as well as broad beans were also used; however, lack of vegetables and fruits in high mountains made people widely use edible wild plants instead (Makalatia 1933). Food plants are especially diverse and abundant in alpine areas, particularly in Tusheti, the eastern part of the Greater Caucasus in Georgia, as well as Khevsureti and Pshavi, traditional knowledge about edible wild plant use is best preserved (see, e.g. Bochoridze 1993, Bussmann *et al*. 2016, 2017). A number of literature sources provide valuable material on plant Georgian names including local names used in Tusheti (Abuladze 1967, Bussmann *et al*. 2016, 2017, Eristavi 1884, Makashvili 1991, Orbeliani 1991).

Materials and Methods

The paper in mostly a review based on the major available literature sources dealing with ethnography and ethnobotany of Georgia, and Tusheti, in particular (Bakhtadze & Koghuashvili 2009, Bochoridze 1993, Gotsiridze 2007, Javakhishvili 1986, Jikia 1967, 1991, Kurdghelaidze 1983, Makalatia 1933, Oshoradze 1969) as well as dictionaries of the Georgian language (Abuladze 1967, Orbeliani 1991) or specifically of plant names (Eristavi 1884, Makashvili 1991).

In the present paper plant scientific names are given according to Kestkhoveli *et al*. (1971-2011) and the fungi names according to Nakhutsrishvili (1986). The Georgian names of plants and fungi are transliterated according to a Romanization system for Georgian approved by US Board on Geographic Names (BGN)/Permanent Committee on Geographical Names (PCGN) 2009 Agreement.

The paper presents both Latin-Georgian (Tushetian) (Appendices 1, 3) and Georgian (Tushetian)-Latin (Appendices 2, 4) name lists of plants and mushrooms to ease the use of the material.

Results

Edible herbs of Tusheti

Seventy-three species and 8 genera of vascular plants (the latter without particular species as only respective generic local names were found) were identified based on the local names given in literature sources. Plants given in various literature sources under certain (13 in total) local names were not identified; these are: **khaparai** [ხაპარაი], **ts'q'lis mzhauna** [წყლის მჟაუნა] (Makalatia 1933); **shat'q'i** [შატყი], **virbat'ra** [ვირბატრა] (Javakhishvili 1986); **akhnakhesha** [ახნახეშა], **balakhai** [ბალახაი], **mamalo** [მამალო], **salat'a** [სალათა], **sajarai** [საჯარაი], **khortsavanai** [ხორცავანაი] (Jikia 1991).

Edible plants recorded in the alpine areas of East Georgia including Tusheti region in the 1990's (Jikia 1991) are (see Appendix 1 for plant local names): *Aethusa cynapium* L., *Agasyllis latifolia* (M.Bieb.) Boiss., *Allium kunthianum* Vved., *A. victorialis* L., *Amaranthus hybridus* L., *A. retroflexus* L., *Anthriscus nemorosa* (M.Bieb.) Spreng., *A. sylvestris* (L.) Hoffm., *Arctium lappa* L., *Artemisia vulgaris* L., *Aruncus dioicus* (Walter) Fernald, *Asperugo procumbens* L., *Atriplex hortensis* L., *Bunias orientalis* L., *Campanula latifolia* L., *C. rapunculoides* L., *Cannabis sativa* L., *Capsella bursa-pastoris* (L.) Medik., *Carum carvi* L., *Chaerophyllum aureum* L., *Ch. bulbosum*, *Chenopodium album* L., *Ch. foliosum* Aschers., *Cirsium rhizocephalum* C.A.Mey., *Daucus carota* L., *Erodium cicutarium* (L.) L'Hér., *Eryngium caeruleum* M.Bieb., *Falcaria vulgaris* Bernh., *Fritillaria collina* Adam, *Gadellia lactiflora* (M.Bieb.) Schulkina, *Galanthus* spp., *Galega orientalis* Lam., *Galium vaillantii* DC., *Geum urbanum* L., *Hedera* spp., *Heracleum asperum* (Hoffm.) M.Bieb., *H. leskovii* Grossh., *Lactuca serriola* L., *Lathyrus roseus* Steven, *Lilium szovitsianum* Fisch. & Avé-Lall., *Malva neglecta* Wallr., *M. sylvestris* L., *Matteuccia struthiopteris* (L.) Tod., *Mentha aquatica* L., *Myosotis sparsiflora* J.C.Mikan ex Pohl, *Petasites* spp., *Polygonum dshawachischwili* Kharkev., *Primula luteola* Rupr., *Prunus spinosa* L., *Rapistrum rugosum* (L.) All., *Rhododendron caucasicum* Pall., *Rubus saxatilis* L., *Rumex acetosa* L., *Rumex alpinus* L., *R. scutatus* L., *Satureja laxiflora* C. Koch, *Sempervivum* spp., *Seseli transcaucasicum* (Schischk.) M.Pimen. & Sdobina, *Silene lacera* (Steven) Sims, *S. wallichiana* Klotzsh., *Sinapis arvensis* L., *Sonchus* spp., *Stellaria media* (L.) Vill., *Swertia iberica* Fisch. ex Boiss., *Symphytum caucasicum* M.Bieb., *Taraxacum confusum* Schischk., *Tragopogon* spp. The author also mentioned radish, beetroot leaves, the latter still widely used for food throughout Georgia, and even potato sprouts. Decades earlier Makalatia (1933) along with some of the above listed plants also mentioned: *Urtica dioica* L., *Achillea ptarmicifolia* (Willd.) Rupr. ex Heimerl, *Polygonatum* sp.

One of the reasons for such a diversity of herbs used might be a necessity to supplement alpine diet of meat and fats with cellular tissue. Herbs were eaten raw, used to cook meals such as "mkhali", "satseba", "chave", were also stored for winter either dried or pickled.

Oshoradze (1969) classified food plants into three groups: (1) plants eaten raw, e.g. *Achillea ptarmicifolia*, *Aethusa cynapium*, *Agasyllis latifolia*, *Lapsana grandifolra* M.Bieb., H*eracleum asperum*, *H. sosnowskyi* Manden., *Polygonum dshawachischwili*, etc.; (2) plants eaten both raw and cooked, e.g. *Chaerophyllum bulbosum*, *Malva neglecta*, *Rumex scutatus*, *Silene wallichiana*, *Sinapis arvensis*, etc.; and (3) plants eaten cooked, e.g. *Allium victorialis*, *Chenopodium foliosum*, *Primula luteola*, *Rumex alpinus*, *Seseli transcaucasicum*, *Silene lacera*, *Viola arvensis* Murr., etc.

The author also described 16 species of wild plants used by the population of Tusheti as wild vegetables in the 1960's; 11 of them were used to cook "mkhali" but also had other culinary uses: *Achillea ptarmicifolia* (with a taste resembling estragon but more bitter), *Aethusa cynapium* (used raw for salad dressings), *Allium victorialis* (cooked and spiced young shoots are eaten, the herb is also stored for winter either pickled or salted), *Chaerophyllum bulbosum* (tuber is boiled, fried in fat and used as garnish with other meals; its young leaves and peeled stem are used to make soup; peeled stem it eaten raw and boiled as well as pickled), *Ch. foliosum* (leaves and young shoots are used to make "mkhali"), *Seseli transcaucasicum* (peeled stems are pickled), *Polygonum dshzwachischvili* (used for salads), *Rumex alpinus* (used to make "mkhali", "shech'amandi", a juicy mal with coarse flour, "chave" in summer of fresh and in winter of dried plant), *R. scutatus* (pickled separately or mixed with *Chaerophyllum bulbosum*; thought to be best dressing for soups and salads because of sour taste), *Silene wallichiana* (used to make "mkhali"), *Sinapis arvensis* (young stem and leaves are used for salads, "mkhali" and "khinkali" filling mixed with curds).

Bussmann *et al*. (2016, 2017) list 317 plant species belonging to 203 genera of 80 families being used in Tusheti, Khevsureti and Pshavi. Of these, 197 species were exclusively wild-harvested, 73 grown in homegardens, and 47 both grown in gardens and sourced in the wild.

Wild edible herb meals

Plants eaten raw and as "sats'eba"

In Tusheti a number of herbs were eaten raw or used fresh to make a meal called "sats'eba"; these were: *Chaerophyllum bulbosum, Rapistrum rigosum* (L.) All., *Achillea ptarmicifolia, Agasyllis latifolia*, *Campanula tridentata* Schreb., *Heracleum asperum*, *Rumex acetosa, Sedum caucasicum* (Grossh.) Boriss., *Conium maculatum* L. [although a poisonous plant], *Carum carvi,* etc. (Bakhtadze & Koghuashvili 2009, Jikia 1967, 1991, Kurdghelaidze 1983, Makalatia 1933). Bakhtadze and Koghuashvili (2009) also mention a plant mariama [მარიამა], which was not identified. "Sats'eba" was prepared as follows: fresh young leaves and peeled stems of various herbs were finely chopped and placed in deep plates; sour cream or "mats'oni" (a Georgian sour milk) or slightly fermented milk mixed with fresh curds was salted and poured onto chopped herbs; or more often small balls were formed of the chopped herbs and dipped into sour cream, "mats'oni", or milk with curds. Particularly the following plants were used for "sats'eba": *Aethusa cynapium*, *Chaerophyllum bulbosum*, *Lapsana grandiflora*, *Polygonum dshzwachischvili*, *Rumex scutatus*, *Sinapis arvensis*, etc. The best were plants with sour taste such as *P. dshzawachischvili, R. scutatus.* "Sats'eba" was eaten before dinner, or in hot weather several times a day. It was thought that "sats'eba" before major meals acts as an appetizer (Oshoradze 1969).

"Mkhali"

Some herbs were boiled and mixed with salted melted butter to cook "mkhali"; these herbs were: *Agasyllis latifolia*, *Allium victorialis*, *Arctium lappa*, *Bunias orientalis*, *Chaerophyllum bulbosum, Chenopodium album*, *Ch. foliosum*, *Cirsium rhizocephalum*, *Malva neglecta*, *M. sylvestris*, *Matteuccia struthiopteris*, *Petasites* spp., *Primula luteola*, *Rumex alpinus*, *Seseli transcaucasicum*, *Silene lacera*, *Taraxacum confusum*, *Urtica dioica*, *Tragopogon* spp.*,* etc. Young potato shoots were also used for "mkhali". The herbs were sorted out, poured into boiling water, squashed in hands, and chopped; melted butter was heated in a pot, and when it started boiling, the chopped herbs were poured on it, the mass was salted, and the ingredients mixed with each other (Javakhishvili 1986, Makalatia 1933).

In Tusheti there were several ways of "mkhali" preparation: (i) thoroughly sorted out and washed herbs were placed in a pot and heated without water, then cooled on a colander, chopped and mixed with onion stewed in melted butter, also eggs and salt; (ii) herbs were cooked in the same way but fresh curds was additionally mixed with the herb meal; (iii) cooked herbs were seasoned with vinegar, garlic and salt. The first two methods were used for *Chenopodium foliosum*, *Silene lacera, S. wallichiana*, *Sinapis arvensis*, and the third one was used for *Rumex alpinus* (fresh or dry) (Oshoradze 1969).

"Chave"

Meals made of herbs dried for winter are called "chave" and in the name of a respective meal the term is added to the vernacular name of each particular herb, e.g. "gholos chave" made of *Rumex alpinus*, "buerais chave" made of *Petasites* spp., *etc*.

„*Mentha aquatica*, *Agasyllis latifolia*, *Rumex alpinus*, *Seseli transcaucasicum, Taraxacum confusum* are dried for "chave" but the best is "chave" made of *A. latifolia*; the herbs are boiled, the broth drained but my mother kept it as she believed that the first broth was good for health. Dried "khashi" (intestines of cow and sheep) was boiled as well as fatty potions of cattle and ship stomach, which were boiled separately as the latter needed longer boiling. Then "khashi" and herbs were further boiled together in their mixed first broth, milk was added and a little flour for thickening. Salt and garlic were optionally added.

Beetroot leaves, *Bunias orientalis*, *Carum carvi*, *Lactuca serriola* L. or *Rumex* sp. (one of the identities of **kharnuq'a**; see Appendix 2), *Lapsana grandiflora*, *Mentha aquatica*, *Petasites* spp., *Polygonatum* spp., *Primula luteola*, *Prunus spinosa*, *Rumex alpinus*, *Satureja laxiflora*, *Seseli transcaucasicum*, *Taraxacum confusum* were plaited in so-called "kudiebi" or "gala" and dried for winter "chave"; herbs were dried indoors but not above the fireplace to avoid fumigation and bitterness of taste; the herbs were never dried under the direct sunlight as it resulted in crumbling of the dried plants (Jikia 1967, 1991). A part of the plait was dipped in hot water for 5 to 10 minutes to remove the bitterness of some herbs, then drained, chopped, mixed with ham, "bari" (cleaned intestines of cattle), cattle stomach cut into long pieces, heart and liver stored salted, "tsmeli" (salted and dried cattle belly fat), and boiled in water; while boiling milk was added in the same amount as water; finally the meal was salted.

"Kveri" ("Khinkali")

In Tusheti some wild herbs were used as "kveri" filling components. It Tusheti "kveri" is the name for dumplings consisting of a filling wrapped in thin dough. Such dumplings are usually called "khinkali" in Georgian but in Tusheti "khinkali" is the name for a certain kind of a ritual bread used during funeral services. *Urtica dioica, Allium victorialis,* potato with meat, butter and curds are wrapped in dough and boiled (Javakhishvili 1986).

Cheese

In Tusheti (as well as Pshavi) *Rumex* spp. leaves were laid in a hole dig in the ground "to make good cheese" (Makalatia 1933).

Pickled herbs

Achillea ptarmicifolia, *Aethusa cynapium*, *Allium victorialis*, *Chaerophyllum bulbosum*, *Chenopodium foliosum*, *Heracleum asperum*, *Rhododendron caucasicum*, *Sedum caucasicum*, *Campanula tridentata*, *Carum carvi*, *Seseli transcaucasicum*, *Sinapis arvensis*, etc. were pickled (Bakhtadze & Koghuashvili 2009, Javakhishvili 1986, Makalatia 1933). Javakhishvili (1986) also mentions **shat'q'i** [შატყი] and **virbat'ra** [ვირბატრა], which were not identified. Leaves and peeled flowering stems were pickled: cleaned material was put into a pot, then boiled and cooled salted water was poured onto the mass. Some plants such as *Allium victorialis* were scalded in advance to speed up the fermentation process. Sometimes pickles of mixed herbs were made, e.g. *Rumex scutatus* is good with *Chaerophyllum bulbosum*. These were mainly summer pickles (Oshoradze 1969).

Spices

Satureja laxiflora was used as a spice (Makalatia 1933). The author also mentions **ts'q'lis mzhauna** [წყლის მჟაუნა], which was not identified.

Tea

Tea was made of *Mentha aquatica*, *Thymus* spp., *Valeriana officinalis* L., leaves of *Rhododendron caucasicum*, *Vaccinium arctostaphylos* L., *V. myrtillus* L. (Makalatia 1933).

Edible mushrooms in Tusheti

Jorjadze *et al*. (2016) reported use of 26 species of edible mushroom in Tusheti. Some groups of these species are mentioned under the same generic local names (see Appendix 3 for the list of species with respective local names). Mushrooms are mainly dried for winter use, when they are soaked in water and used as filling for "khinkali".

Declarations

List of abbreviations: Review - Not applicable.
Ethics approval and consent to participate: Literature review - Not applicable.
Consent for publication: Not applicable.
Availability of data and materials: Available from the corresponding author.
Competing interests: The authors declare no competing interests.
Funding: Not applicable.
Authors' contributions: All authors participated equally in the manuscript and approved the final version.

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Appendix 1. List of wild edible herbs traditionally used in Tusheti, with local names.

Achillea ptarmicifolia (Willd.) Rupr.ex Heimerl: jortk'udai [ჯორთკუდაი]

Aethusa cynapium L.: mariamdzmara [მარიამძმარა]

Agasyllis latifolia (M.Bieb.) Boiss.: dusi [დუსი], dutsi [დუცი]

Allium kunthianum Vved.: t'usa [ტუსა]

Allium victorialis L.: basho [ბაშო], ghandzili [ღანძილი], shebu [შებუ]

Allium ssp.: ganadirebuli khakhvi [განადირებული ხახვი]

Amaranthus hybridus L.: ts'itelmkhala [წითელმხალა]

Amaranthus retroflexus L.: tetrmkhala [თეთრმხალა], titmavala [თითმავალა]

Anthriscus nemorosa (M.Bieb.) Spreng.: q'rolai [ყროლაი]

Anthriscus sylvestris (L.) Hoffm.: maq'alordza [მაყალორძა], maq'rants'elai [მაყრანწელაი]

Arctium lappa L.: dilkhamai [დილხამაი], dzirkhvenai [ძირხვენაი], dzikhvnis tavi [ძირხვნის თავი]

Artemisia vulgaris L.: jorik'udai [ჯორიკუდაი]

Aruncus dioicus (Walter) Fernald: mekendzela [მეკენძელა], nadirmkhalai [ნადირმხალაი]

Asperugo procumbens L.: erbovana [ერბოვანა]

Atriplex hortensis L.: tatami [თათამა]

Bunias orientalis L.: gomat'i [გომატი], khat'ot'i [ხატოტი], khokhnot'a [ხოხნოტა], t'it'a [ტიტა]

Campanula lactiflora M.Bieb.: k'enk'eshai [კენკეშაი], muk'udo [მუკუდო]

Campanula latifolia L.: alvashai [ალვაშაი]

Campanula rapunculoides L.: k'ats'a [კაწა], mochik'ais t'ara [მოჩიკაის ტარა]

Campanula tridentata Schreb.: kartskhvi [ქარცხვი]

Cannabis sativa L.: k'anapa [კანაფა]

Capsella bursa-pastoris (L.) Medik.: chit'is ts'its'mat'a [ჩიტის წიწმატა], khavarta [ხავარტა], khach'ich'ora [ხაჭიჭორა]

Carum carvi L.: k'vlia [კვლია], k'vliava [კვლიავა]

Chaerophyllum aureum L.: lakhch'ima [ლახჭიმა], khozo [ხოზო]

Chaerophyllum bulbosum L.: saskhep'i [სასხეპი], pkholi [ფხოლი], pkholitavai [ფხოლითავაი], ghimi [ღიმი], ch'ima [ჭიმა], khipkholai [ხიფხოლაი]

Chenopodium album L.: tatabo [თათაბო], tatami [თათამა], mokhevuri mkhalai [მოხევური მხალაი], natsarkatama [ნაცარქათამა]

Chenopodium foliosum Aschers.: matuta [მათუთა], matuti [მათუთი], dzaghltzhola [ძაღლთჟოლა]

Cirsium rhizocephalum C.A.Mey.: gozint'ari [გოზინტარი], tkhadzudzai [თხაძუძაი]

Cirsium spp.: narai [ნარაი] (three kinds: field, mountain, and cereal cropfield narai)

Daucus carota L.: shushanai [შუშანაი]

Erodium cicutarium (L.) L'Hér.: bat'ispekhai [ბატისფეხაი]

Eryngium caeruleum M.Bieb.: nartsetskhla [ნარცეცხლა]

Falcaria vulgaris Bernh.: k'omchkhalai [კომჩხალაი]

Fritillaria collina Adam: k'it'ra k'oshola [კიტრა კოშოლა], mtis k'it'ra [მთის კიტრა]

Galanthus spp.: t'q'is niora [ტყის ნიორა]

Galega orientalis Lam.: khbosshublai [ხბოსშუბლაი]

Galium vaillantii DC.: baq'aq'ispekhi [ბაყაყისფეხი]

Geum urbanum L.: mariamkhela მარიამხელა

Hedera spp.: suro [სურო]

Heracleum asperum (Hoffm.) M.Bieb.: shupq'ai [შუპყაი]

Heracleum leskovii Grossh.: apq'i [აპყი],lagi [ლაგი]

Heracleum spp.: diq'i [დიყი]

Lactuca serriola L.: kharnuq'ai [ხარნუყაი]

Lapsana grandifolra M.Bieb.: mts'are kharnuq'a [მწარე ხარნუყა]

Lathyrus roseus Steven: ch'ek'unt'ela [ჭეკუნტელა], ch'ek'usts'vera [ჭეკუსწვერა]

Lilium szovitsianum Fisch. & Avé-Lall.: virdutsai [ვირდუცაი], k'it'rik'obala [კიტრიკობალა], kartuli k'it'rana [ქართული კიტრანა], chuguk'it'ra [ჩუგუკიტრა]

Malva neglecta Wallr.: balba [ბალბა]

Malva sylvestris L.: balba [ბალბა]
Matteuccia struthiopteris (L.) Tod.: chada [ჩადა], chadunai [ჩადუნაი]
Mentha aquatica L.: p'it'na [პიტნა]
Myosotis sparsiflora J.C.Mikan ex Pohl: tik'niq'ura [თიკნიყურა]
Petasites spp.: buerai [ბუერაი]
Polygonatum sp.: svintri [სვინტრი]
Polygonum dshawachischwili Kharkev.: zhartkhali [ჟართხალი], ts'artkhali [წართხალი], ch'ertlhala [ჭერთხალა]
Primula luteola Rupr.: vashlisulai [ვაშლისულაი]
Prunus spinosa L.: k'vinchkha [კვინჩხა]
Rapistrum rugosum (L.) All.: bolok'a [ბოლოკა], shalgi [შალგი]
Sedum caucasicum (Grossh.) Boriss. (*Sedum maximum* subsp. *ruprechtii* (Jalas) Soó): k'ldisduma [კლდისდუმა]
Sempervivum spp.: pkhijai [ფხიჯაი]
Seseli transcaucasicum (Schischk.) M.Pimen. & Sdobina: sasuka [სასუქა]
Silene lacera (Steven) Sims: kvishamkhala [ქვიშამხალა]
Silene wallichiana Kotzsch.: mch'ivanai [მჭივანაი]
Sinapis arvensis L.: gierai [გიერაი], mdogvi [მდოგვი]
Sonchus spp.: ghorinats'q'la [ღორინაწყლა], tskhenis sakhvremai [ცხენის სახვრემაი]
Stellaria media (L.) Vill.: osurmkhala [ოსურმხალა], junjruk'i [ჯუნჯრუკი], chit'istolai [ჩიტისთოლაი], ts'vrilmkhala [წვრილმხალა]
Swertia iberica Fisch. ex Boiss.: gabluarai [გაბლუარაი]
Symphytum caucasicum M.Bieb.: ts'engara [წენგარა]
Taraxacum confusum Schischk.: saghvidzlai [საღვიძლაი]
Thymus spp.: begkondara [ბეგქონდარა]
Tragopogon spp.: vatsits'vera [ვაციწვერა], mdzivanai [მძივანაი]
Urtica dioica L.: ch'inch'ari [ჭინჭარი]
Vaccinium arctostaphylos L.: motsvi [მოცვი]
Vaccinium myrtillus L.: motsvi [მოცვი]
Valeriana officinalis L.: gulbandi [გულბანდი]
Viola arvensis Murr.: p'at'ardzala [პატარძალა]

Appendix 2. Local names of wild edible herbs traditionally used in Tusheti with respective species identities.

Alvashai [ალვაშაი]: *Campanula latifolia* L.
Apq'i [აპყი]: *Heracleum leskovii* Grossh.
Balba [ბალბა]: *Malva neglecta* Wallr., *Malva sylvestris* L.
Baq'aq'ispekhi [ბაყაყისფეხი]: *Galium vaillantii* DC.
Basho [ბაშო]: *Allium victorialis* L.
Begkondara [ბეგქონდარა]: *Thymus* spp.
Bolok'a [ბოლოკა]: *Rapistrum rugosum* (L.) All.
Buerai [ბუერაი]: *Petasites* spp.
Ch'ek'ara [ჭეკარა]: *Rumex alpinus* L.
Ch'ek'unt'ela [ჭეკუნტელა]: *Lathyrus roseus* Steven
Ch'ek'usts'vera [ჭეკუსწვერა]: *Rumex alpinus* L.
Ch'ertkhala [ჭერთხალა]: *Polygonum dshawachischwilii* Kharkev.
Ch'ima [ჭიმა]: *Chaerophyllum bulbosum* L.
Ch'inch'ari [ჭინჭარი]: *Urtica dioica* L.
Chada [ჩადა]: *Matteuccia struthiopteris* (L.) Tod.
Chim'i [ჭიმი]: *Chaerophyllum bulbosum* L.
Chit'is ts'its'mat'a [ჩიტის წიწმატა]: *Capsella bursa-pastoris* (L.) Medik.
Chit'istola [ჩიტისთოლა]: *Stellaria media* (L.) Vill.
Chuguk'it'ra [ჩუგუკიტრა]: *Lilium szovitsianum* Fisch. & Avé-Lall.
Dek'a [დეკა]: *Rhododendron caucasicum* Pall.
Dilkhamai [დილხამაი]: *Arctium lappa* L.
Diq'i [დიყი]: *Heracleum* spp.
Dusi [დუსი]: *Agasyllis latifolia* (M.Bieb.) Boiss.
Dutsi [დუცი]: *Agasyllis latifolia* (M.Bieb.) Boiss.
Dzaghltzhola [ძაღლთჟოლა]: *Chenopodium foliosum* Aschers.
Dzirkhvenai [ძირხვენაი]: *Arctium lappa* L.
Dzirkhvnis tavi [ძირხვნის თავი]: *Arctium lappa* L.
Erbovana [ერბოვანა]: *Asperugo procumbens* L.
Gabluarai [გაბლუარაი]: *Swertia iberica* Fisch. Ex Boiss.
Ganadirebuli khakhvi [განადირებული ხახვი]: *Allium* spp.
Ghandzili [ღანძილი]: *Allium victorialis* L.
Gholo [ღოლო]: *Rumex alpinus* L.
Ghorinats'q'la [ღორინაწყლა]: *Sonchus* spp.
Giera [გიერა]: *Sinapis arvensis* L.
Gomat'i [გომატი]: *Bunias orientalis* L.
Gozint'ara [გოზინტარა]: *Cirsium rhizocephalum* C.A.Mey.
Gulbandi [გულბანდი]: *Valeriana officinalis* L.
Jorik'udai [ჯორიკუდაი]: *Artemisia vulgaris* L.
Jortk'uda [ჯორთკუდა]: *Achillea ptarmicifolia* (Willd.) Rupr. Ex Heimerl
Junjruk'i [ჯუნჯრუკი]: *Stellaria media* (L.) Vill.
K'anapa [კანაფა]: *Cannabis sativa* L.
K'ats'a [კაწა]: *Campanula rapunculoides* L.
K'enk'eshai [კენკეშაი]: *Gadellia lactiflora* (M.Bieb.) Schulkina
K'it'rak'oshola [კიტრაკოშოლა]: *Fritillaria collina* Adam
K'it'rik'obala [კიტრიკობალა]: *Lilium szovitsianum* Fisch. & Avé-Lall.
K'ldisduma [კლდისდუმა]: *Sedum caucasicum* (Grossh.) Boriss. (*S. maximum* subsp. *ruprechtii* (Jalas) Soó)
K'omchkhalai [კომჩხალაი]: *Falcaria vulgaris* Bernh.
K'vinchkha [კვინჩხა]: *Prunus spinosa* L.
K'vlia [კვლია]: *Carum carvi* L.
K'vliava [კვლიავა]: *Carum carvi* L.

Kartskhvi [ქარცხვი]: *Campanula tridentata* Schreb.
Kartuli k'it'rana [ქართული კიტრანა]: *Lilium szovitsianum* Fisch. & Avé-Lall.
Khach'ich'ora [ხაჭიჭორა]: *Capsella bursa-pastoris* (L.) Medik.
Kharnuq'ai [ხარნუყაი]: *Rumex* spp., *Lactuca serriola* L.
Khatoti [ხატოტი]: *Bunias orientalis* L.
Khavart'a [ხავარტა]: *Capsella bursa-pastoris* (L.) Medik.
Khbos shublai [ხბოს შუბლაი]: *Galega orientalis* Lam.
Khipkholai [ხიფხოლაი]: *Chaerophyllum bulbosum* L.
Khozo [ხოზო]: *Chaerophyllum aureum* L.
Kondari [ქონდარი]: *Satureja laxiflora* K.Koch
Kvishamkhala [ქვიშამხალა]: *Silene lacera* (Steven) Sims
Kvishis mzhavia [ქვიშის მჟავია]: *Rumex scutatus* L.
Lagi [ლაგი]: *Heracleum leskovii* Grossh.
Lakhch'ima [ლახჭიმა]: *Chaerophyllum aureum* L.
Lakhtara [ლახტარა]: *Rumex scutatus* L.
Maq'alordza [მაყალორძა]: *Anthriscus sylvestris* (L.) Hoffm.
Maq'rants'ela [მაყრანწელა]: *Anthriscus sylvestris* (L.) Hoffm.
Mariamdzamara [მარიამძმარა]: *Aethusa cynapium* L.
Mariamkhela [მარიამხელა]: *Geum urbanum* L.
Masist'ara [მასისტარა]: *Rumex acetosa* L.
Matuti [მათუთი]: *Conium maculatum* L.
Mch'ivana [მჭივანა]: *Silene wallichiana* Kotzsch.
Mdogvi [მდოგვი]: *Sinapis arvensis* L.
Mdzivanai [მძივანაი]: *Tragopogon* spp.
Mek'emdzela [მეკენძელა]: *Aruncus vulgaris* Raf. (*A. dioicus* (Walter) Fernald)
Mochik'ais t'ari [მოჩიკაის ტარი]: *Campanula rapunculoides* L.
Mokhevuri mkhali [მოხევური მხალი]: *Chenopodium album* L.
Motsvi [მოცვი]: *Vaccinium arctostaphylos* L., *V. myrtillus* L.
Mtis k'it'ra [მთის კიტრა]: *Fritillaria collina* Adam
Mts'are kharnuq'a [მწარე ხარნუყა]: *Lapsana grandifolra* M.Bieb.
Mts'q'ertipkla [მწყერთიფქლა]: *Rubus saxatilis* L.
Muk'udo [მუკუდო]: *Gadellia lactiflora* (M.Bieb.) Schulkina
Mzhavana [მჟავანა]: *Rumex acetosa* L.
Mzhavela [მჟაველა]: *Rumex acetosa* L.
Mzhavia [მჟავია]: *Rumex acetosa* L.
Nadirmkhala [ნადირმხალა]: *Aruncus vulgaris* Raf. (*A. dioicus* (Walter) Fernald)
Narai [ნარაი]: *Cirsium* spp.
Nartsetskhla [ნარცეცხლა]: *Eryngium caeruleum* M.Bieb.
Natsarkatama [ნაცარქათამა]: *Chenopodium album* L.
Osurmkhala [ოსურმხალა]: *Stellaria media* (L.) Vill.
P'at'ardzala [პატარძალა]: *Viola arvensis* Murr.
P'it'na [პიტნა]: *Mentha aquatica* L.
Pkhijai [ფხიჯაი]: *Sempervivum* spp.
Pkholi [ფხოლი]: *Chaerophyllum bulbosum* L.
Pkholitavai [ფხოლითავაი]: *Chaerophyllum bulbosum* L.
Q'rolai [ყროლაი]: *Anthriscus nemorosa* (M.Bieb.) Spreng.
Saghvidzla [საღვიძლა]: *Taraxacum confusum* Schischk.
Sagogai [საგოგაი]: *Rumex alpinus* L.
Saskhepi [სასხეპი]: *Chaerophyllum bulbosum* L.
Sasuka [სასუქა]: *Seseli transcaucasicum* (Schischk.) M.Pimen.& Sdobina
Shebu [შებუ]: *Allium victorialis* L.

Shup’q’a [შუპყა]: *Heracleum asperum* (Hoffm.) M.Bieb.
Shushanai [შუშანაი]: *Daucus carota* L.
Suro [სურო]: *Hedera* spp.
Svintri [სვინტრი]: *Polygonatum* spp.
T’it’a [ტიტა]: *Bunias orientalis* L.
T’q’is niora [ტყის ნიორა]: *Galanthus* spp.
T’usa [ტუსა]: *Allium kunthianum* Vved.
Tatabo [თათაბო]: *Chenopodium album* L.
Tatama [თათამა]: *Atriplex hortensis* L., *Chenopodium album* L.
Tetrmkhala [თეთრამხალა]: *Amaranthus retroflexus* L.
Tik’niq’ura [თიკნიყურა]: *Myosotis sparsiflora* J.C.Mikan ex Pohl
Titmavala [თითმავალა]: *Amaranthus retroflexus* L.
Tkhadzudzai [თხაძუძაი]: *Cirsium rhizocephalum* C.A.Mey.
Ts’engara [წენგარა]: *Symphytum caucasicum* M.Bieb.
Ts’itelmkhala [წითელმხალა]: *Amaranthus hybridus* L.
Ts’vrilmkhala [წვრილმხალა]: *Stellaria media* (L.) Vill.
Tsartkhali [წართხალი]: *Polygonum dshawachischwili* Kharkev.
Tskhenis sakhvremai [ცხენის სახვრემაი]: *Sonchus* spp.
Vashlisula [ვაშლისულა]: *Primula luteola* Rupr.
Virdutsai [ვირდუცაი]: *Lilium szovitsianum* Fisch. & Avé-Lall.
Zhartkhali [ჟართხალი]: *Polygonum dshawachischwilii* Kharkev.

Appendix 3. List of wild edible mushrooms traditionally used in Tusheti; local names of the mushroom species are given according to the interviews collected in Tusheti in 2014 (Jorjadze et al., 2016).

Agaricus arvensis Schaeff.: kama [ქამა]
Agaricus campestris L.: kama [ქამა]
Agaricus silvaticus Schaeff.: kama [ქამა]
Agaricus tabularis Peck: kama [ქამა]
Boletus edulis Bull.: datvis zok'o [დათვის ზოკო]
Boletus erythropus Pers.: datvis zok'o [დათვის ზოკო]
Bovista nigrescens Pers.: tsuana zok'o [ცუანა ზოკო]
Bovista plumbea Pers.: tsuana zok'o [ცუანა ზოკო]
Calvatia gigantea (Batsch) Lloyd: purpasha [ფურფაშა], turpasha [თურფაშა]
Cantharellus cibarius Fr.: miklio [მიქლიო]
Hydnum repandum Fr.: khbost'ucha [ხბოსტუჩა]
Lactarius deliciosus (L.) Gray: mch'ada [მჭადა]
Lactarius piperatus (L.) Pers.: arq'a [არყა]
Leccinum aurantiacum (Bull.) Gray: datvis zok'o [დათვის ზოკო]
Leccinum scabrum (Bull.) Gray: datvis zok'o [დათვის ზოკო]
Lepista personata (Fr.) Cooke: melnisdzira [მელნისძირა]
Lepista sordida (Schumach.) Singer: melana [მელანა], ghrubela [ღრუბელა]
Lycoperdon perlatum Pers.: tsuana zok'o [ცუანა ზოკო]
Lycoperdon pyriforme Schaeff.: tsuana zok'o [ცუანა ზოკო]
Macrolepiota excoriata (Schaeff.) Wasser: ts'erets'o [წერეწო]
Macrolepiota procera (Scop.) Singer: ts'erets'o [წერეწო]
Marasmius oreades (Bolton) Fr.: ts'riala [წრიალა]
Ramaria flava (Schaeff.) Quél.: sachechela [საჩეჩელა]
Russula rosea Schaeff. ex Pers.: ts'itelk'aba [წითელკაბა]
Sparassis crispa Fr.: purpashva [ფურფაშვა], dzhghibla [ჯღიბლა]
Suillus granulatus (L.) Kuntze: zeta [ზეთა]

Appendix 4. Wild edible mushrooms traditionally used in Tusheti by their alphabetically arranged local names; local names of the mushroom species are given according to the interviews collected in Tusheti in 2014 (Jorjadze *et al*., 2016).

Arq'a [არყა]: *Lactarius piperatus* (L.) Pers.

Datvis zok'o [დათვის ზოკო]: *Boletus edulis* Bull., *B. erythropus* Pers., *Leccinum aurantiacum* (Bull.) Gray, *L. scabrum* (Bull.) Gray

Dzhghibla [ჯღიბლა]: *Sparassis crispa* Fr.

Ghrubela [ღრუბელა]: *Lepista sordida* (Schumach.) Singer

Kama [ქამა]: *Agaricus arvensis* Schaeff., *A. campestris* L., *A. silvaticus* Schaeff., *A. tabularis* Peck

Khbost'ucha [ხბოსტუჩა]: *Hydnum repandum* Fr.

Mch'ada [მჭადა]: *Lactarius deliciosus* (L.) Gray

Melana [მელანა]: *Lepista sordida* (Schumach.) Singer

Melnisdzira [მელნისძირა]: *Lepista personata* (Fr.) Cooke

Miklio [მიქლიო]: *Cantharellus cibarius* Fr.

Purpasha [ფურფაშა]: *Calvatia gigantea* (Batsch) Lloyd

Purpashva [ფურფაშვა]: *Sparassis crispa* Fr.

Sachechela [საჩეჩელა]: *Ramaria flava* (Schaeff.) Quél.

Ts'erets'o [წერეწო]: *Macrolepiota excoriata* (Schaeff.) Wasser, *M. procera* (Scop.) Singer:

Ts'itelk'aba [წითელკაბა]: *Russula rosea* Schaeff. Ex Pers.

Ts'riala [წრიალა]: *Marasmius oreades* (Bolton) Fr.

Tsuana zok'o [ცუანა ზოკო]: *Bovista nigrescens* Pers., *B. plumbea* Pers., *Lycoperdon perlatum* Pers., *L. pyriforme* Schaeff.

Turpasha [თურფაშა]: *Calvatia gigantea* (Batsch) Lloyd

Zeta [ზეთა]: *Suillus granulatus* (L.) Kuntze