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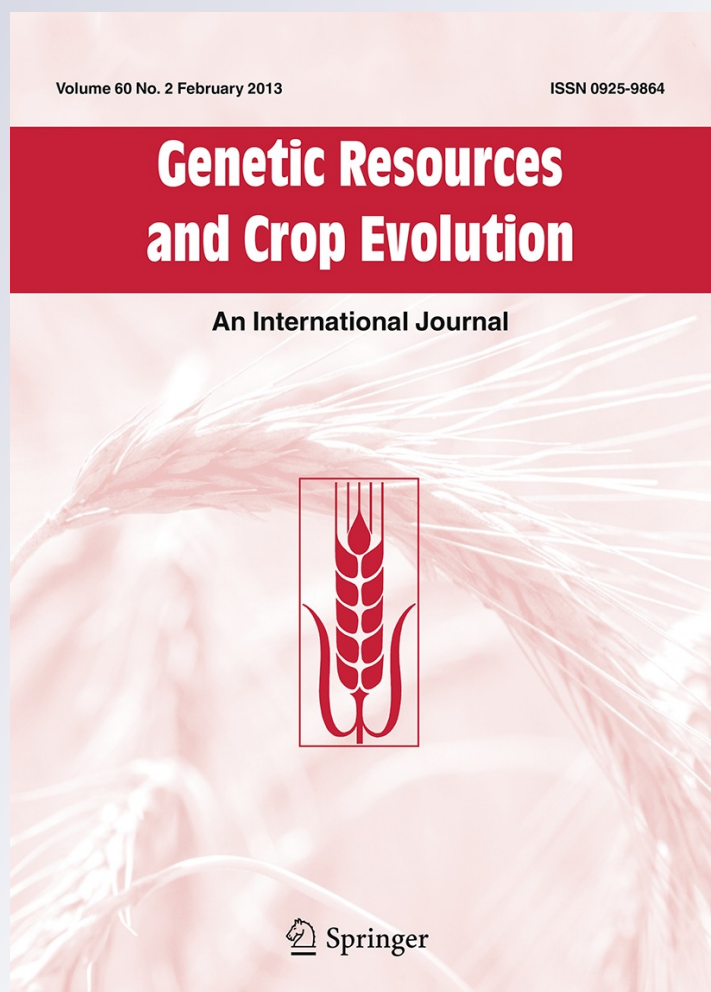
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# Traditional uses of wild food and medicinal plants among Brigasc, Kyé, and Provençal communities on the Western Italian Alps

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**Abstract** An ethnobotanical field study on the traditional uses of wild medicinal and food plants was conducted in three linguistically distinct mountainous communities located at the East End of the Occitan macro-area, in the Western Italian Alps. Interviews with a total of 81 mid-aged and elderly informants were undertaken using standard ethnobotanical methods. The uses of 92 vascular plants belonging to 40 different plant families were recorded. Comparison of the collected data with the ethnobotanical findings of previously conducted studies in other Occitan/Provençal valleys (specifically the Stura and Varaita valleys) has shown that nearly the half of the uses recorded in this study were not reported in other valleys, strongly suggesting a heterogeneous character to Occitan ethnobotany. The specific uses of certain wild plants as famine foods and medicines in this region are highlighted.

**Keywords** Alps · Piedmont · Ethnobotany · Occitans · Briga · Kyé · Famine food · Traditional knowledge

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## Introduction

The ethnobotany of European diasporas, “linguistic isles”, and ethnic minority groups, following the pioneering work of Attila Szabo and co-workers in Transylvania (Szabó and Péntek 1976), has been the focus in recent years of an increasing number of field studies, as for example among Arbëreshë Albanians (Pieroni et al. 2002a, b; Hammer et al. 2011; Laghetti et al. 2011) and Greeks (Nebel et al. 2006) in Southern Italy, Istro-Romanians in Croatia (Pieroni et al. 2003), Albanians in Serbia (Pieroni et al. 2011), Russland-deutsche in South-Western Germany (Pieroni and Gray 2008), and Poles in Argentina (Zamudio et al. 2010; Kujawska et al. 2012).

The aims of these studies have been to record the names and uses of wild plants, and to especially point out unusual perceptions and/or neglected landraces. Moreover, these studies have helped to form our understanding of the ways that traditional knowledge (TK) concerning plants is shaped at cultural edges, and how it adapts and changes in the face of new environmental and socio-cultural contexts.

Transmission of ethnobotanical knowledge represents one of the several means through which diasporas may engage in cultural negotiations with their new hosts (Pieroni and Vandebroek, and chapters therein, 2007; de Madeiros et al. 2012).

In this study, three linguistically diverse mountainous communities located at the East End of the Occitan macro-area, in the Western Italian Alps,

participated in an ethnobotanical survey: the Alpine Provençal communities of the Grana and Gesso valleys, the Kyé speaking community of Prea, and the Brigasc/Alpine Ligurian community of Briga Alta.

The objectives of this study were:

- to record the ethnobotany related to wild food and medicinal plants of these communities;
- to compare the collected data among them, and with those available in the recent ethnobotanical literature of the same area;
- to contribute to an understanding of the overlaps among the ethnobotanies of different communities at the cultural edge between Occitan and Gallo-Italic languages.

## Methodology

### Selected sites

Figure 1 shows the location of the study sites, while Table 1 briefly summarises their geography and demography.

In all of our study sites, the traditional small-scale agro-pastoral activities and especially pastoral activities,

**Fig. 1** Location of the four study sites within the linguistic map of Piedmont, North-West Italy



which were predominant until the first half of the twentieth century, are mostly abandoned today. This shift in the socio-economic structure of the community landscape has been directed by the more recent trend of emigration to the valley towns for purposes of employment, whereas the mountainous villages are occupied primarily by an elderly population, who still manage small home gardens and gather a few wild plants.

In the Gesso and Grana valleys, varieties of the Alpine Provençal language are spoken. This language is also spoken in many other valleys of South-Western Piedmont and on the French side of the same Alps. The association of these varieties with the linguistic Occitan macro-area is considered mainly the result of socio-political perceptions more than that of objective linguistic commonalities (Toso 2006, 2008a).

Prea (Ellero Valley)—much like other tiny villages in the two surrounding valleys—is the centre of a unique language known as Kyé. This is classified by linguists as a peculiar variety of Alpine Provençal, which shows eccentric characteristics due to the isolation of this enclave from the “bulk” of the Alpine Provençal-speaking territory (Fig. 1) and to its proximity to the linguistic borders between Piedmontese and Ligurian (Grassi 1969; Toso 2006).

Finally, Briga Alta represents what nowadays remains in the Italian territory of a formerly larger

**Table 1** Selected study sites

Valley/area	Municipalities (in local language): selected village(s)	Language	Altitude of the municipality center	Population <sup>a</sup>	Number of interviews
Gesso valley	Entracque (Antrègue) and Valdieri (Vaudier): Entracque, Valdieri, Andonno, and Sant'Anna di Valdieri	Alpine Provençal	904 m a.s.l.	Ca. 1800	25
Grana valley	Castelmagno (Chastelmanh)	Alpine Provençal	1,150 m a.s.l.	Ca. 80	23
Ellero valley	Roccaforte Mondovì: Prea	Kyé (“eccentric” Alpine Provençal)	838 m a.s.l.	Ca. 200	24
Brigasc area	Briga Alta (Ra Briga Auta): Piaggia, Carnino, Upega	Brigasc (Alpine Ligurian)	1,310 m a.s.l.	Ca. 50	9

<sup>a</sup> Inhabitants are largely overestimated by the official municipal statistics, since a large part of them lives actually there only during the summer

municipality, which, since the end of the 2nd World War, has been included in the French territory (La Brigue). The local language, Brigasc, despite a few recent local claims on the Italian side to be part of the Occitan macro-area, represents a conservative variety of Alpine Ligurian, which however for historical reasons retains a lexicon showing a few Provençal elements (Toso 2008b).

### Field study

Eighty-one mid-age and elderly informants were selected using snowball techniques for participation in interviews (Russell Bernard 2005). The focus of the interviews was on the folk knowledge of wild food and medicinal plants. We also included information regarding folk ethnoveterinary practices, i.e. those related to specific wild fodder plants thought to be important for improving the quality of the animal and dairy products, as well as wild honey plants.

Prior informed consent was obtained verbally before commencing each interview and the Code of Ethics of the International Society of Ethnobiology (ISE 2008) was followed.

Questions about the use of folk medicines were asked using free-listing, semi-structured, and open interviews. The quoted wild plant species were collected, when available, verified by our interviewees, identified according to Pignatti's Flora d'Italia (Pignatti 1997), and finally stored at the Herbarium of the University of Gastronomic Sciences. Plant family assignments follow the current Angiosperm

Phylogeny Group designations (Stevens 2001). Folk taxa, for which vouchers could not be collected, were identified using their local names and using the interviewees' in-depth description of the plant. Quoted folk plant names were transcribed using the rules of the Italian language.

### Data analysis

The data collected during the field study were entered into Microsoft® Excel for analysis.

We compared the gathered data among the three linguistic groups (Provençal, Alpine Ligurian/Brigasc, and Kyé/Provençal) and also considered the few recent (<10 years) ethnobotanical studies conducted in surrounding areas (in the Alpine Provençal Stura and Varaita valleys) in our analysis. The Jaccard similarity index among the considered studies has been calculated following methods described in the recent comparative analysis of a few circum-Mediterranean medical ethnobotanies (González-Tejero et al. 2008).

### Results and discussion

Table 2 reports the recorded local names and uses of 92 wild food and medicinal taxa recorded in the three selected linguistic sites. In total, this list of taxa represents members of 40 plant families. Table 2 also reports the documented uses of the same taxa in two recently conducted ethnobotanical studies in two other Occitan/Provençal valleys in Piedmont (Stura and

Varaita valleys: Musset and Dore 2006; Pieroni and Giusti 2009).

#### Archaic carbohydrate-containing food plants

The food use of the tuber of *Lathyrus tuberosus* L., Fabaceae, which has been documented mainly in the past in both the Brigasc area and the Grana Valley, confirms the popularity of this food source in the Piedmontese traditions. Specifically, in the Brigasc area, we recorded the use of these tubers in an old local food called *panissa di gasce*, which is a kind of polenta-like gruel that is prepared by also adding a few boiled potatoes.

In his 1918 review of the wild food plants of Piedmont, Mattiolo (1918) described the use of these tubers and discussed their large availability in the Piedmontese valleys and in Southern Piedmont and their potential role as famine foods. Mattiolo argued that because of time and energy required for gathering these tubers, the use of this plant as an emergency food should be discouraged. On the other hand, the similar use of the tubers of *Bunium bulbocastanum* L., Apiaceae, which we recorded in the Grana Valley, is still also known in other valleys of the Occitan/Provençal area (Pieroni and Giusti 2009). Mattiolo (1918) considered this species very valuable and he also described two culinary techniques in practice at that time: the tubers could be smashed with salt, milk, and flour to obtain dough, which was later baked into small crackers; or they were directly roasted on fire.

#### Emergency oleaginous plants

Elderly informants in the Grana Valley also quoted a few unusual plant species, which, apart from walnuts and hazelnuts, were used in the past for oil production, especially during wartimes. The seeds of plants from various plant families, including *Celtis australis* L. (Cannabaceae), *Arctium lappa* L. (Asteraceae), *Pinus cembra* L. (Pinaceae), *Cornus sanguinea* L. (Cornaceae), and even *Onopordum acanthium* L. (Asteraceae) have been used for this purpose. It would be interesting to evaluate the phytochemical properties and safety of the oils obtained from these unusual plant sources. Such applications, if deemed safe, could be revived as a niche food product, boosting the economy of these communities.

#### Western Alpine herbal medicines

The commonly quoted use of Alpine wormwood (*Artemisia* spp.) and gentian (*Gentiana* spp.) in medicinal digestives, often in form of home-made liquors, confirm their crucial role in the folk medicine of this part of the Alps. As we pointed out in the field study conducted in the upper Varaita Valley (Pieroni and Giusti 2009), these customs could lead to problems of unsustainable overexploitation. We contend that local institutions should implement a policy that both acknowledges and regulates the sustainable small-scale use of these species and also for preserving the rich Alpine biodiversity.

#### Wild food plants in producing and refining local cheese

The Grana Valley, despite its very tiny population, is well-known for its small-scale production of the famous artisanal cheese named after the main village of the valley: Castelmagno. Castelmagno is a cheese with protected designation of origin (PDO) status, which has been in production for many centuries (the earliest known mention of it dates to 1277). Castelmagno is a semi-hard, half-fat cheese produced from whole cows milk, obtained from cattle of the Piedmontese breed fed on fresh forage or hay from the Alpine meadows or pasture.

Local informants emphasized the importance of specific wild fodder plants (all from the Poaceae family) for obtaining an excellent quality of milk and subsequently cheese: *Alopecurus pratensis* L., *Poa pratensis* L. and *Festuca arundinacea* Schreb. Moreover, juniper and dandelion are used during the refinement of cheese, for improving its gustatory characteristics.

#### Comparative analysis

More than half (55 %) of the plant uses recorded in the Gesso and Grana valleys have not been recorded in the ethnobotany of the Stura and Varaita valleys. This may demonstrate a quite heterogeneous character of the Occitan ethnobotany, as we also pointed out in one of our previous works in which we considered the (diachronic) comparison between the ethnobotany of the Varaita valley and those of other Occitan/Provençal valleys, previously investigated in past decades,

**Table 2** Recorded wild food and medicinal plant uses in the studied sites

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Achillea erba-rotta</i> All. (Asteraceae)	Camamia ed montagna (K), Camomilla di montagna (G), Peverina (G)	Ft	Digestive, depurative, anti-bacterial and anti-inflammatory infusion or macerate in grappa++	Dried and “smoked” (referred as “ <i>tobacco of the mountains</i> ”)++	Digestive infusion ++; liquors+	Yes
<i>Achillea millefolium</i> L. (Asteraceae) UNISGDIS001	Erba besa (B), Erbo de la fritaa (G)	Le	Soup seasoning +++		Omelettes+++	No (anti-haemorrhoidal infusion or external anti-wound)
<i>Achemilla vulgaris</i> L. (Rosaceae)		Ap		Antibacterial infusion or decoction+		No ( <i>A. alpina</i> L. in infusions for counteracting belly pains)
<i>Allium schoenoprasum</i> L. (Amaryllidaceae)	Puret (K)	Le		Seasoning, as anti-helminthic+	To be avoided by cows, otherwise the milk becomes bitter+	Yes
<i>Allium vineale</i> L. (Amaryllidaceae)	Aie (B)	Wp	Seasoning+		Seasoning, also dried or roasted for the winter+	No
<i>Alopecurus pratensis</i> L. (Poaceae)		Ap			Fodder for improving the quality of milk for cheese production++	No
<i>Arctium lappa</i> L. (Asteraceae) UNISGDIS002	Gravasse (G), Lapoura (K)	Le, Se		Topical application of the leaves, together with butter, for calming stomach pains+	In the past the seeds were pressed for the production of oil++	No
<i>Arnica montana</i> L. (Asteraceae)	Arnica (K, G)	Le, Fl	Leaves are macerated in oil; when the oil turns red, it is ready for use as topical anti-inflammatory+	Macerated in oil; the resulting oil used for the treatment of bruises++	In external compresses on bruises++	Yes

Table 2 continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Artemisia absinthium</i> L. (Asteraceae) UNISGDIS003	Bommeighe(B), Bounmè (K), Bunfort (G), Erba Bianca (G) Isent (G)	Ap	In omelettes, digestive liquors and infusions as an anti-parasitic and antihelminthic medicine for cattle and children. It was said that this decoction saved the whole local population from the 1918 pandemic flu “Spanish flu”++++	Decoction or as anti-helminthic for children; the alcoholic macerate aids digestion (it may be served together with sugar cubes)++	Omelette and digestive liquor; antihelminthic for children, together with wild chicory++++ Antihelminthic (leaf juice was administered orally to children or crushed leaves were applied on the chest as an emetic)+	Yes
<i>Artemisia glacialis</i> L. and <i>A. umbelliformis</i> Lam. (Asteraceae)	Genepì	Ft	Liquor+	Tea as a panacea+	Liquors++++	Yes
<i>Asparagus acutifolius</i> L. (Asparagaceae)	Asparago	Sh	Boiled and mixed in salads+		Boiled and mixed in salads+	No
<i>Astragalus glycyphyllos</i> L. (Fabaceae)	Sgrizia (K)	Ro		Consumed as a snack (fresh or dried)+		No
<i>Atropa belladonna</i> L. (Solanaceae)	Beladonna (B)	Le	Fumigations against caries/tooth-ache+			No
<i>Beta vulgaris</i> ssp. <i>maritima</i> (L.) Arcang. (Amaranthaceae)		Le	Main ingredient of the <i>ravioli</i> filling and of a local soup+++			Yes
<i>Borago officinalis</i> L. (Boraginaceae)	Bouroi (K)	Ap	Ravioli filling; decoction as a bronchial emollient++++	Omelettes+	Omelettes+	Yes
<i>Bunium bulbocastanum</i> L. (Apiaceae)	Gravioun (G)	Tu			They were used in the past in place of potatoes, together with milk (or milk cream) and flour to prepare baked crackers. Otherwise they could be roasted on a hot stone and dried for the winter+	Yes



Table 2 continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B; Brigasc; K; Kyé; G; Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Campanula rapunculatus</i> L. (Campanulaceae)	Anardoun (B), Rampoun (G)	Ap, Ro	The shoots are consumed in salads, the leaves in soups+		Aerial parts are boiled and then consumed in an omelette; roots are consumed raw in salads+	No
<i>Capsella bursa-pastoris</i> (L.) Medik. (Brassicaceae)	Rastlet (G)	Le			Salads+	No
<i>Castanea sativa</i> Mill. (Fagaceae) UNISGDIS018	Erbu (K), Chastanhes (G)	Se	Roasted or boiled, sweet or salty, after being smoked in the <i>canissi</i> ++	Staple food in the area for many years. Consumed in soups and desserts. Preserved frozen during the winter months; flour++	Roasted or boiled in milk; cakes+	Yes
<i>Celtis australis</i> L. (Cannabaceae)	Glanda (G)	Se			It was used for the production of oil+	No
<i>Cetraria islandica</i> (L.) Ach. (Parmeliaceae)	Lic (K)	Th		The decoction helps respiratory (cough, bronchitis) and intestinal problems; it may served together with milk; however, if it is excessively consumed, it may weaken the body++		No
<i>Chelidonium majus</i> L. (Papaveraceae) UNISGDIS028	Eiba di pouret (K)	La		Externally applied on skin inflammations+		Yes
<i>Chenopodium bonus-henricus</i> L. (Amaranthaceae) UNISGDIS009	Angiarde (G), Engari (B), Ingri (B), Ourla (K), Orles (G), Spinaci selvatici (G), Valcordi (G)	Ap	The young shoots are consumed in salads, while boiled leaves occur in the <i>ravioli</i> filling++++	Consumed boiled in salads (together with dried chestnut), stuffing for filled pasta, omelette or stewed with pork fat or butter. The leaves are now preserved frozen and kept for wintertime++	The young shoots are used in the salad and in home-made <i>gnocchi</i> . Boiled leaves in <i>agnolotti</i> and pies++++	Yes

**Table 2** continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Cichorium intybus</i> L. (Asteraceae)	Craver (G), Sicoria (G), Sicorio (G), Zicoria (G)	Ro	Dried as the “poor person’s coffee”; antihelminthic, also in salads++		Dried as the “poor person’s coffee”; anti-helminthic, also in salads++	Yes
<i>Clematis vitalba</i> L. (Ranunculaceae)		Le Sh	In soup and <i>ravioli</i> filling +		Boiled and fried; omelettes+	Yes No
<i>Cornus sanguinea</i> L. (Cornaceae)	Sanguinelo (G)	Fr			Used for the production of oil+	No
<i>Corylus avellana</i> L. (Betulaceae)	Oulania (G), Nisorè (K)	Se		Unripe fruit kernels used for a home-made liquor+	Used for the production of oil+	No
UNISGDIS025						
<i>Crataegus monogyna</i> Jacq. (Rosaceae)	Biancospino (G), Bossu (B)	Le and Fr	Decoction helps circulation and heart arrhythmias+		Relaxant tea+	Yes
<i>Echium vulgare</i> L. (Boraginaceae)	Viperena azzurra (G)	Fl			Tea+	No
<i>Equisetum arvense</i> L. (Equisetaceae)	Sioura (K)	Ap		Infusion for treating prostatic problems+		No
UNISGDIS015						
<i>Festuca arundinacea</i> Schreb. (Poaceae)	Festucca (G)	Ap			Fodder for improving the quality of the milk for the cheese production++	No
<i>Fragaria vesca</i> L. (Rosaceae)	Maiore (K)	Fr		Jams++	Fodder for improving the quality of the milk for the cheese production++	Yes/No
UNISGDIS033						
<i>Foeniculum vulgare</i> Mill. (Apiaceae)	Orla (K)	Ap		Consumed in salads; fodder for sheep and goats++	Seasoning, liquor++	No
<i>Fraxinus excelsior</i> L. (Oleaceae)	Fraise (G)	Le			Infusion, as a diuretic and sudorific+	No

**Table 2** continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Gentiana acaulis</i> L. and <i>G. verna</i> L. (Gentianaceae) UNISGDIS021 UNISGDIS022	Ergentzianela (K)	Ap, FI	Digestive liquor++	Digestive and depurative (“blood cleansing”) liquor++	Liquor or aromatised wine+++; Fodder for improving the quality of the milk for cheese production++	Yes
<i>Gentiana lutea</i> L. (Gentianaceae)	Giansiana (B), Ergentziona (K)	Ro	Digestive liquor**	Digestive infusion or liquor (used in small dosage)++	Fodder for improving the quality of the milk for cheese production+++; liquors+	Yes
<i>Humulus lupulus</i> L. (Cannabaceae) UNISGDIS010	Brasabosc (G), Leuvertin (K), Luvertin (G, K)	Sh, FI		Consumed in omelettes. Used for topical wound healing applications and internally as a digestive++	Shoots are consumed in soups, in omelettes and as a side dish with <i>polenta</i> +++; A liquor is prepared with the female inflorescences+	Yes
<i>Hypericum perforatum</i> L. (Hypericaceae)	Eiba ed San Giouan (K)	Ft		Oleolite prepared by maceration in oil while exposed to sunshine, and then topically applied to burns and as an anti-inflammatory+	Oleolite prepared by maceration in oil while exposed to sunshine, and then topically applied to treat muscular and joint pains+	Yes
<i>Juglans regia</i> L. (Juglandaceae)	Nouza (G)	Se			Used for the production of oil+	Yes
<i>Juniperus communis</i> L. (Cupressaceae)	Genevre (B)	Fr, Ro	Game seasoning+	Game seasoning+	External compresses on swollen feet+	Yes
<i>Knautia arvensis</i> (L.) Coult. (Dipsacaceae)	Vedovina (G), Zampe di gallina (G)	Wh			Seasoning cheese during the refinement+	Yes
<i>Lactuca serriola</i> L. (Asteraceae)	Laciacion (G)	Le			Roots and fruits macerated in alcohol for a liquor++ Omelettes and soups+	No
					Salads and soups, also a mild laxative+	Yes ( <i>L. perennis</i> )

Table 2 continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Lamium album</i> L. (Lamiaceae)	Ourtio bianco (G)	Le			Salads+	No
<i>Lapsana communis</i> L. (Asteraceae)	Muletta (B), Gialimeto (G)	Le	Soups, omelettes and <i>ravioli</i> filling+		Soups and omelettes+	No
<i>Lathyrus tuberosus</i> L. (Fabaceae)	Gasce (B), Subioles (G), Subuetta (G)	Le, Tu	Leaves in salads and omelettes; the tubers were the main ingredient of the local <i>panissa di gasce</i> (a kind of polenta-like gruel, prepared also adding boiled potatoes, in order to mitigate the bitterness of the tubers)+		Leaves in salad; tubers in soup or in salad after having being boiled; also as fodder for cows++	No
<i>Lavandula angustifolia</i> Miller (Lamiaceae)	San Giuan (B), Lavanda (G)	Fl	In home-made alcoholic liquors and as the most appreciated honey plant+++		As a honey plant+ Teas, or for seasoning salads and meat++	No
<i>Malva neglecta</i> Wallr. and <i>M. sylvestris</i> L. UNISGDIS026 (Malvaceae)	Rioundela (K), Arioundelo (G), Riondella (G)	Le, Ro	Raw leaves are eaten in salads; decoction of the roots considered as a good inflammatory and anti-abscess+++	Infusions used as an anti-inflammatory and anti-haemorrhoidal++	Raw leaves consumed in salads or cooked in soups+ Decoction of the roots as a digestive and an intestinal anti-spasmodic++	Yes
<i>Mentha</i> spp. (Lamiaceae)	Menta	Le	Seasoning+++		Seasoning++	Yes
<i>Matricaria recutita</i> L. (Asteraceae) UNISGDIS004	Camamia (K)	Ft		Infusion as an anti-inflammatory and mild laxative++	Infusion as an anti-inflammatory+	No
<i>Nasturtium officinale</i> W.T. Aiton (Brassicaceae)	Credoun, Creisoun (G)	Le			Salads; also used in decoction externally for enhancing hair growth++	No
<i>Onopordum acanthium</i> L. (Asteraceae)	Pet d'ason (G)	Se			Used for the production of oil+	No

**Table 2** continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Origanum vulgare</i> L. (Lamiaceae)	Origano	Le	Seasoning++		Seasoning++	Yes
<i>Papaver rhoeas</i> L. (Papaveraceae)	Rouzel, Caramadones (G)	Le, Fr	Mothers put some fruits on the neck of the child in order to let him/her sleep well+		Young leaves in salads or boiled in pies+	No
<i>Parietaria officinalis</i> L. (Urticaceae)	Chambo rouseto (G)	Le, Ro			Leaves in soups and omelettes; the leaf juice was used internally as a diuretic and anti-septic for the urinary tract; the roots were boiled twice in order to decrease the bitterness) and then were consumed fried or roasted+	No
<i>Phyteuma orbiculare</i> L. (Campanulaceae)	Grif (G)	Ap, Ro			Aerial parts are boiled and then cooked in omelette; raw roots are consumed in salads+	No
<i>Pinus cembra</i> L. and <i>P. mugo</i> Turra (Pinaceae)	Pin (G)	Se, Co		Infused in grappa as a digestive+	Used for the production of oil; otherwise they are consumed roasted+	No
UNISGDIS029						
<i>Plantago lanceolata</i> and <i>P. major</i> L. (Plantaginaceae)	Sinco nervi (B), Piantadzou o Panisa (K), Piantai (G)	Le	The leaf juice is used as a cicatrizant+	Young leaves are consumed in salads; otherwise they are externally applied on animal bites for relieving the pain+		No
<i>Poa pratensis</i> L. (Poaceae)	Poa (G)	Ap			Fodder for improving the quality of the milk for the cheese production++	No
<i>Polygonum bistorta</i> L. (Polygonaceae)		Le			As an anti-haemorrhoidal++	No
<i>Polypodium vulgare</i> L. (Polypodiaceae)	Bertivu (K)	Ro		Laxative+	Honey plant+	No

**Table 2** continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Primula acutis</i> L. and <i>P. veris</i> L. (Primulaceae) UNISGDIS032	Coucù (G), Fiou ed mortz (K), Pamparà (B), Primula (G)	Fl, Le	Omelettes+	Leaves in omelettes; flowers in salads and in infusion for relieving asthmas++	In vegetable pies, soups and omelettes (considered a good diuretic and depurative)+ Flower buds stored in oil or with sugar+	Yes
<i>Prunus avium</i> (L.) L. (Rosaceae) UNISGDIS034	Griota (K)	Fr		Eaten raw or in jams++		Yes
<i>Robinia pseudoacacia</i> L. (Fabaceae) UNISGDIS019		Fl		Fried in batter+		No
<i>Rosa canina</i> L. (Rosaceae) UNISGDIS035	Pibura (B), Grattacù (K), Grattacul (G)	Pf	In teas and jams+++	Jams+	Teas, or in sauces++	Yes
<i>Rubus idaeus</i> L. (Rosaceae) UNISGDIS036	Ompoure (K)	Fr	Jams+	Jams and home-made liquors+		Yes
<i>Rumex acetosa</i> L. (Polygonaceae) UNISGDIS032 and <i>R. acetosella</i> L. (Polygonaceae)	Asetou (G)	Le		Salads+	In salads and soups++	No
<i>Rumex alpinus</i> L. (Polygonaceae)	Arembou (G), Rembo (K)	Le, Ro		Soups, omelettes, pies+	Leaves used in salads and roots dried and used a digestive decoctions+	No
<i>Sabia pratensis</i> L. (Lamiaceae) UNISGDIS023	Savio, Salvio (G)	Le		Digestive infusion and stomachic+	As a filling for pies+ Honey plant+	No

**Table 2** continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B; Brigasc; K; Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Sambucus nigra</i> L. (Adoxaceae) UNISGDIS012	Sambugu (B), Sambuc (K, G)	Fl, Fr	Flowers in syrups and decoctions, used in compresses as an eye anti-inflammatory; fruits in jams++++		Flowers consumed fried or seasoning wines++ Flower heated with bran and externally applied on pains (esp. children)+ Fruits in jams (considered laxative)++ Seasoning+	Yes
<i>Satureja montana</i> L. (Lamiaceae)		Ap				No
<i>Silene vulgaris</i> (Moench) Garcke (Caryophyllaceae) UNISGDIS011	Erba della Madonna (G), Gariet (G), S-ciupet (G)	Le, Sh		Boiled, or in risotto or omelettes+	Omelettes and risotto++	No
<i>Silybum marianum</i> (L.) Gaertn. (Asteraceae)		Le	Boiled leaves are considered depurative for the liver++			No
<i>Tanacetum vulgare</i> L. (Asteraceae)	Arquebuse (G)	Le, Fl			Consumed in small amounts in salads or cooked in soups; home-made liquor; considered protective of the liver++	No
<i>Taraxacum officinale</i> F.H. Wigg. (Asteraceae) UNISGDIS006	Arvirasu (K), Marpourcin (K), Girasole (G), Girasu (K), Secorio (G) Virasoulei (G)	Ap, Fl	Used as a filling for <i>ravioli</i> and in soups++++	Young leaves and flowers are consumed in salads and omelette. Flowers are also consumed fried or processed into a jam. The infusion of the flowers is considered depurative++	Leaves in digestive infusions, or cooked in pies, omelettes, and in the refinement of cheese++ Flowers are consumed in salads or fried in the pan++ Honey plant ++	Yes
<i>Thymus serpyllum</i> L. (s.l.) (Lamiaceae) UNISGDIS024	Erbo dal marin (G), Timo selvatico (G)	Ap	Seasoning++++	Seasoning and as a disinfectant infusion+	Seasoning and in digestive infusions++++	Yes

Table 2 continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Tilia cordata</i> Mill. (Malvaceae) UNISGDIS038	Tiù (K)	Fl and Ba		Infusions for treating cough and cold+	Infusions+	Yes
<i>Tragopogon pratensis</i> L. (Asteraceae)	Barbabouc (G)	Sh, Ro		Decoction of the bark of the young stems as anti-diarrhoeal+		Yes
<i>Tussilago farfara</i> L. (Asteraceae) UNISGDIS007	Farfarà (K), Piè d'asino (K)	Le		Boiled or raw in salads	Shoots are consumed in soups or pies++ Roots were cooked and ingested against diabetes++	No
<i>Urtica dioica</i> L. (Urticaceae) UNISGDIS041	Urtiga (B), Ortia (K), Urtio (G)	Le	In soups, as dyes for homemade noodles and polenta; following birth, cows were fed this plant because of its galactagogue properties; Vinegar in which the leaves have been macerated in for 3 days was used to wash the hair to kill/remove lice and to make the hair more resistant++++		Omelettes, soups, or as filling for stuffed pasta; infusion considered depurative an anti-rheumatic++	Yes
<i>Vaccinium myrtillus</i> L. (Ericaceae) UNISGDIS017	Nirioun (K)	Fr	Jams++	Jams and liquor+	Desserts++	Yes
<i>Valerianella</i> spp. (Valerianaceae)	Salizet (G)	Le	Salads+		Salads++	Yes
<i>Veratrum album</i> L. (Melanthiaceae)	Varaver (B)	Le	They were used externally against lice in children and animals+			No



**Table 2** continued

Scientific name, botanical family and voucher specimen codes	Recorded local name(s) (B: Brigasc; K: Kyé; G: Grana and Gesso valleys)	Used part (s)	Local use(s) in the Brigasc area and quotations	Local use(s) in the Kyé area and quotations	Local use(s) in the Provençal Gesso and Grana valleys and quotations	Similar use(s) recently recorded in the Franco-Provençal upper Varaita valley (Pieroni and Giusti 2009) and Valle Stura (Musset and Dore 2006)
<i>Verbascum thapsus</i> L. (Schrophulariaceae) UNISGDIS037		Le and Fl	Anti-tussive infusions+			Yes
<i>Veronica allionii</i> Vill. (Plantaginaceae)	Tè (G)	Ap			As a tea substitute+++	Yes
<i>Viola odorata</i> L. UNISGDIS039 and <i>V. tricolor</i> L. (Violaceae) UNISGDIS040	Klavetta (K), Viola del pensiero (G)	Le, Fl	Leaves are consumed in salads and omelettes. Flowers are consumed in salads for decoration, or in desserts; the infusion is considered good for treating skin ailments++		Infusions against the cough++	Yes

Ap aerial parts, Ba bark, Co cones, Fl flowers, Fr fruits, Ft flowering tops, Le leaves, Pf pseudo-fruits, Ro roots, Se seeds, Wh, whorls, Wp whole plant

QI quotation Index. ++++ quoted by more than 40 % of the informants, + quoted by less than 10 % of the informants, ++ quoted by more than 10 % and less than 40 % of the informants

such the Susa, Maira, Chisone and Germansca valleys in Italy and the Ubaye Valley on the French site (Pieroni and Giusti 2009).

Moreover, Fig. 2 demonstrates the similarity of the wild botanical taxa, which were quoted for being used as food or home-medicines. Despite their linguistic differences, an important link can be seen between the ethnobotanies of the Occitan/Provençal valleys and Briga Alta, and between the same valleys and the Kyé community, while the overlap between the Kyé and Brigasc ethnobotanies would seem to be less crucial.

This may be in agreement with the historical trajectory of the Brigasc peoples, who for centuries have moved to the Provençal coastal region in winter, as transhumant pastoralists. Their vocabulary related to agricultural terms is in fact very rich in Occitan

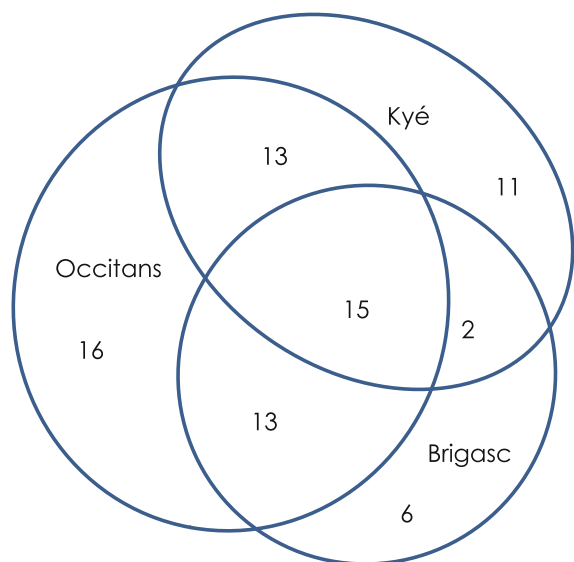
words, and our studies may suggest that the same paradigm has occurred with regards to the TK related to plants.

On the other hand, the Kyé area, although linguistically considered part of the Occitan/Provençal macro-area, has been largely influenced by the Piedmontese (plain) culture, with whom Kyé people have had several periods of contact in the last century.

However, the Jaccard Index analysis (Table 3) shows that there are no significant differences in medicinal species used among the three linguistic groups, suggesting a certain degree of interdependence of the three analysed ethnobotanies.

## Conclusion

Wild plants have historically played an important role in the context of famine foods and medicines in the Occitan macro-area of the Western Italian Alps. The persistence of TK regarding these plants is a testament to the vital nature of their role in human health and food security. The key points highlighted in this study include the importance of certain wild grasses, which are used as key fodder for livestock in the production of artisanal cheeses in the region, and the enduring significance of certain medicinal plants (specifically wormwood and gentian) in the creation of local medicinal digestives. Moreover, the unusual use of certain wild tubers as key sources of carbohydrates during periods of famine and of oleaginous plants, which have served as useful sources of dietary oils, have been discussed. While further research is necessary to determine the nutritional value and safety of these unusual food sources, they may nevertheless prove to be important to this region both in the context of food security, but also as resources for eventual niche food markets.



**Fig. 2** Overlap of the wild food and medicinal plants used in the three linguistic communities

**Table 3** Jaccard similarity index among the wild medicinal and food botanical taxa used in the studies areas

Group 1	Group 2	Botanical taxa used in both groups	Botanical taxa used in one group only (group 1/group 2)	Jaccard index
Alpine Provençal speakers of the Gesso and Grana valleys	Kyé speakers of Prea	28	29/13	0.40*
Kyé speakers of Prea	Brigasc speakers of Briga Alta	17	24/19	0.28*
Brigasc speakers of Briga Alta	Alpine Provençal speakers of the Gesso and Grana valleys	28	8/29	0.44*

\* None of the JI values are statistically significant at a *P* value <0.05

In conclusion, the biodiversity of this region is represented by a myriad of wild species holding great cultural and economic importance to the local communities, and measures to ensure that these resources are collected in a sustainable manner are of critical importance. Conservation of local TK in Western Alps, in turn, is also a key initiative as the nature of this information is highly heterogeneous, and applications of the local wild plant species have been found to vary from valley to valley.

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