

# Folk pharmaceutical knowledge in the territory of the Dolomiti Lucane, inland southern Italy

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## Abstract

An ethnopharmacognostic survey on the traditional pharmaceutical knowledge (TPhK) of old and newly introduced natural remedies used for healing humans in a small mountainous area in Central Lucania, inland southern Italy, was carried out using classical ethnographical and ethnobiological methods. Approximately 110 remedies of plant origin (belonging to 103 botanical taxa), 30 of animal origin and 20 mineral or industrial (non-pharmaceutical) products were recorded. Among these remedies, the common use of the aerial parts of *Hypericum hircinum* and the leaves of *Morus alba* against cough, and the uncommon uses of *Salvia argentea* leaves as a haemostatic, of *Erigeron acer* roots to relieve tooth-aches and arthritic pains, and *Elaphe quatuorlineata* snake fat for rheumatism are reported for first time in Italy. Moreover, diverse medicinal plants used for uncommon medical purposes and a few biological ingredients used in food preparations with the aim to improve human health were identified. Pharmacological and toxicological considerations relating to possible applications of the recorded traditional knowledge in modern evidence-based medicine are discussed as well. The data that we present here could suggest new inputs for further phytochemical and pharmacological studies among Mediterranean folk pharmacopoeias, and also for sustaining environmentally integrated projects focused on of the maintenance of TPhK via breeding or controlled gathering activities of local medicinal species.

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## 1. Introduction

We recently defined objectives and aims of ethnopharmaceutical research (Heinrich and Pieroni, 2001; Pieroni et al., 2002a,b) and ethnopharmacy as the ‘interdisciplinary science that deals with the study of the pharmaceutical means, considered in relation to the cultural determinants which characterise the uses of these means in a given human group, and involving identification, classification and cognitive categorisation of the natural material from which the remedy will be produced (ethnobiology), the preparation of the pharmaceutical forms (ethnopharmaceutics), the

claimed ascribed effects of such preparation (ethnopharmacology) and the socio-medical aspects implied in these uses (ethnomedicine)’.

In the present paper, we will analyze the ethnopharmacy and traditional pharmaceutical knowledge (TPhK) of two small autochthonous south Italian communities, which are isolated in a mountainous area located in the inland part of the region Lucania (or Basilicata), southern Italy. The focus of this study is on ‘biological’ means used in medical practices: materials of plant, animal, and mineral origin. Motivated by Bellakhdar’s work on Moroccan traditional medicine (Bellakhdar, 1997), we have also included industrial materials in this analysis, which are used for aims that are different from those for which they were originally produced.

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At the same time, we did not want our study to be confined to the analysis of ‘old’ traditional bio-pharmaceutical means for humans (having already collected ethnoveterinary knowledge about plants in the same area (Pieroni et al., 2004)), but instead to review ‘traditional’ uses of phytopharmaceuticals brought into the study area by recent migration flows from eastern Europe, and also ‘new’ similar products, recently diffused by the industrial phytopharmaceuticals/food supplements channels in the local food, beverage, or pharmacy markets.

A clarification is then needed here concerning the term ‘traditional’, which is frequently abused in the terminology of European ethnobotanists; here, we use the term ‘traditional’ for defining something that has been an integrated part of a culture for more than one generation (similarly as underlined recently by other authors; Ogoye-Ndegwa and Aagard-Hansen, 2003).

On the other hand, since we have recently studied the ethnopharmacy of historic Albanians in the same region, in the future we would like to carry out an intercultural comparative study between the TPhK of diverse cultures living in the same or similar environments. Ethnobiological studies among non-dominant ethnic groups in southern Europe have been carried out extensively in Catalonia (Bonet et al., 1992, 1999; Raja et al., 1997; Barbini et al., 1999; Agelet and Vallés, 2001, 2003a,b; Bonet and Vallès, 2003), and to smaller extent, in northern Italy among Gallo-Rhaetian Ladins (Barbini et al., 1999) and German Cimbrian Alpine communities (Zampiva, 1995, 1998).

The particular isolation of the mountainous area, which has been the object of our survey, and its economy, which is still partially based on small-scale agricultural and pastoral activities (sheep, and to decreasing extent, the Podolica cattle), represents a good opportunity for conducting studies about local TPhK. In the whole Basilicata, only a few ethnobotanical studies have been conducted over the last 50 years, mainly carried out recently by our research group (Capasso et al., 1982; Caneva et al., 1997; Pieroni et al., 2002a,b, 2004; Pieroni, 2003).

The research focus on Mediterranean ethnopharmacy of small communities could permit, for example, a ‘re-discovery’ of the last traces of retained TPhK, and an opportunity to connect this evaluation with the development of new phytopharmaceuticals and nutraceuticals, and with programs for sustaining local biological and cultural diversities.

## 2. Methods

The fieldwork was conducted over a period of 30 weeks from March 2002 to September 2003 and took place in the municipalities of Castelmezzano and Pietrapertosa (ca. 800 and 1200 inhabitants, 850 and 1088 m above sea level, respectively), located in the territory of the Dolomiti Lucane, Central Lucania, inland southern Italy (Fig. 1). This area is located in a mountainous region bordering the Basento river

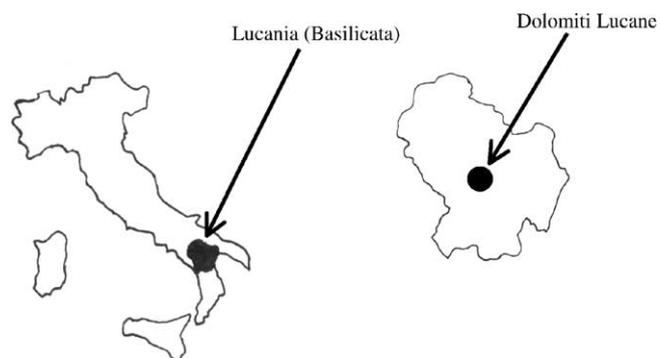


Fig. 1. The location of the studied region.

valley. On an anthropological level, this small area is very well known for having been described in the late 1950s by the Italian anthropologist Ernesto de Martino, who lived in Castelmezzano during the spring in 1957 (de Martino, 1959; Gallini and Faeta, 1999; Paternò, 2003).

In our study, ethnobotanical information was collected using participant observation and open and semi-structured interviews with 121 persons chosen at random among the elderly population and who still retain traditional knowledge about medicinal plants. Most of the interviewees belonged to the female group (average age: 67), which still retains the most information concerning the heritage of domestic remedies. Information was gathered through observation of the present use of traditional plant pharmaceuticals or uses that are at least still alive in the remembrances of the oldest population.

During the interviews, several fresh plant specimens or dried samples stocked in a small transportable field herbarium were shown to the interviewees. Each non-cultivated botanical species recognised by the study participants as having been used for medicinal aims was collected and identified by the first author.

Reports of materials derived from animal and mineral origin and that are or have been used ‘traditionally’ in human medical treatments were also considered, as well as other industrial materials used and newly introduced plant derivatives. Information was also recorded from the local pharmacist about the most common ‘new’ phytotherapeutics bought in the small local pharmacy. In addition, information concerning the sale of phytopharmaceuticals in the small pharmacy of the village and the consumption of commercial beverages based on plant extracts by teenagers during their night-time social gatherings was also recorded.

Traditional knowledge of plants was researched using the more traditional means of the ethnobiological and cognitive-anthropological analysis (Berlin et al., 1966; Berlin, 1992; Randall and Hunn, 1984; Wierzbicka, 1984; D’Andrade, 1995; Alexiades and Sheldon, 1996; Atran, 1999) for a better understanding of the folk taxonomical hierarchies and systems, and for studying the most quoted plants by free listing, triad tests, and pile sorts (Russell Bernard, 1994), analysing a consensus index (expressed here as percentage of the whole

Table 1  
 'Traditional' plant phytotherapeutics recorded in the territory of Castelmezzano and Pietrapertosa

Botanical taxon (voucher specimen code)	Botanical family	Vernacular name recorded in Castelmezzano (including determinative article)	Status	Part(s) used	Preparation	Claimed medicinal uses	Consensus index	Observed use during the field study
<i>Achillea millefolium</i> L. (CASTACH)	Asteraceae	<i>a stagnasanghē/u millefiorē</i>	W	Aerial parts	Topical application Decoction	Haemostatic Diuretic	+ +	
<i>Agrimonia eupatoria</i> L. (CASTEUP)	Rosaceae	<i>l'agrimonia</i>	W	Aerial parts	Put in the shoes	To prevent feet from sweating	++	
<i>Allium cepa</i> L.	Alliaceae	<i>a cipudda</i>	C	Membranes of the bulbs	Oleolite (frying with olive oil)	To heal purulent skin abscesses (caused by thorns)	++	
					Soup made by onions, dried sweet pepper, eggs, and served on dried bread <sup>MF</sup>	Galactagogue	+++	X
					Beaten and then mixed with vinegar and salt: topical application	Anti-bruises	+	
<i>Allium sativum</i> L.	Alliaceae	<i>l'agliē</i>	C	Bulbs	Used as an aromatic in the kitchen <sup>MF</sup>	Anti-hypertensive	+	
					Ground, mixed with parsley, and topically applied	To heal insect bites	+	
					Necklace, to be worn by babies or children	Vermifuge	++	
					Heated on hot charcoal, then in topic application	Anti-warts	++	
					Together with <i>Armoracia rusticana</i> and <i>Laurus nobilis</i> leaves, as aromatising means of pickled fruits of			
<i>Anethum graveolens</i> L. <sup>NN</sup>	Apiaceae		C	Leaves	<i>Lycopersicon esculentum</i> , with water, vinegar, salt, and sugar; the remaining solution to the tomato pickling process is drunk <sup>#MF</sup>	To heal drunkenness <sup>#</sup>	+	X
<i>Anthemis altissima</i> L. (CASTANT)	Asteraceae		W	Aerial parts	Decoction	Digestive	+	
<i>Avena sativa</i> L.	Graminae	<i>a biama</i>	C	Seeds	Decoction	Reconstituent for small children	++	
<i>Arundo donax</i> L. (CASTARU)	Graminae	<i>a canna</i>	W	Cambium membrane	Topical application	Haemostatic	++	X
<i>Armoracia rusticana</i> P. GAERTN., B. MEY. E SCHERB.	Brassicaceae	<i>u rafanē</i>	SC	Root	Cut and scoured locally	Anti-rheumatic	+	
				Leaves	Together with <i>Anethum graveolens</i> and <i>Laurus nobilis</i> leaves, as aromatising means of pickled fruits of <i>Lycopersicon esculentum</i> , with water, vinegar, salt, and sugar; the remaining solution to the tomato pickling process is drunk <sup>#MF</sup>	To heal drunkenness <sup>#</sup>	+	X
<i>Arum italicum</i> MILL. (CASTARU)	Araceae	<i>a nzalē</i>	W	Leaf sap	Topical application	Anti-warts	+	
<i>Asparagus acutifolius</i> L. (CASTASP)	Asparagaceae	<i>u sparacē (dē sparaognē)</i>	W	Shoots	Boiled and consumed alone or with scrambled eggs and fresh cheese <sup>MF</sup>	Diuretic	++	
<i>Ballota nigra</i> L. (CASTBAL)	Lamiaceae		W	Aerial parts	Decoction, in washes	Haemostatic	+	
<i>Borago officinalis</i> L. (CASTBOR)	Boraginaceae	<i>a vurrascēnē</i>	W	Aerial parts	Soup prepared with onions and dried sweet pepper and served on dried bread <sup>MF</sup>	Galactagogue	++	
				Flowering tops	Decoction	Against sore throats	+	
<i>Brassica oleracea</i> L.	Brassicaceae	<i>u caulē</i>	C	Leaves	Roasted and applied topically	To heal mastitis or shoulder pains	+	
<i>Capsicum annuum</i> L. <sup>NN</sup>	Solanaceae	<i>a cerasedda/u diaulicchiē/u sprunē dē gaddē</i>	C	Fruits	Used as an aromatic in the kitchen <sup>MF</sup>	Anti-hypertensive	+	
				Seeds	Stuffing for a little bag ( <i>l'abbatiddē</i> ) attached to clothing as an amulet (ritual-medical use)	Against the evil-eye	+	
					Macerate in grappa, with novalgin (metamizole sodium) pills, in topical application (massages) <sup>#</sup>	Anti-rheumatic <sup>#</sup>	+	X
<i>Centaurium erythraea</i> RAFN. (CAST-CEN)	Gentianaceae	<i>a erva da frevē</i>	W	Aerial parts	Decoction	Anti-fever	+	
<i>Ceterach officinarum</i> DC. (CASTCET)	Adiantaceae	<i>u spaccapretē</i>	W	Aerial parts	Oleolite	To heal muscular pains in the shoulder region	+	
<i>Cichorium intybus</i> L. (Catalogna Group)	Asteraceae	<i>a cicoria catalogna</i>	C	Leaves	Soup <sup>MF</sup>	Laxative	+	X
<i>Citrus limon</i> (L.) BURM. <sup>NN</sup>	Rutaceae	<i>u lēmonē</i>	C	Fruits	Decoction	Anti-diarrhoea	+	X
<i>Citrus sinensis</i> (L.) OSBECK. <sup>NN</sup>	Rutaceae	<i>u pērtēgallē</i>	C	Epicarp	Decoction in mixtures with other species <sup>*</sup>	To heal sore throat and cough	++	X
<i>Clematis vitalba</i> L. (CASTCLE)	Ranunculaceae	<i>a vitacchia</i>	W	Fruits	Decoction, in gargles	To heal mouth inflammations	+	
<i>Conium maculatum</i> L. (CASTCON)	Apiaceae	<i>a cicuta /arcimelē</i> <sup>Pic</sup>	W	Entire plants	Topical application	Anti-warts	+	
<i>Cornus sanguinea</i> L.	Cornaceae	<i>u sanganiiddē</i>	W	Stems	To build small crosses	Thought to be able to keep witches far away (and illnesses caused by them, ritual use) tranquiliser	+	

Table 1 (Continued)

Botanical taxon (voucher specimen code)	Botanical family	Vernacular name recorded in Castelmezzano (including determinative article)	Status	Part(s) used	Preparation	Claimed medicinal uses	Consensus index	Observed use during the field study
<i>Crataegus monogyna</i> JACQ. (CASTCRA)	Rosaceae	<i>a ceraseddē/uscarrapollicē</i> <sup>Pie</sup>	W	Flowers	Decoction	Enhancing blood circulation	+	
<i>Cyclamen hederifolium</i> AITON (CA-CASTCYC)	Primulaceae	<i>l' acinē terrognē/l' arocelē terrognē</i>	W	Tuber	Cut and applied topically; then it is hung on a thorny stem; when the tuber has dried, the wart will have disappeared (ritual use)	Anti-warts	++	X
<i>Cynara candunculus</i> L. (CASTCYN)	Asteraceae	<i>a scalira</i>	W	Aerial parts	Decoction together with <i>Scrophularia canina</i> and <i>Potentilla reptans</i> aerial parts, then in compress	Anti-rheumatic	+	
<i>Cynara scolymus</i> L.	Asteraceae	<i>a carcioffa</i>	W	Flower receptacles	Decoction	Liver depurative	++	X
<i>Cynodon dactylon</i> (L.) PERS. (CASTCYN)	Graminae	<i>a gramegna</i>	W	Rhizome	Decoction	Diuretic; against hepatitis	+++	X
<i>Diplotaxis tenuifolia</i> (L.) DC. (CASTDIP)	Brassicaceae	<i>a ruca salvaccē</i>	W	Leaves	Oleolite (leaves fried in olive oil), topical application	To heal muscular pains (especially in the shoulder region)	+	
<i>Echallium elaterium</i> (L.) A. RICH. (CASTECB)	Cucurbitaceae	<i>u cucumariddē</i>	W	Fruits	Decoction, gargles	Against tooth-ache	+	
<i>Erigeron acer</i> BIVONA (CASTERI)	Asteraceae	<i>a radica u latrē/a radēca pēlmēnarē</i> <sup>Pie</sup>	W	Root	Topical application	To heal tooth-ache; to heal bruises and arthritis	+	
<i>Euphorbia helioscopia</i> L. (CASTEUP1)	Euphorbiaceae	<i>l'erva du garramonē</i>	W	Latex	Topical application	Male aphrodisiac (penile vasodilator)	++	
<i>Euphorbia cyparissias</i> L. (CASTEUP2)	Euphorbiaceae	<i>u lattē prēscianellē</i>	W	Latex	Topical application	Anti-warts	+	X
<i>Ficus carica</i> L.	Moraceae	<i>a fica</i> <sup>F</sup>	C, SC	Pseudofruits	Dried, then decoction with other herbal drugs*	To heal sore throats, bronchitis and as intestinal depurative	+++	X
				Sap	Topical application	To heal insect bites; anti-warts	++	X
<i>Fraxinus excelsior</i> L. (CASTFRAX)	Oleaceae	<i>u frassinē</i>	W	Leaves	Decoction	Against gastritis	+	
<i>Galium album</i> MILL. and <i>G. verum</i> L. (CASTGAL1 and CASTGAL2)	Rubiaceae	<i>a culatorē salvaccē</i>	W	Leaves	Topical application	To heal wounds (also on the gingiva)	+	
<i>Glycyrrhiza glabra</i> L. <sup>NN</sup>	Fabaceae	<i>a ghērlizia</i>	SC	Roots ( <i>a radēchē</i> )	Decoction	Anti-tussive	++	X
<i>Hordeum vulgare</i> L.	Graminae	<i>l'urscē</i>	C	Seeds	Decoction, in mixtures with other species* Bread imbedded with a decoction of the seeds <sup>MF</sup>	To heal sore throat and bronchitis Reconstituent for ill children and elderly	+++ +	X
<i>Hypericum hircinum</i> L. (CASTHYP)	Hypericaceae	<i>l'erva da bronchitē</i>	W → C	Leaves and stems (harvested in September when there is no moon)	Decoction, generally in mixture with other herbs*	To heal bronchitis	+++	X
<i>Lactuca sativa</i> L.	Asteraceae	<i>a lattuga</i>	C	Leaves	Decoction, in gargles; boiled plant, topical application Boiled, in topical application	Against gingival abscess Against toothache	+	
<i>Laurus nobilis</i> L.	Lauraceae	<i>u laurē</i>	SC	Leaves	Decoction, with other species* Decoction	To heal sore throat Anti-stress	+++ +	X
<i>Linaria vulgaris</i> Mill. (PIELIN)	Scrophulariaceae	<i>l'erva pau stomachē</i> <sup>Pie</sup>	W	Aerial parts	Decoction	To heal stomachache	+	
<i>Lycopersicon esculentum</i> MILL. <sup>NN</sup>	Solanaceae	<i>a pommēdora</i>	C	Fruits	Pickled with water, vinegar, salt, sugar, and aromatising with <i>Anethum graveolens</i> , <i>Armoracia rusticana</i> , and <i>Laurus nobilis</i> , leaves; the remaining solution to the tomato pickling process is drunk <sup>MF</sup>	To heal drunkenness <sup>#</sup>	+	X
<i>Matricaria recutita</i> (L.) RAUSCHERT. (CASTMAT)	Asteraceae	<i>a gancamilla</i>	W	Flowering tops	Decoction Decoction, in mixture with other species*	As anti-hypertensive; eye anti-inflammatory To heal sore throat, bronchitis; as intestinal depurative	+	
<i>Malva sylvestris</i> L. (CASTMAL)	Malvaceae	<i>a malva</i>	W	Aerial parts collecting while flowering	Decoction Decoction, in mixture with other species*	As mild laxative; to heal menstrual pains To heal sore throat, bronchitis; as intestinal depurative	+++ +++	X
<i>Marrubium vulgare</i> L. (CASTMAR)	Lamiaceae	<i>a marruggia</i>	W	Aerial parts	Decoction, in washes	To heal cyst	+	
<i>Mercurialis annua</i> L. (CASTMER)	Euphorbiaceae	<i>a mercuredde</i>	W	Leaves	Decoction	Laxative	+	
<i>Mentha spicata</i> L.	Lamiaceae	<i>a menta</i>	C	Leaves	Decoction	Against stomachache	++	X
<i>Morus alba</i> L.	Moraceae	<i>u ciuz bianchē</i>	SC	Leaves and stems ( <i>a fronnē</i> ), collected in September	Decoction, in mixture with other species*	To heal sore throat, bronchitis	++	X

<i>Morus nigra</i> L.	Moraceae	<i>u ciuz neurē</i>	SC	Leaves and stems ( <i>a fromē</i> ), collected in September	Decoction, in mixture with other species*	To heal sore throat, bronchitis (but thought to be less used than <i>Morus alba</i> , because of the taste of the leaves, said to be unpleasantly sour)	+	
<i>Malus domestica</i> BORKH.	Rosaceae	<i>a mēledda/a puma</i> <sup>Pie</sup>	C	Fruits	Decoction, in mixtures with other species*	To heal sore throat; bronchitis	+++	X
<i>Papaver somniferum</i> L.	Papaveraceae	<i>a papagna</i>	SC	Fruits	Decoction (made by 3, 5, or 7 fruits; using a paired number of fruits is said to be ineffective)	Tranquilliser	++	
<i>Parietaria judaica</i> L. (CASTPAR)	Urticaceae	<i>l'erva vjntē</i>	W	Aerial parts	Decoction	Diuretic; against intestinal pains; post-partum depurative	++	
<i>Petroselinum crispum</i> (MILL.) NYMAN EX A.W. HILL	Apiaceae	<i>u petērsinē</i>	C	Aerial parts	Decoction	Abortive	+	
<i>Potentilla reptans</i> L. (CASTPOT)	Rosaceae	<i>a cirsuddē/a cirsugliē</i> <sup>Pie</sup>	W	Aerial parts	Ground with garlic ( <i>Allium sativum</i> ) bulbs and topically applied	To heal insect bites	+	
					Decoction	Anti-hypertensive	+	
					Decoction together with <i>Scrophularia canina</i> and <i>Cynara cardunculus</i> aerial parts, then in compresses	Anti-rheumatic	+	
					Decoction	Against malaria	+	
<i>Plantago lanceolata</i> L. and <i>P. major</i> L. (CASTPLA1 and CASTPLA2)	Plantaginaceae	<i>a centinervia</i> <sup>Pie</sup>	W	Leaves	Topical application	Suppurative	++	X
<i>Prunus dulcis</i> (MILLER) D.A. WEBB.	Rosaceae	<i>a menola</i>	C, SC	Epicarp	Decoction, with other herbs*	To heal sore throat	++	X
<i>Prunus domestica</i> L.	Rosaceae	<i>le prune</i> <sup>fr, pl</sup>	C	Fruits	Eaten dried <sup>MF</sup>	Laxative	++	X
<i>Prunus spinosa</i> L. (CASTPRU)	Rosaceae	<i>u trignonē</i>	W	Fruits	Decoction	'Hepatoprotector'	+	
<i>Pyrus communis</i> L.	Rosaceae	<i>u pirē</i> <sup>wp</sup> / <i>a pera</i> <sup>fr</sup>	C	Fruits	Roasted <sup>MF</sup>	Mild laxative	+	X
<i>Ocimum basilicum</i> L. <sup>NN</sup>	Lamiaceae	<i>u basilichē</i>	C	Leaves	Smell inhaled	Anti-headache	+	
<i>Olea europaea</i> L.	Oleaceae	<i>aulivē</i>	C	Leaves	Chewed	Against stomachache	+	
<i>Origanum heracleoticum</i> L. (CASTORI)	Lamiaceae	<i>a riganē</i>	W	Flowering tops	Smoked, fumes inhaled	Against toothache	+	
<i>Robinia pseudoacacia</i> L. <sup>NN</sup> (CASTROB)	Fabaceae	<i>a spinagaggiē</i>	W	Dried fruits	Decoction	Anti-bronchitis	+	
<i>Rosa canina</i> L. (CASTROS)	Rosaceae	<i>u scaudapoddici/u spinapurcē</i> <sup>Pie</sup>	W	Leaves	Ground and topically applied	To heal insect bites	+	
				Pseudofruits	Stuffing for a little bag ( <i>l'abbatidē</i> ) attached to clothing as an amulet (ritual-medical use)	Against the evil-eye	+	
<i>Rosa</i> ssp. pl.	Rosaceae	<i>a rosa</i>	W	Flower buds	Decoction	Against stomachache; anti-depressive; diuretic	+	X
<i>Rosmarinum officinalis</i> L.	Lamiaceae	<i>a spigadossa</i>	C	Leaves	Decoction	To heal sore throat; against stomachache	+	
<i>Rubus ulmifolius</i> SCHOTT (CASTRUB)	Rosaceae	<i>e revētalē</i> <sup>pl</sup>	W	Leaves	Heated and then topically applied	Against carbuncles; to heal purulent skin abscesses (caused by thorns)	++	X
<i>Ruscus aculeatus</i> L. (CASTRUS)	Liliaceae s.l.	<i>u sparacē (de fruscitiddē)</i>	W	Shoots	Eaten boiled (traditionally consumed with bread and sour cream from <i>Podolica</i> cow milk) <sup>MF</sup>	Hepato-dupurative	++	X
<i>Ruta graveolens</i> L.	Rutaceae	<i>a ruta</i>	C	Aerial parts	Oleolite (plant is fried in olive oil) in topical applications; enolite	Against muscular pains	+	X
					Macerate in grape distillate ( <i>grappa</i> )	Digestive	+	
					Topical application	Haemostatic	++	
<i>Salvia argentea</i> L. (CASTSAL)	Lamiaceae	<i>l'erva du tagliē</i>	W	Young leaves	Decoction	To heal sore throat; against headache	+	
<i>Salvia officinalis</i> L.	Lam	<i>a salvia</i>	C	Leaves	Decoction	Anti-diaphoretic for the feet (baths)	+	
<i>Sambucus ebulus</i> L. (CASTSAM1)	Caprifoliaceae	<i>u gliulē/u livulē</i>	W	Leaves	Topical application; decoction	Diaphoretic; against belly pains	++	
<i>Sambucus nigra</i> L. (CASTSAM2)	Caprifoliaceae	<i>u sambuchē/u sammuchē</i>	W	Flowers	Decoction;	Against sore throat	++	X
				Leaves	Decoction together with other species* Scoured on the skin	Against insect bites	+	
<i>Santolina chamaecyparissus</i> L. (CASTSAN)	Lamiaceae		W	Aerial parts	Decoction	Anti-tussive	+	
<i>Scrophularia canina</i> L. (CASTSCR)	Scrophulariaceae	<i>a ruta salvaccē</i>	W	Aerial parts	Beaten on iron metal for juice extraction; oleolite	Against general pains	+	
					Decoction together with <i>Scrophularia canina</i> and <i>Cynara cardunculus</i> , then in compress	Anti-rheumatic	+	+
<i>Sedum telephium</i> L. (CASTSED1)	Crassulaceae	<i>a calla</i>	C, W	Leaves (as for Umbilicus sp.)	Topical application	Anti-warts	+	
<i>Sedum rupestre</i> L. (CASTSED2)	Crassulaceae	<i>u maccheroncīnē/u maccheronē di gaddinē</i>	W	Aerial parts	Decoction	Diuretic	+	

Table 1 (Continued)

Botanical taxon (voucher specimen code)	Botanical family	Vernacular name recorded in Castelmezzano (including determinative article)	Status	Part(s) used	Preparation	Claimed medicinal uses	Consensus index	Observed use during the field study
<i>Senecio vulgaris</i> L. (CASTSEN)	Asteraceae	<i>u savunciddē/u savoncellē vastardē</i> <sup>Pie</sup>	W	Aerial parts	Topical application of crushed plants	Against skin inflammations	+	
<i>Silybum marianum</i> (L.) GAERTN. (CASTSIL)	Asteraceae	<i>u cardonē spicchialicchiē</i>	W	Stems; leaf stalks	Eaten raw as a snack <sup>MF</sup>	Laxative	+	
<i>Solanum nigrum</i> L. (CASTSOL)	Solanaceae	<i>l'erva delle sjrpē/l'acinicchiē/l'acinellē</i>	W	Fruits	Topical application; heated on charcoal, and then vapours are inhaled	Against toothache	+	
<i>Sonchus oleraceus</i> L. (CASTSON)	Asteraceae	<i>u sivunē</i>	W	Leaves	Eaten raw in salads <sup>MF</sup>	Anti-gastritis	+	
<i>Sorbus domestica</i> L.	Rosaceae	<i>a sorva</i>	SC	Fruits	Eaten dried or boiled <sup>MF</sup> ; decoction	Anti-diarrhoea	++	
<i>Sorghum bicolor</i> L.	Graminae	<i>a melechē</i>	C	Aerial parts	To build a broom	Thought to be able to keep witches far away (and illnesses caused by them, ritual use)	+	
<i>Spartium junceum</i> L. (CASTSPA)	Fabaceae	<i>a scēnēstra</i>	W	Stems juice	Topical application	Anti-warts	++	
<i>Teucrium chamaedrys</i> L. (CASTTEU)	Lamiaceae	<i>l'erva da malaria</i>	W	Aerial parts	Decoction	Anti-malaria	+	
<i>Tilia cordata</i> MILL. <sup>NN</sup>	Tiliaceae	<i>u tigliē</i>	C	Flowers	Decoction with <i>Malva</i> spp.	To heal body tremors	+	
<i>Triticum durum</i> DESF.	Graminae	<i>u granē</i>	C	Seeds → bran	Mixed with water and heated, external topical application	Against sore throat	++	
<i>Tussilago farfara</i> L. (CASTTUS)	Asteraceae	<i>a rognā cavadda</i>	W	Roots	Decoction	Diuretic	+	
<i>Ulmus minor</i> MILL. (CASTULM)	Ulmaceae	<i>l'olmē</i>	W	Contents of galls	Topical application	Against muscular pains, swollen bruises	+	
<i>Umbilicus rupestris</i> (SALISB.) DUNDY (CASTUMB)	Crassulaceae	<i>e cuppette</i> <sup>pl</sup> / <i>e orecchiē dē prevēte</i> <sup>pl</sup> / <i>i cuppitelle</i> <sup>pl</sup> , <sup>Pie</sup>	W	Leaves (after extraction of the external membrane)	Topically applied	Against carbuncles and skin inflammation	++	
<i>Urtica</i> ssp. pl.	Urticaceae	<i>ardiga</i>	W	Leaves	Decoction	Digestive	+	
<i>Veronica beccabunga</i> L. (CASTVER)	Scrophulariaceae	<i>u crisciumē</i>	W	Aerial parts	Decoction; eaten raw or boiled <sup>MF</sup>	Diuretic	+	
<i>Vitis vinifera</i> L.	Vitaceae	<i>a vitē</i>	C	Fruits → wine ( <i>u vinē</i> )	Topical application	Against insect bites	+	
				Fruits → boiled wine ( <i>u vinē veddute</i> )	Drunk or bread is dipped in wine <sup>MF</sup>	Galactagogue	+++	X
				Shoot sap	Drunk hot <sup>MF</sup>	Against sore throat and anti-tussive; partum enhancer	++	X
				Young shoots	Topical application	To relieve eye inflammations	++	
				Fruits and peduncles → grappa	Eaten raw <sup>MF</sup>	Anti-gastritis	+	
					Mixed together with diverse decoctions	Anti-fever; anti-tussive	++	X
					Macerate with chillies ( <i>Capsicum annuum</i> fruits) and novalgin (metamizole sodium) pills, in topical application (massages) <sup>#</sup>	Anti-rheumatic <sup>#</sup>	+	X
<i>Zea mais</i> L. <sup>NN</sup>	Graminae	<i>u grandinie/u pupē</i>	C	Stigma ( <i>capeddē de le pupē</i> )	Decoction	Diuretic	++	
				Seeds → flour	<i>Polenta</i> made boiling water with onions, parsley and pork fat, then adding corn flour <sup>MF</sup>	Reconstituent	++	
<i>Ziziphus jujuba</i> MILL. <sup>NN</sup>	Rhamnaceae	<i>e scescēlē</i> <sup>pl</sup>	C	Fruits	Decoction, in mixtures with other species <sup>*</sup>	To heal sore throat or cough	++	X
Non identified		<i>suedosē</i>	C	Root	Oleolite <sup>##</sup>	To heal muscular pains <sup>##</sup>	+	

NN: Species, which are not native in the Dolomiti Lucane area; MF: species, which are used as a medicinal food; C: cultivated species (no voucher specimens collected); SC: semi-cultivated species or species reverted to the wild status (including diverse forms of managing plants in the wild); W: wild; C → W: domesticated in loco (by transplantation from wild environment); fr: folk name of the fruit; pl: folk name in plural; wp: folk name of the whole plant; Pie: folk name recorded in Pietrapertosa; +: use quoted by less than 10% of the informants; ++: use quoted by more than 10% and less than 40% of the informants; +++: use quoted by more than 40% of the informants; X: use observed during the field study.

\* Plants that are generally used together in diverse combination of mixtures.

# Remedies and uses quoted by migrant women from Ukraine.

## Remedy and use quoted by autochthonous population that migrated during the 1960s to French Switzerland and then returned back to live in their original territory.

interviewees spontaneously quoting a given remedy) and also of the factors affecting the cultural importance given to every plant (Pieroni, 2001). Round-table focus groups with local gatherers and women took place in the second phase of the study in order to discuss and elaborate details concerning the information collected (Price, 1997).

The transcription of vernacular names of the recorded-traditional remedies of the local-folk pharmacopoeia follow the rules of the Italian language; the neutral centralised vowel ('schwa') of the southern Italian (Calabro-Neapolitan) dialect spoken in the study area, often marked by a few linguists by an apostrophe ('), has been symbolised in this study by the sign 'ē'.

Voucher specimens of non-domesticated medicinal plants, identified following the Italian botanical standard treatise (Pignatti, 1982), as well as more than 80 h of tape-recorded interviews and photographic documentation (around 3000 electronic pictures) are available at the first author's address.

### 3. Results

Tables 1 and 2 report the 'traditional' plant- and animal-derived remedies used until recently in the studied area and represent the traditional heritage of the ethnopharmacopoeia of this small mountainous zone. In these two tables, we reported for each biological taxon or remedy its folk names, the used parts, the means of administration/preparation, the claimed medical use, a consensus index expressing what was indicated in the aforementioned methodology, and the observation of an eventual use for each drug during the field study. In Table 3, we included other materials (both mineral and industrial) traditionally used for medical or ritual medical purposes in the territories of Castelmezzano and Pietrapertosa.

### 4. Discussion

It is apparent that knowledge on traditional natural remedies for healing human diseases is quickly disappearing in Central Lucania. Modern pharmaceuticals have substituted many natural remedies and real healers no longer exist in the area. Nevertheless, many people still remember the most famous 'healer' of southern Italy (well described by de Martino, 1959), the 'Mago Ferramosca' (alias Giuseppe Calvello from Pietrapertosa) who died in 1968 in Castelmezzano, and the last perceived 'healer' of the village, 'Zia Teresa' a Lia' (alias Teresa Vertino), who died in 2001. In Castelmezzano, people sustain today that she presumably had learned most of her knowledge from Ferramosca.

Nevertheless, a great heritage in the field of folk 'domestic medicine' still remains in the Dolomiti Lucane. Most of the remedies quoted in this survey have been abandoned, or are rarely in use at present, but a few of them are still at hand in the primary health care of the family, normally dispensed by

the oldest women of the family (the mother, the grandmother, or the mother-in-law). Around 110 remedies of plant origin (belonging to 103 botanical taxa), 30 of animal origin, and 20 mineral or industrial (non-pharmaceutical) products were recorded.

#### 4.1. Comparative analysis

We have compared the folk-phytotherapeutical data collected in our study with data present in the available ethnobotanical literature of southern Italy (Catanzaro, 1968, 1970; Galt and Galt, 1978; Barbagallo et al., 1979; Barone, 1979; Antonone et al., 1988; Lentini et al., 1988; Lentini and Raimondo, 1990; Raimondo and Lentini, 1990; Lentini and Aleo, 1991; De Feo et al., 1992; De Feo and Senatore, 1993; Lentini et al., 1995; Amico and Sorge, 1997; Pieroni et al., 2002a,b). We will discuss briefly in the following paragraphs a few of them, which have been never quoted or reported before as medicinally used in Italy.

##### 4.1.1. *Hypericum hircinum*

This species is very widely used in the Castelmezzano for treating cough (the vernacular name of the plant is 'the herb of the cough'), and it is mainly used in the fall or winter, together with other local herbal drugs, in the so-called 'village-style decoction' ('*u decottē a paisanē*'), which is used to heal or prevent sore throats and/or colds and as an anti-tussive. The herbal components of this complex decoction, which is still used by nearly every family in the village, are gathered during the summertime or September (as for the leaves of *Hypericum hircinum*), dried, and stored for the winter.

The other species that can accompany *Hypericum hircinum* in the decoction are: mallow (*Malva sylvestris*), chamomile (*Matricaria recutita*), dried figs (*Ficus carica*), dried jujube fruits (*Ziziphus jujubs*), barley or oak seeds (*Hordeum vulgare*/*Avena sativa*), mulberry leaves (*Morus alba* and *M. nigra*), bay leaves (*Laurus nobilis*), orange (*Citrus sinensis*), almond (*Prunus dulcis*) epicarp, and apple fruits (*Malus domestica*).

*Hypericum hircinum*, which is a shrub, has been transplanted from a very humid environment near the village (*Acquarē*), where the species grows wild, to a few home gardens located in the centre of Castelmezzano where they are nowadays cultivated. The domestication process of this species seems to be very old, since it was difficult to trace the information about the origin of the plant.

Recently, an Italian group investigated the phytochemistry of *Hypericum hircinum* leaf essential oils and the anti-bacterial activity of diverse extracts of the species. The essential oil of *Hypericum hircinum* is rich in B-caryophyllene, alfa-gurjunene, caryophyllene-oxide and β-gurjunene (Bertoli et al., 2000). While *Hypericum hircinum* methanolic extract exhibited a strong activity against *Staphylococcus aureus*, the pure isolated constituents (methyl ester of chlorogenic acid, quercetin, quercitrin, biapigenin, and an unknown compound) showed no antimicrobial ac-

Table 2  
Animal derived remedies used in the folk medicine of the Dolomiti Lucane

Remedy	Folk name (including determinative article)	Administration	Claimed medicinal use	Consensus index
Two-headed salamander ( <i>Salamandra</i> sp.)	<i>a salagrechē</i>	Head cut and stored in alcohol	Good omen	+
Cerumen	<i>u cerumē</i>	Topical application	To heal purulent skin abscesses (caused by thorns)	+
Common cuckoo ( <i>Cuculus canorus</i> )	<i>u cucchē</i>	To hear the bird singing	Good omen for long life	+
Cow faeces	<i>u rumatē da vacchē</i>	Topical application Smelling it early in the morning	To heal skin burns Against pertussis	+ +
Dog faeces	<i>u rumatē du cuanē</i>	Topical application	To heal skin burns	+
Donkey milk	<i>u lattē da ciuccīē</i>	Drunk <sup>MF</sup>	Reconstituent for children	++
Dried ricotta	<i>a ricotta tostē</i>	Mixed with hot water, which remains after having boiled noodles, and then the mixture used as sauce for the same noodles <sup>MF</sup> ; mixed with boiled bread <sup>MF</sup>	Anti-diarrhoea; galactagogue	++
Egg albumen	<i>u jancu de l'ovē</i>	Scrambled and topically applied with a cloth	Anti-bruises	++
Egg	<i>ovē</i>	Boiled eggs <sup>MF</sup>	Anti-diarrhoea	++
Fermented cream (from cow milk)	<i>u butirrē</i>	Topical application	Emollient for healing skin inflammations of babies	+
Four-lined snake ( <i>Elaphe quatuorlineata</i> )	<i>a serpē cervonē</i>	Fat ( <i>a sunzē</i> ) extracted when the snake is still alive, used as an ointment	Anti-rheumatism	++
Goat milk	<i>u lattē da crapē</i>	Drunk hot with honey <sup>MF</sup>	Anti-tussive; reconstituent (children)	+++
Hair	<i>a ciocca dē capeddē</i>	Cut on 1st Friday of March	Good omen for preventing headache	+
Hen meat	<i>a gaddina</i>	Soup <sup>MF</sup>	Post-partum depurative (even given as gift to a woman who has just given birth); reconstituent during various illnesses	++
Human milk	<i>u lattē da femēnē</i>	Topical application	To heal eye inflammations	
Human sweat	<i>u sudorē</i>	Topical application of the sweat soaked inner brim of a hat	Anti-wounds	
Leather (extracted from a black dog)	<i>u crigiulē du cuane neurē</i>	To be worn as an amulet	Against the evil-eye	+
Leech ( <i>Hirudo medicinalis</i> )	<i>a magnattola</i>	Topical application	To heal a not clearly identified disease related with skin troubles, as an apotropaic: if the animals survive after the application, it is seen as good omen	+
Mouse ( <i>Mus musculus</i> )	<i>u sorcē</i>	Eaten boiled or cooked <sup>MF</sup>	Anti-enuresis	++
Pigeon meat	<i>u piccionē</i>	Soup <sup>MF</sup>	Post-partum depurative and galactagogue (even given as gift to the women who have had a birth); reconstituent during an illness	++
Pork lard	<i>l'untē</i>	Soup <sup>MF</sup>	Laxative	+
Sheep milk	<i>u lattē da pechērē</i>	Drunk <sup>MF</sup>	Laxative	+
Silk ribbon	<i>u filē a setē</i>	Bound around the wart	Anti-warts	+
Slug ( <i>Arion hortensis</i> )	<i>u valicē aranudē</i>	Topical application	To heal warts: after the treatment, which has to be carried out when full moon is decreasing, the slug is hung on a <i>Rubus ulmifolius</i> thorn; when the animal has dried up, the wart will have disappeared	+++
Urine	<i>u piscē</i>	Topical application	Haemostatic	++
Whey	<i>u sjrē crudē</i>	Drunk <sup>MF</sup>	Laxative; digestive troubles	++
Wood affected by woodworms ( <i>Anobium punctatum</i> )	<i>a leuna imbracētātē</i>	Topical application	Antiseptic (babies)	+
Non identified insect	<i>u cavaddē da mortē</i>	The 'crystal' of the insect placed on necklaces to be dressed	Amulet against the evil-eye ( <i>affascēnē</i> )	+

MF: species, which are used as a medicinal food; +: use quoted by less than 10% of the informants; ++: use quoted by more than 10% and less than 40% of the informants; +++: use quoted by more than 40% of the informants.

Table 3  
Other materials (of mineral or industrial origins) used in the folk pharmacopoeia of the Dolomiti Lucane

Remedy	Folk name (including determinative article)	Administration	Claimed medicinal use	Consensus index
Ashes	<i>a cenerē</i>	Compresses, topical application on the neck	To heal sore throat; haemostatic	++
Clay	<i>a terrē</i>	Topical application	To heal insect bites	+
Coin	<i>le centolirē</i>	Applied on the skin, upon a candle, under a glass (the whole practice is called locally 'i cuppetieddē' or 'e coppettē')	Anti-inflammatory	++
Copper sulphate	<i>u vetriolē</i>	Ground and locally applied	Against purulent wounds	++
Match head	<i>a capezzolē du fiammiferē</i>	Powdered, in topical applications	Haemostatic	+
Nail from the donkey iron	<i>a postē</i>	Worn under clothing as an amulet	Amulet against the evil eye	++
Old bed sheets	<i>a pezzē</i>	Embedded with boiled water, in compresses	To heal skin inflammations	+
Petrol	<i>u petroliē</i>	Topical application	Haemostatic	+
Safety pin	<i>a spillē</i>	Attached to female clothes	As an amulet against the evil eye	++
Salt	<i>u salē</i>	Solution in water: gargles	Against sore throat	++
Sea air	<i>l'aria marinē</i>	Person should take spend a few days at the sea side for at least two/three years	To heal 'a lagrimē dē l'ucchiē': eye diseases thought to be caused by the interruption of the lachrymal channels and causing bad eye inflammations	+
Stone	<i>u pesc-conē</i>	Put on the belly Early in the morning on 1st August, a particular river stone has to be seen forming a special shape (a head joined to the body)	Anti-gastritis Good omen	+ +
Sugar	<i>u zuccherē</i>	Drunk in solution with water	Against tiredness; against stomachache	++
Train smoke	<i>u fumē du trenē</i>	Smelling it early in the morning	To heal pertussis in babies	+
Used bullet	<i>a paddē sparatē</i>	Worn as a necklace on a chain Stuffing for a small bag ( <i>abbatiddē</i> ) to be worn as an amulet	As an amulet against the evil eye As an amulet against the evil-eye	+ +
Wool ribbon (that one when the cattle were castrated, turning three times the testicles)	<i>u filo da lanē</i>	Worn as a necklace	To heal unidentified thyroid diseases	+

Remedy and use quoted by migrant women from the Ukraine; +: use quoted by less than 10% of the informants; ++: use quoted by more than 10% and less than 40% of the informants; +++: use quoted by more than 40% of the informants.

tivity against the tested microorganisms (Pistelli et al., 2000).

Further investigation of the pharmacology and phytochemistry of this species could be promising.

#### 4.1.2. *Salvia argentea*

Historically, *Salvia argentea* leaves have been used in the Dolomiti Lucane territory against wounds, probably as a haemostatic. The collection of *Salvia argentea* generally took place during the procession to Viggiano for the old religious ceremony of the Black Madonna. This popular tradition takes place on the first Sunday of May and September, and there are still people from all the villages of the Central Lucania who walk along the highest mountain chains to Viaggiano during Friday or Saturday night, before the ceremony. On the way back, *Salvia argentea*, which grows in Lucania generally only at the highest altitudes, is collected and dried for its use throughout the whole year.

The appearance of the young leaves, which are very hairy, may have played a role in the folk 'perception' of the external medical properties of the species. Yet, no pharmacological investigations have been carried out on this Mediterranean

plant so far. The only recent work available in the literature is a study on the chemical composition of the essential oil of *Salvia argentea* collected from south-eastern Serbia (Couladis et al., 2001): the oil was found to be characterised by a high content of sesquiterpenes, mainly represented by viridiflorol (32.4%), manool (14.6%), and alpha-humulene (10.7%).

#### 4.1.3. *Erigeron acer*

The use of the roots of *Erigeron acer* in the human folk medicine of the Dolomiti Lucane to heal tooth-ache and arthritic pains must be connected with the spread of an ethnoveterinary use of the same species, in which the root is implanted into the skin of the ear to diagnose and heal swine erysipelas caused by *Erysipelothrix rhusiopathiae*. This use of *Erigeron acer* is similar to that of the roots of *Helleborus* species, which is widely used for the same purpose in central and northern Italy (Viegi et al., 2003) and in Romania (Bogdan et al., 1990).

*Erigeron acer* was well known in Central European folklore for its role in protection against witchcraft: in Sudeten–Silesia, it was given to cattle to protect them against

bad spirits, and as a good omen, the plant was put on hot coals while a cow's udder was smoked before being eaten (Marzell, 1943). In addition, the ritual symbolism related with this plant is still evident in the vernacular name that we recorded ('root of the crook'), and in other Italian vernacular names used for other *Erigeron* species (*cua de lu*, 'wolf's cue', or *panas de volp*, 'fox bread' (Penzig, 1924)).

Nevertheless, despite its interesting folk medical uses, *Erigeron acer* has never been studied phytochemically and pharmacologically, whereas a few recent studies on other *Erigeron* species have demonstrated molluscicidal, antifungal (*Erigeron speciosus* (Meepagala et al., 2002)), and vascular endothelium protecting activities (*Erigeron breviscapus*; Zhu et al., 1999).

#### 4.2. New "phytotherapeutics"

A few uses of plants as stimulants have been introduced in the studied area only very recently by the food industry (for example, guaranà and ginkgo extracts), and a few others by phytopharmaceutical companies, via the consultation of the local pharmacist or GP (for modern 'non-standardized' herbal extracts, or for liquorice candies, locally called *caramellè da ghèrlizia*, consumed in order to heal stomach-aches).

In contrast, a separate chapter would be needed to discuss the 'new' plant medical materials brought in the study area by migrant Ukrainian women, who have introduced very unusual (for autochthonous inhabitants) medical usages of common food plants. From these migrant women, we recorded the consumption of pickled tomato together with the liquid with which they are pickled as the best relief from drunkenness and a macerate of chillies and novalgin in *grappa* (typical example of modern 'folk' use of pharmaceutical and phytopharmaceuticals together, whose toxicological relevance should be underlined) against muscular pains. Both of these uses are certainly completely different from those of the autochthonous inhabitants, who instead greatly appreciate tomatoes and chillies in the kitchen, but much less medicinally.

This data can once again represent examples how, from one side, TPhK, as any kind of TK, both in traditional and Western rural societies, has become strongly eroded, due to acculturation and 'modernisation' processes, but on the other hand, how the same knowledge acquires new inputs and changes over time.

#### 4.3. Remedies of animal origins

In Table 2, the connection between food and medicine becomes clearer through observing the plant-derived remedies. Here, we can analyze how many remedies quoted for being used internally actually represent foods, which are consumed also because of their perceived health-benefiting properties (for a in-depth discussion about ethnobotanical food-medicines, see our previous works; Pieroni, 2001; Pieroni et

al., 2002b). A notable exception is represented by the external use of a material, which will be described in detail in the next paragraph.

##### 4.3.1. *Elaphe quatuorlineata*

The use of the fat of the snake *Elaphe quatuorlineata* (known as 'four-lined snake' in English) represents a constant of the Lucanian medical folklore. The fat is said to have to be extracted when the animal is still alive.

It was reported by several sources—including de Martino in the 1950s (de Martino, 1959), a video-documentary produced at that time by Italian television documenting that study, and many elderly who we interviewed in Castelmezzano and Pietrapertosa—that the renown healer Ferramosca, who lived in a isolated house that was approximately 1 h walk from the village of Castelmezzano, regularly hung the skins of the four-line snake outside of his home. All the interviewees assumed that the fat of this snake was frequently used in external medical applications by Ferramosca.

In any case, this material has been used for many years in the domestic medicine of the study area to heal rheumatism. The central role of the four-lined snake in the history of Mediterranean medicine is quite well known.

An Italian interdisciplinary group has described finding votive tablets during the excavation of shrines of the Greco-Roman god of medicine (Asklepios or Aesculapius), which associate the healing of superficial lesions with contact with the oral cavity of non-poisonous serpents (Angeletti et al., 1992). The Italian researchers suggested that this could have been the empirical exploitation of the healing properties of salivary growth factors of *Elaphe quatuorlineata*, which was probably used in healing rituals. Bio-scientific data regarding the pharmaceutical properties of *Elaphe quatuorlineata* fat are, however, completely absent in the literature. This snake species is still used in ritual religious ceremony in central-southern Italy (Filippi and Luiselli, 2003).

#### 4.4. Other materials of the ethnopharmacopoeia and ritual uses

The traditional ethnopharmacy of the Dolomiti Lucane also include minor mineral or industrial materials (Table 3). A few of them (as in the case of a few ethnoveterinary medicines) were used ritually in the past, as amulets or good omens for preventing illnesses and especially the evil-eye (called in the study area *affascènè*). In other papers, we have discussed the relevance of the 'evil-eye' system in Lucania (Quave and Pieroni, 2002; Giusti et al., 2004; Quave and Pieroni, in press). The relevance of ritual healing practices in the Dolomiti Lucane, which are carried out by only a very few remaining special women ('*quelle che aiutano*') is very much less than what we recorded in the nearby historical Albanian villages (see aforementioned references).

## 5. Conclusion

Evaluation of the last 'isles' of TPhK in rural areas in the Mediterranean region is more urgent than ever. At the same time, ethnographic, ethnobiological, and ethnopharmacological surveys dealing with traditional Mediterranean uses of plants and other aspects of folk pharmacopoeias could represent the basis for the implementation of such 'rediscovered' data focusing on eco-sustainable interdisciplinary projects involving biological conservation, and, most importantly, the conservation of local cultural heritage. Last, but not least, a lot of unknown uses of medicinal plants, or even unknown medicinal plants (as this article is demonstrating), do exist even in Europe, and ethnobotanical studies such as the present one could provide inputs for new phytochemical and phytopharmacological studies. These, on their turn, could lead to integrated projects for the sustainable cultivation of local plant resources for the small-scale production of raw phytotherapeutics.

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## References

- Agelet, A., Vallés, J., 2001. Studies on pharmaceutical ethnobotany in the region of Pallars (Pyrenees, Catalonia, Iberian Peninsula). Part I. General results and new or very rare medicinal plants. *Journal of Ethnopharmacology* 77, 57–70.
- Agelet, A., Vallés, J., 2003a. Studies on pharmaceutical ethnobotany in the region of Pallars (Pyrenees, Catalonia, Iberian Peninsula). Part II. New or very rare uses of previously known medicinal plants. *Journal of Ethnopharmacology* 84, 211–227.
- Agelet, A., Vallés, J., 2003b. Studies on pharmaceutical ethnobotany in the region of Pallars (Pyrenees, Catalonia, Iberian Peninsula). Part III. Medicinal uses of non-vascular plants. *Journal of Ethnopharmacology* 84, 229–234.
- Alexiades, N.M., Sheldon, J.W. (Eds.), 1996. *Selected Guidelines for Ethnobotanical Research: A Field Manual*. Botanical Garden Press, New York, USA.
- Amico, F.P., Sorge, E.G., 1997. Medicinal plants and phytotherapy in Mussomeli area (Caltanissetta, Sicily, Italy). *Fitoterapia* LXVIII, 143–159.
- Angeletti, L.R., Agrimi, U., Curia, C., French, D., Mariani-Costantini, R., 1992. Healing rituals and sacred serpents. *Lancet* 340, 223–225.
- Antonone, R., De Simone, F., Morsica, P., Ramando, E., 1988. Traditional phytotherapy in the Roccamonfina volcanic group, Campania, southern Italy. *Journal of Ethnopharmacology* 22, 295–306.
- Atran, S., 1999. Itzaj Maya folkbiological taxonomy: cognitive universals and cultural particulars. In: Medin, D.L., Atran, S. (Eds.), *Folkbiology*. The MIT Press, Cambridge, MA, USA.
- Barbagallo, C., Grillo, M., Meli, R., 1979. Nota sulle piante officinali spontanee e coltivate del territorio di Cesarò (Messina). *Fitoterapia* 2, 57–66.
- Barbini, S., Tarascio, M., Sacchetti, G., Bruni, A., 1999. Studio preliminare sulla etnofarmacologia delle comunità ladine dolomitiche. *Informatore Botanico Italiano* 31, 181–182.
- Barone, R., 1979. Le piante della medicina popolare nel territorio di Falconara e San Lucido (Calabria). *Webbia* 17, 329–357.
- Bellakhdar, J., 1997. *La Pharmacopée Marocaine Traditionnelle*. Ibis Press, Paris.
- Berlin, B., 1992. *Ethnobiological Classification*. Princeton University Press, Princeton, USA.
- Berlin, B., Breedlove, D.E., Raven, P.H., 1966. Folk taxonomies and biological classification. *Science* 154, 273–275.
- Bertoli, A., Pistelli, L., Morelli, I., Spinelli, G., Manichini, F., 2000. Constituents of *Hypericum hircinum* oil. *Journal of Essential Oil Research* 12, 617–620.
- Bogdan, I., Nechifor, A., Basea, I., Hruban, E., 1990. Aus der rumänischen Volksmedizin: unspezifische Reiztherapie durch transkutane implantation der Nieswurz (*Helleborus purpurascens* Fam. Ranunculaceae) bei landwirtschaftlichen Nutztieren. *Deutsche Tierärztliche Wochenschrift* 97, 525–529.
- Bonet, M.A., Blanché, C., Vallès Xirau, J., 1992. Ethnobotanical study in river tenes valley (Catalonia, Iberian Peninsula). *Journal of Ethnopharmacology* 37, 205–212.
- Bonet, M.A., Parada, M., Selga, A., Vallès, J., 1999. Studies on pharmaceutical ethnobotany in the regions of L'Alt Empordà and Les Guilleries (Catalonia, Iberian Peninsula). *Journal of Ethnopharmacology* 68, 145–168.
- Bonet, M.A., Vallès, J., 2003. Pharmaceutical ethnobotany in the Montseny biosphere reserve (Catalonia, Iberian Peninsula). General results and new or rarely reported medicinal plants. *Journal of Pharmacy and Pharmacology* 55, 259–270.
- Catanzaro, F., 1968. *Piante officinali dell'Isola di Pantelleria*. *Webbia* 23, 135–148.
- Catanzaro, F., 1970. Le piante officinali del territorio di Bivona (Agrigento) nella tradizione popolare. *Fitoterapia* 41, 66–84.
- Caneva, G., Pontandolfi, M.A., Fascetti, S., 1997. *Le Piante Alimentari della Basilicata*. Regione Basilicata, Potenza (Italy).
- Capasso, F., De Simone, F., Senatore, F., 1982. Traditional phytotherapy in the agri valley, Lucania, southern Italy. *Journal of Ethnopharmacology* 6, 243–250.
- Couladis, M., Tzakou, O., Stojanovic, D., Mimica-Dukic, N., Jancic, R., 2001. The essential oil composition of *Salvia argentea* L. *Flavour and Fragrance Journal* 16, 227–229.
- D'Andrade, R., 1995. *The Development of Cognitive Anthropology*. Cambridge University Press, Cambridge, UK.
- De Feo, V., Senatore, F., 1993. Medicinal plants and phytotherapy in the Amalfitan Coast, Salerno province, Campania, southern Italy. *Journal of Ethnopharmacology* 39, 39–51.
- De Feo, V., Aquino, R., Menghini, A., Ramundo, E., Senatore, F., 1992. Traditional phytotherapy in the Penisula Sorrentina, Campania, southern Italy. *Journal of Ethnopharmacology* 36, 113–125.
- de Martino, E., 1959. *Sud e Magia*. Feltrinelli Editore, Milan, Italy, 1999 (reprint).

- Filippi, E., Luiselli, L., 2003. Delayed reproduction in snakes subjected to human traditional rituals in central Italy. *Vie et Milieu-Life and Environment* 53, 111–118.
- Gallini, C., Faeta, F. (Eds.), 1999. *I Viaggi nel Sud di Ernesto de Martino*. Bollati Boringhieri, Turin, Italy.
- Galt, A.H., Galt, J.W., 1978. Peasant use of some wild plants on the island of Pantelleria. *Economic Botany* 32, 202–226.
- Giusti, M.E., Pieroni, A., Quave, C., 2004. Medical anthropology at the borders: ritual healing in Arbëreshë Albanian ethnic communities in Lucania (southern Italy). In: Paládi-Kovács, A., (Ed.), *Times, Places, Passages. Ethnological Approaches in the New Millennium*. Akadémiai kiadó, Budapest, Hungary, 237–245.
- Heinrich, M., Pieroni, A., 2001. Ethnopharmakologie der Albaner Süditaliens. *Zeitschrift für Phytotherapie* 22, 236–240.
- Lentini, F., Aleo, M., 1991. Indagini etnobotaniche in Sicily. V. L'uso tradizionale delle piante nel territorio di Erice (Trapani). *Atti dell'Accademia di Scienze Lettere e Arti di Palermo*, 1–30.
- Lentini, F., Catanzaro, F., Aleo, M., 1988. Indagini etnobotaniche in Sicilia. III. L'uso tradizionale delle piante nel territorio di Mazara del Vallo (Trapani). *Atti dell'Accademia di Scienze Lettere e Arti di Palermo*, 1–29.
- Lentini, F., Giani, S., Armenta, R., 1995. L'uso popolare delle piante nelle isole Eolie (Sicilia). *Acta Technologiae et Legis Medicamenti* 3, 351–355.
- Lentini, F., Raimondo, F.M., 1990. Indagini etnobotaniche in Sicilia. IV. L'uso popolare delle piante nel territorio di Mistretta (Messina). *Quaderni di Botanica Ambientale Applicata* 1, 103–117.
- Marzell, H., 1943. *Wörterbuch der deutschen Pflanzenamen—Zweiter Band*. Verlag von S. Hirzel, Leipzig, Germany, pp. 276–278 (reprinted in 2000 by Parkland Verlag, Köln, Germany).
- Meepagala, K.M., Sturtz, G., Wise, D., Wedge, D.E., 2002. Molluscicidal and antifungal activity of *Erigeron speciosus* steam distillate. *Pest Management Science* 58, 1043–1047.
- Ogoye-Ndegwa, C., Aagard-Hansen, J., 2003. Traditional gathering of wild vegetables among the Luo of western Kenya—a nutritional anthropology project. *Ecology of Food and Nutrition* 42, 69–89.
- Paternò, M., 2003. Personal communication.
- Penzig, O., 1924. *Flora Popolare Italiana. Raccolta dei nomi dialettali delle principali piante indigene e coltivate in Italia* (reprinted in 1974 by Edizioni Edagricole, Bologna, Italy).
- Pieroni, A., 2001. Evaluation of the cultural significance of wild food botanicals traditionally gathered in northwestern Tuscany, Italy. *Journal of Ethnobiology*, 89–104.
- Pieroni, A., 2003. Wild food plants and Arbëresh women in Lucania, southern Italy. In: Howard, P. (Ed.), *Women & Plants. Case Studies on Gender Relations in Biodiversity Management & Conservation*. Zed Press, London/New York, UK/USA, pp. 66–82.
- Pieroni, A., Nebel, S., Quave, C., Münz, H., Heinrich, M., 2002a. Ethnopharmacology of *liakra*, traditional weedy vegetables of the Arbëreshë of the vulture area in southern Italy. *Journal of Ethnopharmacology* 81, 165–185.
- Pieroni, A., Quave, C., Nebel, S., Heinrich, M., 2002b. Ethnopharmacy of ethnic albanians (Arbëreshë) in northern Basilicata (southern Italy). *Fitoterapia* 73, 217–241.
- Pieroni, A., Howard, P., Volpato, G., Santoro, R.F., 2004. Natural remedies and nutraceuticals used in ethnoveterinary practices in inland southern Italy. *Veterinary Research Communication* 28, 55–80.
- Pignatti, S., 1982. *Flora d'Italia*. Edizioni Edagricole, Bologna, Italy.
- Pistelli, L., Bertoli, A., Zucconelli, S., Morelli, I., Panizzi, L., Manichini, F., 2000. Antimicrobial activity of crude extracts and pure compounds of *Hypericum hircinum*. *Fitoterapia* 71, S138.
- Price, L., 1997. Wild plant food in agricultural environments: a study of occurrence, management, and gathering rights in northeast Thailand. *Human Organization* 56, 209–221.
- Quave, C., Pieroni, A., 2002. Traditional healing in the Vulture area of Southern Italy. In: Gottschalk-Batschkus, C.E., Green, J.C. (Eds.), *Handbuch der Ethnotherapien/Handbook of Ethnotherapies*. BOD, Norderstedt, Germany, pp. 109–118.
- Quave, C., Pieroni, A., in press. Folk illness and healing in Arbëreshë Albanian and Italian communities of Lucania, Southern Italy. *Journal of Folklore Research*.
- Raja, D., Blanché, C., Vallès Xirau, J., 1997. Contribution to the knowledge of the pharmaceutical ethnobotany of La Segarra region (Catalonia, Iberian Peninsula). *Journal of Ethnopharmacology* 57, 149–160.
- Raimondo, F.M., Lentini, F., 1990. Indagini etnobotaniche in Sicilia. I. Le piante della flora locale nella tradizione popolare delle Madonie (Palermo). II *Naturalista Siciliano* 3–4, 77–99.
- Randall, R., Hunn, E.S., 1984. Do life-forms evolve or do uses for life? Some doubts about Brown's universal hypotheses. *American Ethnologist* 11, 329–349.
- Russell Bernard, H., 1994. *Research Methods in Anthropology. Qualitative and Quantitative Approaches*. Alta Mira Press, London, UK.
- Viegi, L., Pieroni, A., Guarrera, P.M., Vangelisti, R., 2003. A review of plants used in folk veterinary medicine in Italy as basis for a databank. *Journal of Ethnopharmacology* 89, 221–244.
- Wierzbicka, A.W., 1984. Apples are not a kind of fruit. *American Ethnologist* 11, 131–326.
- Zampiva, F., 1995. Piante sacre e piante maledette. *Cimbre-Tzimbar. Vita e Cultura delle Comunità Cimbre* 14, 179–202.
- Zampiva, F., 1998. Le principali erbe della farmacopea timbra. *Cimbri-Tzimbar. Vita e Cultura delle Comunità Cimbre* 19, 135–146.
- Zhu, B.H., Guan, Y.Y., He, H., Lin, M.J., 1999. *Erigeron breviscapus* prevents defective endothelium-dependent relaxation in diabetic rat aorta. *Life Sciences* 65, 1553–1559.