

Traditional phytotherapy and trans-cultural pharmacy among Turkish migrants living in Cologne, Germany

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Received 27 October 2004; received in revised form 10 May 2005; accepted 21 May 2005

Available online 5 July 2005

Abstract

This article reports on an ethnopharmaceutical field study carried out among Turkish migrants in Cologne, western Germany, which recorded 79 botanical taxa and 115 plant-based preparations, encompassing 167 folk phytotherapeutic uses, as well as a few other biological (animal and mineral derived) remedies. One-fourth of the recorded remedies were represented by food–medicines. Half of the ingredients quoted came originally from Turkey; only a few plants were gathered from the wild or cultivated in the Cologne area. This article discusses the Turkish migrants' frequent use of aerial parts of *Sideritis* species, the fruits of *Pistacia terebinthus* and the seeds of *Peganum harmala* from the perspective of modern phytopharmacology, phytotherapy and toxicology. It considers cultural adaptation related to the use of folk pharmaceuticals by analysing the ingredients of the Turkish folk pharmacopoeia and comparing them with those of the Turkish medical ethnobotany and of the phytotherapy of the host country (Germany). Only one third of the remedies mentioned by Turkish migrants living in Cologne are also known in German evidence-based phytotherapy, and less than 10% of the recorded phytotherapeutic uses are common to both pharmacopoeias. This article concludes by suggesting hypotheses on future changes affecting the knowledge and use of medicinal plants within the Turkish community of Cologne.

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Keywords: Ethnobotany; Ethnopharmacy; Medicinal plants; Migrants; Turkey; Germany

1. Introduction

This article presents an analysis of the folk pharmacopoeia currently in use among Turkish migrants in urban areas of Cologne, Germany, following a field study that was conducted within the framework of a broader research project (RUBIA, 2003) involving eight universities and research centres. The project's aim was to compare traditional plant uses in twelve selected circum-Mediterranean sites, and among Mediterranean migrants in Central Europe. An interdisci-

plinary and transdisciplinary approach was chosen for this research (Lawrence and Després, 2004).

The general scientific objectives of this broad research consortium were:

- to create a knowledge database of the vegetable materials which have been or are still used in traditional practices of 12 selected circum-Mediterranean areas;
- to develop an ethnobotanical data base of all the recorded uses and technologies related to these plants for medicine, food and handicrafts;
- to evaluate these traditional vegetable resources under the perspectives of their agronomic feasibility (cultivation of

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neglected or wild species in arid and semi-arid areas) and the small-scale eco-sustainable production of herbal products/phytotherapeutics from local medicinal plants;

- to contribute to modern ethnobotanical museology by developing special sections in local botanical gardens and ethnographic museums that illustrate the traditional uses of plants.

In English scientific ethnobotanical literature, most of the field studies conducted in Southern Europe and in the entire Mediterranean basin have been based on the traditional uses of medicinal plants within a single cultural context (examples in the last 4 years include Agelet et al., 2000; Alvarez Arias, 2000; Ertuğ, 2000; Merzouki et al., 2000; Pieroni, 2000; Tuzlacı and Tolon, 2000; Agelet and Valles, 2001, 2003a, 2003b; Ballero et al., 2001; Jouad et al., 2001; Leporatti and Corradi, 2001; Palmese et al., 2001; Sezik et al., 2001; Tuzlacı and Aymaz, 2001; Eddouks et al., 2002; Pieroni et al., 2002a, 2003, 2004a, 2004b; Camejo-Rodrigues et al., 2003; El-Hilaly et al., 2003; Loi et al., 2001; Novais et al., 2004). A few works have primarily addressed the issue of crude drugs traditionally traded in the Near East (Abu-Irmaileh and Afifi, 2003; Afifi and Abu-Irmaileh, 2000; Lev and Amar, 2000, 2002; Said et al., 2002; Azaizeh et al., 2003), while others have used a socio-pharmaceutical approach (Ali-Shtayeh et al., 2000). In recent times, only two surveys have been carried out comparing the traditional phytotherapeutic data (in the former study mainly derived from secondary literature) of two European ethnic groups (Leporatti and Ivancheva, 2003; Pieroni and Quave, 2005a,b).

On other continents, cross-cultural comparative ethnopharmaceutical studies have been carried out only very rarely, the only exception being the recent work of Vandebroek et al. (2004), who focused their attention mainly on the comparison of the medico-botanical floras. Other works (Heinrich et al., 1998; Moerman et al., 1999; Leonti et al., 2003; Janni and Bastien, 2004) only partially addressed the issue of the medical systems, both in terms of cultural concepts of health and diseases, and of ethnopharmacy, e.g. the analysis of the entire local folk *Materia Medica*/folk pharmacopoeias.

Folk *Materia Medica*s in the Mediterranean area include a few animal and mineral products, and a relevant number of *medicinal foods* (e.g. the consumption of weedy and wild greens is often perceived as having a medicinal character [Etkin and Ross, 1982; Johns, 1990; Pieroni, 2000; Pieroni et al., 2002b; Pieroni and Price, 2005]), which have recently received the attention of very arguable research approaches, newly indicated as *ethnomics* or *ethnobotanomics* (Rivera and Obón, 2004).

Little is known in Western countries about folk pharmaceutical and medical practices in multi-cultural contexts and among migrant groups (Cheon-Klessig et al., 1988; Kuebel and Tucker, 1988; Brainard and Zaharlick, 1989; Spring, 1989; Stewart, 1994; Stephenson, 1995; Davis, 1997; Griffiths et al., 1997; Pachter et al., 1998; Balick et al., 2000; Boyd et al., 2000; Nabuzoka and Badhadhe, 2000;

Corlett et al., 2003; Cappuccio et al., 2001; Warnakulasuriya, 2002; Nguyen, 2003; Reiff et al., 2003; Palmer, 2004). A further minor ethnopharmacological work has been carried out on the traditional uses of neglected vegetables within the South-Asian community of Bradford, in northern England (Ansari et al., 2005).

Only one field survey has been carried out in continental Europe so far on the specific topic of migrant ethnobiology: under the perspective of agro-ecology, it was designed to ascertain the potential of migrants' home-gardens for urban bio-diversity within a small urban setting in the former German capital city of Bonn (Gladiš, 2002, 2003). Starting from the assumption that ethnopharmacy concerns "the interdisciplinary science that deals with the study of the pharmaceutical means, considered in relation to the cultural determinants which characterize the uses of these means in a given human group" (Pieroni et al., 2002a), and preferring to use this term to "ethnopharmacology" (which is strongly associated instead with the *bio-scientific evaluation* of traditional remedies, as originally defined by Bruhn and Holmstedt, 1981), this paper focuses specifically on cultural adaptation to social changes, vis-à-vis the management and use of natural ingredients of the folk pharmacopoeia by Turks living in Cologne, Germany; on the hypothetical dynamics and changes of Traditional Pharmaceutical Knowledge (TPhK) within this culture over a period of time.

2. Methodologies

2.1. Turkish migrants in Germany and in Cologne

For historical reasons, the Turks represent the most important ethnic group in Germany. Since the 1960s, when Germany became the favourite destination of most Mediterranean *Gastarbeiter* and after Germany and Turkey signed the intergovernmental contract for labour recruitment (30 October 1961) the Turkish population in Germany has continued to increase. On 31 December 2002, there were 1,912,200 Turkish citizens living in Germany (Turkish Embassy in Germany, 2004), in addition to approximately 600,000 ethnic Turks born in Germany and retaining a German passport (dual citizenship not being allowed in Germany, with recent legalised exceptions for very few EU citizens). Moreover, between 1995 and 2002, approximately 60,000 additional Turkish migrants have entered Germany each year; hence the influx of ethnic Turks into Germany is clearly still very relevant (Migration Policy Institute, 2004).

After the capital, Berlin, which at the end of 2001 had a population of approximately 130,000 Turks, Cologne has the second largest Turkish community. In 2002, Cologne had around 180,000 foreigners among a population of 1 million people. The Turkish population represented the most important part of this foreign community, with approximately 70,000 inhabitants, of whom 12,000 are ethnic Turks naturalized as Germans (Municipality of Cologne, 2003). The Turks living in Cologne come from a broad spectrum of regions in

Turkey, however most are from various parts of Anatolia and especially from Western coastal areas.

Turks in Cologne have retained most of their customs; they have their own shops, cafés, restaurants (Çaglar, 1999) and recreational and religious spaces, hence the “integration” of Turkish migrants into the mainstream Germany society has always been complex and transnational ties with their country of origin are still strong, even among the youngest population, mainly facilitated by the new media (Ehrkamp, 2005).

This complex figure could also be due to the very peculiar German model of inclusion towards *Gastarbeiter* (Vasta, 2005), and especially to their marginal legal status (Horrocks and Kolinsky, 1996), since the old German law on the citizenship right that was in force until 2001 offered foreigners very few chances for a naturalization, even to ethnic Turks born in Germany.

Recent sociological papers have confirmed that the Turks’ degree of involvement in local policy in Cologne is extremely low (Koopmans, 2004), and that apathy, alienation from institutions in the host country, and violence that occurs especially among Turkish male teenagers, have much to do with a lack of social recognition (Diehl and Blohm, 2001; Babka von Gostomski, 2003).

Moreover, access of Turkish migrants to the official public health system is sometimes problematic in Europe (Gilgen et al., 2005), and a recent socio-medical study pointed out for example that in a gynaecological department of a university hospital in Berlin, Turkish patients’ knowledge on their diagnosis and therapy is very low and even that following informed consent procedure this knowledge significantly decreases (while increasing in German patients, Pette et al., 2004).

2.2. Field studies

The fieldwork in this research was conducted over a period of 24 weeks from October 2003 to March 2004, and from August through September 2004. It took place in the metropolitan centre of Cologne, in central-Western Germany (Fig. 1). The participants in this research were persons of Turkish origin who were first-generation migrants. They were randomly selected among the Turkish population of Cologne, however most came from the northern suburbs of the city (Mülheim, Kalk, Ehrenfeld, Nippes, and Niehl), where the Turkish presence is very relevant, and where in a few cases Turks make up roughly half of the population. In the first phase of the survey, a semi-structured questionnaire was used to ask 78 interviewees (60 women and 18 men) for information on their current use of traditional medicines in their domestic domain. In the second phase, focus groups of women were arranged to meet in park of the city so that the phonetic, linguistic and ethnotaxonomical analysis could be refined. In every case, prior informed consent (PIC) was obtained at least verbally, after the participants had been given an explanation of the scope and purpose of the study, via a previously prepared printed brochure.

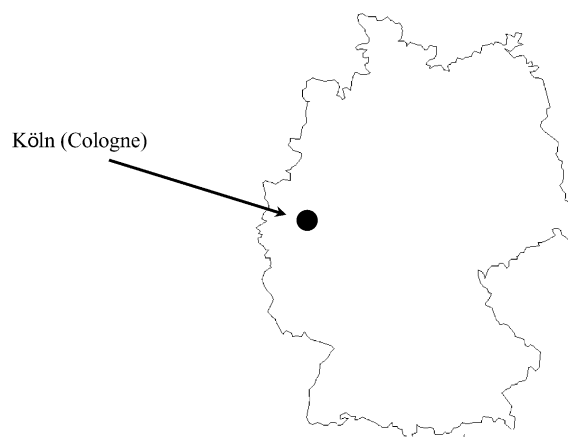


Fig. 1. Location of the study area.

A clear expression of consent was also obtained before a camera or audio-recorder were used. Throughout this field study, the ethical guidelines adopted by the AAA/American Anthropological Association (1998) and by the ICE/International Society of Ethnobiology (1998) were rigorously observed. During the interviews, which were carried out in German and Turkish, several pharmacognostic (dried) specimens were collected and inventoried. Fresh botanical specimens of wild plants were collected in only a few cases, when it was stipulated that these plants were used fresh. These fresh specimens plants were generally gathered in the parks and surrounding areas of Cologne. Reports of other biological materials derived from animal and/or mineral origins that are or have been used “traditionally” in human medical treatments were also considered. TPhK related to the plants mentioned in this survey was researched using the more traditional means of ethnobotanical and cognitive-anthropological analysis (Berlin et al., 1966; Berlin, 1992; D’Andrade, 1995; Martin, 1995; Alexiades and Sheldon, 1996; Cotton, 1996; Vogl et al., 2004). Participants were asked to free-list traditional remedies still in use, to define the exact administration/preparation and origin/provenience of these ingredients, and to mention the approximate frequency of use.

Voucher specimens of all the non-domesticated medicinal plants were obtained and identified by the first author, and in the case of the more problematic pharmacognostic samples, with the help of the Department of Botany of the Anadolu University, Turkey. Identification followed the Turkish botanical standard treatises (Davis, 1965–1988; Güner et al., 2000). In a few isolated cases it was possible to classify them at the genus level only, because the collected samples were mostly dried specimens.

Voucher specimens, as well as approximately 30 h of tape-recorded interviews and some photographic documentation (80 electronic pictures) are available at the first author’s address.

In the second phase of the survey, the gathered field data were compared with all the ethnobotanical literature of

Turkey available in English and published before November 2004 (Sezik et al., 1991, 1992, 1997, 2001; Tabata et al., 1994; Fujita et al., 1995; Yeşilada et al., 1993, 1995, 1999; Honda et al., 1996; Yazicioğlu and Tuzlacı, 1996; Tuzlacı and Erol, 1999; Tuzlacı and Tolon, 2000; Tuzlacı and Aymaz, 2001; Durmuşkahya, 2004; Uzun et al., 2004), with an ethnopharmacology-zoological review of Turkey (Ertuğ, 1999), and with the standard work on the current German evidence-based clinical phytotherapy (Schilcher and Kammerer, 2003).

3. Results and discussion

3.1. The folk pharmacopoeia of the Turks in Cologne

Tables 1 and 2 outline the plants and the other biological ingredients currently in use among Turks living in Cologne. We recorded 79 botanical taxa, and 115 plant-based preparations, encompassing 167 folk phytotherapeutical uses. Approximately one fourth of the plant preparations were represented as “medicinal foods” (Fig. 2), confirming the central role that this “bordering area” plays in the domestic medical practices and health care of Mediterranean populations. This is in accordance with other recent studies (Pieroni et al., 2004a; Pardo de Santayana et al., 2005; Pieroni and Quave, 2005a,b).

The last column of Table 1 shows that approximately one third of folk phytotherapeutical usages mentioned by Turks living in Cologne have been previously reported in ethnobotanical studies conducted in Turkey, particularly those field surveys that were conducted in the western part of the country, where the majority of Cologne’s Turkish migrants come from.

3.2. The most interesting recorded taxa

3.2.1. Aerial parts of *Sideritis* species

Various species of *Sideritis* are gaining increased attention from those involved in the German herbal drug market, hence the importation of these taxa is constantly growing, especially from Turkey (Oektem, 2004), Greece and Albania (personal observations). The drug, known in German as

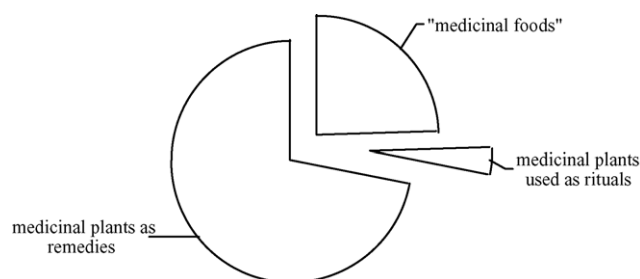


Fig. 2. Classification of the herbal preparations of the folk pharmacopoeia of Turkish migrants in Cologne.

“Bergtee” (English: “Mountain tea”) is sold in many Turkish shops to both Turks and Germans, and now German customers have begun to request the same drug from German-owned herbal shops.

Sideritis species, in particular *Sideritis congesta*, *Sideritis libanotica* and *Sideritis pisdica*, are very popular among Turkish migrants in Cologne, who use the dried aerial parts and flowers in decoctions and infusions to treat coughs, hypertension, and a culturally unique syndrome that is translated literally as “worms in the eyes”. The same syndrome was recently described by Yeşilada and Sezik (2003), who have conducted for many years field ethnobotanical studies in Anatolia: patients believe that severe pains in the eyes, ears or tooth may be caused by worms with black head; the treatment described in Turkey normally consists of putting *Hyosciamus* and *Datura* seeds on the fire, while the patient inhales vapours through his/her mouth, or expose the eyes to the vapours coming from a pot of boiling water put on the same fire (during this treatment worms with black head and white body are thought to come out the patient’s body, and the patient in this way to be cured).

Very interestingly, and differently from other folk illnesses related to “worms” and described in the medical anthropological literature in Europe, which generally involve other body districts (tooth, hearth, fingers, hair: Grabner, 1963; Gerebek, 1999; Quave and Pieroni, 2005), in Turkey eyes are also thought to be affected by “worms”.

Mountain tea species are also very well known and used by mainland Greeks, Albanian and Kosovo-Albanian migrants in Central Europe (personal observation). For the latter, the plant represents their cultural identity, and the dried aerial parts of “caj malhit” (mainly *Sideritis syriaca*) are often their sole “home-souvenir” which, even in worse times of the recent Kosovan war, was packed in the luggage of refugees before they flew to Western Europe. Diverse studies have pointed out the antimicrobial (Rodríguez-Linde et al., 1994; Aliğannis et al., 2001), anti-oxidant (Triantaphyllou et al., 2001; Güvenç et al., 2005), analgesic, immunomodulating and anti-inflammatory (Barberan et al., 1987; Yeşilada and Ezer, 1989; de las Heras et al., 1994; Godo et al., 2000; Navarro et al., 2001; Hernandez-Perez and Rabanal Gallego, 2002a, 2002b; Hernandez-Perez et al., 2004) activities of *Sideritis* extracts. The latter properties in *Sideritis foetens* have been related to the presence of the diterpene andalusol (Navarro et al., 1997, 2000), that inhibits the NOS-2 expression in macrophages through the inactivation of NF-kappaB (de las Heras et al., 1999). We would therefore suggest that further investigation be carried out to try to evaluate the anti-hypertensive properties of these taxa.

3.2.2. *Pistacia terebinthus* fruits

Dried fruits of *Pistacia terebinthus* are eaten by Turkish people in Cologne as a snack. They are claimed to be very useful for treating diabetes. While a few recent studies have investigated the pharmacological properties of the

Table 1
Traditional phytotherapeutics used by Turks of Cologne

Botanical taxon (taxa), family and voucher specimen code(s)	Turkish folk name(s) recorded in Cologne	English name	Provenience(s) of the plant material	Part(s) used	Administration	Claimed medicinal use(s)	Frequency of quotation	Same or similar use(s) recorded in ethnobotanical field studies conducted in Turkey
<i>Achillea nobilis</i> L. (Asteraceae) KOEACH	Ayvadana/Efelik	Yarrow	T-b	Flowering tops, dried	Decoction (sometimes together with <i>Thymus</i> and <i>Salvia</i> ssp.)	Carminative; to heal cold	xx	
<i>Allium cepa</i> L. (Liliaceae s.l.)	Soğan	Onion	G-c/b	Bulbs, fresh	Raw or cooked, in poultice (sometimes with powdered black pepper), in external applications	To treat alopecia; to heal wounds	xx	C, N2, NE3, NW1, S2
					Cooked/grilled, in compresses (normally the most internal part is eliminated after cooking, and the rest mixed with ground soap)	To heal bruises	xx	NE2, NE3
					Grilled, sometimes together with red paprika and aromatized with thyme, as medicinal food	To treat cold	xxx	
<i>Allium porrum</i> L. (Liliaceae s.l.)	Pırasa	Leek	G-c/b	Aerial parts, fresh	Eaten raw and cooked	To treat diabetes; digestive; anti-hyperlipidemic	xxx	N2
<i>Allium sativum</i> L. (Liliaceae s.l.)	Samırsah/Samırsak/Samsak/Sanımsak/Sarmısak	Garlic	G-c/b	Bulbs and leaves, fresh	Eaten raw	Against hypertension	xxx	C, NE1, NW2
<i>Anethum graveolens</i> L. (Apiaceae)	Dere otu	Dill	G-b	Leaves, fresh	Used to aromatize cooked red beets, that are consumed as medicinal food	To stop nose bleeding	x	
<i>Beta vulgaris</i> ssp. <i>vulgaris</i> L. var. <i>vulgaris</i> (Chenopodiaceae)	Pancar kokil	Red beet	G-c/b	Roots, fresh	Eaten cooked, often aromatized with dill and bay leaves	To treat nose bleeding	xx	
<i>Brassica nigra</i> (L.) W.D. J. Koch (Brassicaceae) KOEBRA	Siyah hardal	Black mustard	G-b	Seeds, dried	Decoction	To heal kidney stone	xx	
<i>Cannabis sativa</i> L. (Cannabaceae) KOECAN	Çedene/Çetene/Genevir/Kendir/Kenevir/Kenevir	Hemp	T-b	Seeds, dried	Eaten roasted (sometimes together with sesame seeds and/or adding salt)	To heal abdominal pains	xx	
<i>Cassia angustifolia</i> Vahl. KOECAS	Sinameki	Senna	T-b	Leaves, dried	Decoction	To heal circulation troubles; purgative	x	
					Cold macerate Decoction, in external washes	Laxative	x	
<i>Ceratonia siliqua</i> L. (Fabaceae)	Keçi boynuzu	Carob	T-g/b	Fruits, dried; concentrated fruit juice	Ingested	To heal alopecia To heal intestinal troubles	x xx	

Table 1 (Continued)

Botanical taxon (taxa), family and voucher specimen code(s)	Turkish folk name(s) recorded in Cologne	English name	Provenience(s) of the plant material	Part(s) used	Administration	Claimed medicinal use(s)	Frequency of quotation	Same or similar use(s) recorded in ethnobotanical field studies conducted in Turkey
<i>Cichorium intybus</i> L. (Asteraceae)	Hindiba	Cichory	T-b	Roots, dried	Decoction	To heal kidney stone	xxx	
<i>Citrus lemon</i> (L.) Burm. f. (Rutaceae)	Limon	Lemon	G-b	Fruits, fresh	Cooked, externally applied on the neck	To heal tonsillitis (in children ⁹)	xxx	NE3
<i>Citrus paradisi</i> Macf. (Rutaceae)	Greyfruit	Grapefruit	G-b	Fruits (mesocarp), fresh	Decoction of the mesocarp (sometimes together with wild thyme)	To treat diabetes	xx	
<i>Cornus mas</i> L. (Cornaceae) KOECOR	Kızılcık	Cornelian cherry	T-g	Leaves, dried	Decoction	To heal diabetes	x	NW1
<i>Cucurbita maxima</i> Lam. (Cucurbitaceae)	Kabak	Squash	G-c/b	Fruits, fresh	Cooked, applied externally on the belly	Digestive; diuretic	xx	
				Shoots, fresh	Burned; the ashes in external application	To heal burns	x	
<i>Cydonia oblonga</i> Mill. (Rosaceae)	Ayva	Quince	G-b/T-g	Fruits, fresh	Boiled, eaten	To heal cold	xxx	E, N2, NW1, NW2, NW3, W1
<i>Cynodon dactylon</i> (L.) Pers. (Poaceae) KOECYN	Şehtere	Bermuda grass	G-b	Rhizome, dried	Decoction	To “clean” the blood; to treat vein insufficiency	xx	NI
<i>Equisetum arvense</i> L. (Equisetaceae) KOEEQU		Horsetail	T-b	Aerial parts, dried	Decoction	To treat bronchitis, expectorant	x	
<i>Elaeagnus angustifolia</i> L. (Elaeagnaceae) KOEELA	İğde/İğde hurması/Niğde	Russian olive	T-g/b	Stems, dried	Hang on the clothes	Amulet against the evil eye	x	
				Fruits, dried	Decoction	To promote pregnancy	xx	
<i>Ficus carica</i> L. (Moraceae)	İncir	Fig	T-g/b	Pseudo-fruits, fresh	Dried, eaten as snack	To heal bronchitis	xxx	
<i>Foeniculum vulgare</i> L. (Apiaceae)	Rezene	Fennel	G-b	Fruits, dried	Decoction	To heal abdominal pains and gastritis	xxx	
<i>Fragaria vesca</i> L. (Rosaceae)	Çilek	Strawberry	G-b	Fruits, fresh	Decoction	To heal gynaecological troubles, emmenagogue	x	
<i>Glycyrrhiza glabra</i> L. (Fabaceae) KOEGLY	Meyan	Licorice	T-b	Roots	Boiled in water, then adding broccoli, which are at the end eaten	To treat hearth diseases	x	

<i>Hordeum vulgare</i> L. (Poaceae)	Arpa	Barley	T-b	Seeds, dried	Decoction	To heal cold; diuretic	x	
<i>Hypericum</i> sp. ^a (Guttiferae) KOE- HYP1/KOEHYP2	Çay otu/Kantos/ Kantaryan	St. John's wort	T-g/b	Leaves and flowers, dried	Decoction	To heal stomachache and nausea; diuretic	xx	N1, NW3, S1, S2
					Decoction, in washes	To heal eczemas and skin inflammations	x	NW2, NW3, S1, S2
					Decoction, in external washes (sometimes mixed with black olives to make a poultice)	To heal haemorrhoids; to heal skin wounds, following shots	x	C, NW3
<i>Juniperus oxycedrus</i> L. (Cupressaceae)	Ardıç	Juniper	T-g/b/G-b	Fruits (<i>giligili</i>), dried	Long cooked with sugar, then filtered; ingested in spoons	“To treat cancer”	x	
<i>Lamium purpureum</i> L. (Lamiaceae) KOELAM	Ballıbaba	Woundwort	T-g/b	Flowers, dried	Decoction	To heal gastritis	x	
<i>Laurus nobilis</i> L. (Lauraceae)	Defne/Defne yaprağı	Bay tree/leaves	G-b	Leaves, dried	Eaten with red beet, or mixed with honey	Eaten against nose bleeding	xx	
<i>Lawsonia inermis</i> L. (Lythraceae)	Kına	Henna	T-b	Leaves, dried and powdered	Macerate, external applications	To heal hair itching; against headache; to heal toes inflammations	xx	
<i>Lens culinaria</i> Med. (Fabaceae)	Mercimek	Lentil	G-b	Seeds, dried	Roasted, ground, externally applied	To heal burns	x	C
<i>Lycopersicon esculentum</i> Mill. (Solanaceae)	Domates	Tomato	G-b	Fruits, fresh	Eaten in raw	Good for the blood (so that it is not too “thick”)	xxx	
<i>Malus domestica</i> Borkh. (Rosaceae)	Elma	Apple	G-b	Fruits, fresh	Boiled, eaten	To heal cold	xxx	
<i>Malva neglecta</i> Wallr. and <i>M. sylvestris</i> L. (Malvaceae) KOEMAL	Ebegümeçi	Mallow	G-g	Leaves, fresh	Compresses, on the belly	To heal abdominal pains	xxx	(§) N1, NE2, NE3, NW3, W1, W2
<i>Matricaria recutita</i> L. (Asteraceae) KOEMAT	Papatya	Camomile	G-b	Flowering tops, dried	Decoction	To heal sore throats and bronchitis;	xxx	NW2
					Decoction (together with mint leaves)	To heal bronchitis; to heal abdominal pains and nausea	xxx	NW2
			T-b	Flowering tops → essential oil	Mixed with water, ingested	Diuretic	x	
<i>Melissa officinalis</i> L. (Lamiaceae) KOEMEL	Melisa	Lemon balm	G-b	Leaves, dried	Decoction	To heal stomach-ache; to strengthen the hearth and heal head-ache	x	NW2, NW4

Table 1 (Continued)

Botanical taxon (taxa), family and voucher specimen code(s)	Turkish folk name(s) recorded in Cologne	English name	Provenience(s) of the plant material	Part(s) used	Administration	Claimed medicinal use(s)	Frequency of quotation	Same or similar use(s) recorded in ethnobotanical field studies conducted in Turkey
<i>Mentha spicata</i> L. (Lamiaceae) KOEMEN	Nane	Mint	G-b	Leaves, fresh and dried	Decoction	To heal cold (together with lemon); carminative; to treat stomach-ache	xxx	NE2, NW3
					Oleolite in olive oil (sometimes together with <i>Tussilago farfara</i>)	To heal wounds and skin inflammations	xx	
					Decoction, often together with black tea	To heal diarrhoea	xx	
<i>Mentha pulegium</i> L. (Lamiaceae)	Filiskin	Pennyroyal	T-b	Aerial parts → essential oil	Mixed with sugar, ingested; massages on the back	To heal cough (children)	x	
<i>Morus nigra</i> L. (Moraceae)	Dut	Mulberry	G-b/T-b	Condensed fruit juice (<i>dut pekmezi</i>)	Drunk	To relief gingival inflammations	xx	N2
<i>Nicotiana tabacum</i> L. (Solanaceae) KOENIC	Tütün	Tobacco	G-b/T-b	Leaves, dried	External applications	To heal inflammations	x	
				Leaves, dried → cigarette ashes	Mixed with butter, external application	To heal dermatitis	x	
<i>Nigella sativa</i> L. (Ranunculaceae) KOENIG	Çörek otu	Black cumin	G-b/T-b	Seeds, dried	Roasted, and the vapours inhaled	To heal bronchitis	xx	C
					Powdered, in decoction with coffee und wheat	To relief abdominal pain	xx	
<i>Olea europaea</i> L. (Oleaceae)	Zeytin	Olive	G-b/T-b	Fruits, fresh → oil	External application	To heal stomach-ache, ear pains, skin inflammations, especially in the umbilicus region	xxx	
				Fruits, fresh	Eaten raw	To heal diabetes	xxx	
<i>Origanum</i> ssp. pl. ^a (Lamiaceae) KOEOR11/ KOEOR12/ KOEOR13	Dağı çayı/Kekik	Pot marjoram	T-b	Leaves, dried	Decoction	To heal diabetes	x	NW2, NW3
				Leaves, dried	Decoction (sometimes together <i>Tilia cordata</i> , and <i>Satureja</i> sp.)	To heal abdominal pains	xxx	E, N1, NW3, S1, S2, W1

				Flowering tops, dried	Decoction	To heal cold and sore throats	xxx	NW3, S1, S2
			G-b/T-b	Leaves and flowers, fresh → “oregano water” (<i>kekik suyu</i>) = diluted essential oil	Ingested	Digestive, to treat stomach pains; diuretic; bechic; anti-diabetes; antibacterial	xxx	W3
<i>Papaver somniferum</i> L. (Papaveraceae)	Haşhaş/Afyon kozağı	Poppy	G-b	Seeds, dried	Eaten raw, or crushed and eaten	To depress hunger feeling and tranquillizer; to heal cough	xx	NW1
<i>Peganum harmala</i> L. (Zygophyllaceae) KOEPEG	Üzerlik/Yüzellik/Yüzerlik	Syrian rue	T-b/g	Fruits, dried	In necklaces (sometimes also a bench of the plant is hung in the house)	Amulet against evil-eye	xxx	
			T-b	Seeds, dried	Eaten Burned (sometimes adding salt)	To heal intestinal troubles Diagnostic mean for the evil eye (the fact that the person will cry while the plant is burned, is seen as a sign showing the presence of the evil eye); to treat the evil eye (inhalation)	x xxx	
			T-g	Aerial parts, dried	Burned together with seven blue pieces of clothes or with a piece of the shoe sole of the gazer (in both cases, obtained secretly), and exposed to the gaze/patient	Apotropaic against the evil eye	xxx	
			T-g	Aerial parts and fruits, dried	Decoction	To heal catarrh	x	NE3
<i>Petroselinum crispus</i> (Mill.) Nyman ex A. W. Hill. (Apiaceae)	Maydanoz	Parsley	G-b	Leaves, fresh	Decoction, and the uterus exposed to the vapours	To heal inflammations of uterus	xx	
<i>Pinus</i> sp. ^a (Pinaceae) KOEABI	Çam	Fir	T-b	Resin (<i>çam sakızı</i>), extracted by heating	Poultice made by resin and goat hair	To treat broken bones	x	N2, S2
			T-g/b	Fresh exudates (<i>çam akmazı</i>)	External application Chewed	To heal wounds and skin inflammations To treat stomach-ache; carminative	x x	N2, NE3, S2; W1 C, N2, NE2 ^b , S2, W1, W2
<i>Pistacia lentiscus</i> L. (Anacardiaceae) KOEPIS1	Ağaç balı/Ağaç sakızı/Akım diri/Çam pisi/Çam sakızı/Damla sakızı/Yabam sakız	Mastix tree	T-b T-b	Tar (<i>katran</i>) Exudates (<i>damla sakız</i>), dried	External application Chewed	To heal wounds ^c Mouth antiseptic	x x	C
<i>Pistacia terebinthus</i> L. (Anacardiaceae) KOEPIS2	Çitlembik/Menengiç	Terebinth	T-b	Fruits, dried	Eaten dried (sometimes dried and salted)	To heal diabetes	xx	

Table 1 (Continued)

Botanical taxon (taxa), family and voucher specimen code(s)	Turkish folk name(s) recorded in Cologne	English name	Provenience(s) of the plant material	Part(s) used	Administration	Claimed medicinal use(s)	Frequency of quotation	Same or similar use(s) recorded in ethnobotanical field studies conducted in Turkey
<i>Plantago major</i> (Plantaginaceae) KOEPL	Bağ yaprağı	Plantain	G-g	Leaves, fresh	Shortly heated, in external application	To heal warts	xx	C, E, N2, NE1, NE3, NW1, NW2, NW3, NW4, S1, S2
<i>Portulaca oleracea</i> L. (Portulacaceae) KOEPOR	Semiz out	Purslane	G-g/T-b	Aerial parts, fresh and dried	Eaten raw in salad (fresh parts) or cooked (fresh and/or dried plant parts) generally with sweet peppers, onions, and tomatoes	“Good for the health” ^d	x	
<i>Prunus armeniaca</i> L. (Rosaceae)	Kayı	Apricot	G-b/T-c/b	Fruits, dried	Decoction	Diuretic	x	
<i>Prunus dulcis</i> (Mill.) D.A. Webb. (Rosaceae)	Badem	Almond	T-b	Endocarp → oil	Mixed with olive oil and externally applied	Tonic for the hair; to heal skin furuncles	xx	
<i>Prunus spinosa</i> L. (Rosaceae) KOEPRU1	Erik ekşisi	Sloe	T-g/b	Fruits, dried	Decoction	To heal diabetes	x	NW2, W3
<i>Punica granatum</i> L. (Punicaceae)	Nar	Pomegranate	G-b	Fruits, fresh (<i>nar ekşisi</i>)	Eaten raw	To heal diabetes	xxx	
<i>Pyrus elaeagnifolia</i> Pall. ^c (Rosaceae)	Dağ armutu	Wild pear	T-g	Fruits, fresh	Eaten raw	To heal diarrhoea	x	C
<i>Quercus</i> sp. ^a (Fagaceae)	Palamut meşe	Oak	G-g/T-g	Fruits (<i>petit</i>)	Stored under earth, and then eaten raw (endocarp)	To heal diabetes; anti-hyperlipidemic	x	
<i>Raphanus sativus</i> L. (Brassicaceae)	Kara turp	Radish	G-c/b	Roots, fresh	Ground and eaten raw	Diuretic; to heal kidney stones	x	
<i>Rosa</i> sp. ^a (Rosaceae)	Gül	Rose	T-b	Flowers → essential oil	Mixed with water	Skin emollient	xx	
<i>Rosa canina</i> L. (Rosaceae) KOEROS	Kuşburnu	Dog rose	G-b	Pseudofruits, dried	Decoction	Preventive of flu	xx	C, NW1, W1; W2
					Decoction (sometimes together with thyme)	Against diarrhoea	xx	NE3, S2
<i>Rosmarinum officinalis</i> L. (Lamiaceae)	Biberiye	Rosemary	G-b	Leaves, dried	Cooked with meat	To heal tachycardia	x	
<i>Rumex acetosella</i> L. (Polygonaceae) KOERUM	Kuzu kulağı	Sorrel	G-g	Leaves, fresh	Eaten raw	To heal diabetes; “good for the health” ^d	xxx	
<i>Salix</i> sp. ^a (Salicaceae)	Dağkavağı	Willow	T-g	Stems, dried	Ashes	In external applications against arthritis	x	
<i>Salvia fruticosa</i> Mill. (Lamiaceae) KOESAL	Ada çayı/Kara ot	Greek sage	T-g/b	Leaves and stems, dried	Decoction	To heal cold, tonsillitis, and bronchitis; carminative and digestive; to treat stomach-ache	xxx	NW3, W1

					Decoction, applied externally	Washes against wounds; emollient for the skin	x	
					Decoction	laxative	x	
<i>Satureja spicigera</i> (K. Koch.) Boiss. (Lamiaceae) KOESAT	Ankara kekiği/ Büyük kekik/ Dağ ıkekiği/Kekik	Creeping savory	T-g/b	Leaves, dried	Decoction (sometimes together <i>Tilia</i> and <i>Origanum</i> ssp.)	To heal abdominal Pains	xx	C
<i>Sideritis congesta</i> P.H. Davis et Hub.-Mor., <i>Sideritis libanotica</i> Labill. and <i>Sideritis pisidica</i> Boiss. (Lamiaceae) KOESID1/KOESID2/ KOESID3/KOESID4	Ada çayı/Dağı çayı/ Yandak/Yayla çayı	Mountain tea	T-g/b/G-b	Aerial parts and flowers, dried	Decoction/infusion	Tonic, to heal cough; to treat intestinal troubles; anti-hypertensive; against the “worms in the eyes” (after the treatment the worms fall down)	xxx	S1, S2; W1
<i>Solarium tuberosum</i> L. (Solanaceae)	Patates	Potato	G-g/b	Tubers	Cut in pieces, and externally applied	To relief head-aches	xx	C, NE2, NE3
<i>Syzygium aromaticum</i> (L.). Merr. et Perry (Myrtaceae)	Karanfil	Clove	T-b	Flower buds → essential oil	Diluted with water/oil and externally applied	To heal tooth-aches and mouth inflammations; to treat muscular pains	x	
<i>Taraxacum officinale</i> Weber (Asteraceae) KOETAR1	Hardal	Dandelion	G-b	Leaves, fresh	Eaten raw	To heal diabetes	xx	
<i>Thymus</i> ssp. pl. ^a (Lamiaceae) KOETH Y1 / KOETH Y2/ KOETHY3/ KOETH Y 4	Anık/Dağ anığı/ Dağ kekiği/Kekik/ Kekük çayı/Yayla çayı	Wild thyme	T-g/b	Leaves and flowers, dried	Decoction	Tonic, to heal cold and cough; diuretic; against hypertension	xxx	N2, NW2, NW3, SI
<i>Tilia cordata</i> Mill. (Tiliaceae) KOETIL	Ahmur/Ihlamur/ Ihramil/Ikrampur	Lime tree	G-g/b	Flowers and leaves, dried	Decoction (sometimes also together with <i>Mentha</i> sp.), also in gurgles	To heal cold, flu, sore throats, tonsillitis and laryngitis; to treat stomach-ache and abdominal pains; to relief nausea	xxx	N2 ^e , NE2 ^e NW1, NW3, W1
<i>Triticum</i> sp. (Poaceae)	Buğday	Wheat	G-g G-b/T-b	Flower buds, fresh Cracked seeds → <i>bulgur</i>	Decoction Cooked, in external compresses	Carminative To heal bruises	xx xx	C
<i>Tussilago farfara</i> L. (Asteraceae) KOETUS	Deve tabanı	Coltsfoot	T-g	Flowers, fresh	Oleolite in olive oil (sometimes adding mint leaves)	To heal wounds and skin inflammations	x	NW3, NW4
<i>Ulmus</i> sp. ^{a,c} (Ulmaceae) KOEULM	Kara ağaç	Elm	T-g/b	Roots, dried	Compresses	To heal broken bones and bruises	x	C, N2, NW1
<i>Urtica dioica</i> L. (Urticaceae) KOEURT	Isırgan	Nettle	G-g	Leaves, fresh and dried	Decoction	To treat abdominal pains; diuretic; to treat allergies	xxx	C, NE2, NW1, NW2, NW4, S1, S2, W2
				Leaves, fresh	Medicinal food: boiled in milk, with garlic and pepper	“To treat cancer”	x	

Table 1 (Continued)

Botanical taxon (taxa), family and voucher specimen code(s)	Turkish folk name(s) recorded in Cologne	English name	Provenience(s) of the plant material	Part(s) used	Administration	Claimed medicinal use(s)	Frequency of quotation	Same or similar use(s) recorded in ethnobotanical field studies conducted in Turkey
				Leaves, fresh	Heated, and externally applied	To heal wounds	x	NE2, W2
				Leaves, fresh	Raw, or cooked, eaten with various cultivated vegetables, or as stuffing for Turkish pies (<i>börek</i>), or simply in soups	“Good for the health” ^d	xxx	NW2, NW3
				Leaves, fresh	Topically applied, or in decoctions, applied externally	To heal rheumatisms	x	C, E, N1, N2, NE2, NE3, NW3, NW4, S1, S2, W2
			G-g	Aerial parts, dried	Decoction (sometimes with honey and drunk every morning; sometimes also added to food)	“To heal cancer”; to lose weight; diuretic	xx	NE2, NW1, NW4, W2
				Leaves, dried	Decoction (sometimes adding together with olive leaves, bay leaves, rosemary, and thyme)	To heal hypertension and diabetes	x	C, N2, NW4, W1
			T-b	Seeds, dried	Mixed with honey, and consumed in the morning without having eaten	Tonic, to strengthen body hair; to treat skin inflammation (<i>kildonmesi</i>)	xxx	NE2
<i>Viscum album</i> L. (Loranthaceae) KOEVIS	Ökse otu	Mistletoe	G-b/T-b	Aerial parts, dried	Decoction	To heal head-ache; to treat gastritis; anti-hypertensive	x	
<i>Vitis vinifera</i> L. (Vitaceae)	Asma	Grape	G-b/T-b	Fruits, fresh → concentrated juice (<i>üzüm pekmezi</i>)	Oleolite Drunk, or eaten with bread	to heal burns To heal cough and bronchitis; reconstituent; depurative (“it makes the right blood”); against rheumatisms	x xxx	
			G-b	Fruits, fresh (<i>çekirdekli üzüm</i>)	Eaten raw	Depurative (“make good blood”); to heal respiratory troubles created by atmospheric pollution	xx	
<i>Zingiber officinalis</i> Roscoe (Zingiberaceae)	Zencefil	Ginger	G-b	Rhizomes, fresh	External application Cut in small pieces and eaten raw	To heal burns To heal diabetes	x xx	C, S2

G: Germany; T: Turkey; g: gathered from the wild; c: cultivated; b: bought in market/shops (in Germany generally represented by Turkish shops). x: use quoted by less than 10% of the informants; xx: use quoted by more than 10% and less than 40% of the informants; xxx: use quoted by more than 40% of the informants; C: use recorded in central Turkey (Sezik et al., 2001); E: use recorded in Eastern Turkey (Tabata et al., 1994); N: use recorded in Northern Turkey (N1: Sezik et al., 1992; N2: Fujita et al., 1995); NE: use recorded in the North-East of Turkey (NE1: Sezik et al., 1991; NE2: Yazicioğlu and Tuzlacı, 1996; NE3: Sezik et al., 1997); NW: use recorded in the North-West of Turkey (NW1: Yeşilada et al., 1999; NW2: Tuzlacı and Tolon, 2000; NW3: Tuzlacı and Aymaz, 2001; NW4: Uzun et al., 2004); S: use recorded in the South of Turkey (S1: Yeşilada et al., 1993; S2: Yeşilada et al., 1995); W: use recorded in the West of Turkey (W1: Honda et al., 1996; W2: Tuzlacı and Erol, 1999; W3: Durmuşkahya, 2004); (s) usages refer mainly to *Malva neglecta* Wallr., and *Malva nicaensis* All.

^a Botanical identification at species level not possible, since pharmacognostic samples only have been available (fresh specimens of the plants could not be obtained).

^b Usages refer to resin of both *Pinus* and *Picea* ssp.

^c Disappeared use.

^d Considered to be “healthy”, without any other claimed medical specification.

^e Usages refer to *Tilia rubra* DC.

Table 2
Other biological remedies of the folk pharmacopoeia of the Turkish community of Cologne

Remedy	Turkish folk name recorded in Cologne	Provenience(s) of the remedy	Administration	Claimed medical use	Frequency of quotation	Same or similar uses recorded in ethnobiological filed studies conducted in Turkey
Animal skin (fresh)	Hayvan derisi	T-b	External application	To heal bruises	xxx	
Bird ^a	Kuş	T	Poultice of the fresh meat	To heal mumps (<i>kuşkuyruğu</i>)	x	
Blue stone or object (has to be round, eye-like, can be also a jewel [for women only])	Nazar boncuğu	G-b/T-b	Hang to clothes or hold in the house	Amulet against the evil eye (especially devoted to children)	xxx	
Donkey thymus ^a	Penzer		Dried, ground, then macerated in water and drunk	To relief gastritis	x	
Eggs dough	Yumurtalı hamur	G-b	External application	Against skin inflammation	x	
Egg yolks	Yumurta sansi	G-b	Mixed with soap and olive oil	To heal wounds, suppurative	xx	
Hedgehog (<i>Erinaceus europaeus</i>) ^a	Kirpi	T	Eaten cooked	To heal haemorrhoids	x	C, NW1
Honey	Bal	T-b/G-b	Eaten in spoons	To heal bronchitis and stomach-ache	x	NW1
Lead	Kurşun	T-b/G-b	Melted in a pot, then pouring it into water (from the shape created by the melted metal the face of the gazer may be recognized)	To treat the evil eye	x	
Medicinal leech (<i>Hirudo medicinalis</i>) ^a	Sülük	T-b	Applied externally	To treat vein insufficiency (varicose veins)	xx	NE3
Milk (cow)	İnek sütü	G-b	Heated, inhaled	To heal skin troubles following hormone pills administration	xx	
			Together with honey and eggs, drunk	To treat stomach-ache and ulcer	xx	
Milk (human)	Anne sütü		Injected in the ears	To heal ear pains (children); conjunctivitis	xx	
Milk cream (cow)	Kaymak	G-b	Externally applied	Vulnerable	xx	
Newspaper ashes	Gazete külü		External applications	To treat skin inflammations	x	
Salt	Tuz	G-b	Licked	Anti-cough	x	
Sugar	Şeker	G-b	Dissolved in hot water, than externally applied in compresses	To heal skin inflammations	xx	
			Ground, in external applications	To heal wounds	xx	
Starch	Nişasta	G-b	Decoction	To heal cold; reconstituent for mothers after giving a birth	x	
Trout (<i>Salmo sp.?</i>) ^a	Alabalık	G-b	Put on the back	To relief backbone pains	x	
Urin	İdrar		External application	Against burns; to heal skin inflammations between the toes	x	
			Drunk	To treat malaria ^a	x	

Table 2 (Continued)

Remedy	Turkish folk name recorded in Cologne	Provenience(s) of the remedy	Administration	Claimed medical use	Frequency of quotation	Same or similar uses recorded in ethnobiological filed studies conducted in Turkey
Yoghurt	Yoğurt	G-hp/b	Produced and stored in a copper pot, external applications	To heal dermatitis	x	
Water	Su		Heated (boiling), than external exposition to the vapours	To relief uterine pains	xx	
Worms ^a	Solucan	T-g	Mixed with olive oil, external application External application of the paste obtained by heating the worms	Skin emollient Anti-tetanus	x x	NW1

G: Germany; T: Turkey; g: gathered from the wild; c: cultivated; b: bought in market/shops (in Germany generally in Turkish shops); x: use quoted by less than 10% of the informants; xx: use quoted by more than 10% and less than 40% of the informants; xxx: use quoted by more than 40% of the informants. C: use recorded in Central Turkey (Sezik et al., 2001); E: use recorded in Eastern Turkey (Tabata et al., 1994); N: use recorded in Northern Turkey (N1: Sezik et al., 1992; N2: Fujita et al., 1995); NE: use recorded in the North-East of Turkey (NE1: Sezik et al., 1991; NE2: Yazicioğlu and Tuzlaci, 1996; NE3: Sezik et al., 1997); NW: use recorded in the North-West of Turkey (NW1: Yeşilada et al., 1999; NW2: Tuzlaci and Tolon, 2000; NW3: Tuzlaci and Aymaz, 2001; NW4: Uzun et al., 2004); S: use recorded in the South of Turkey (S1: Yeşilada et al., 1993; S2: Yeşilada et al., 1995); W: use recorded in the west of Turkey (W1: Honda et al., 1996; W2: Tuzlaci and Erol, 1999; W3: Durmuşkahya, 2004).

^a Disappeared use.

leaves (anti-fungal: Duru et al., 2003; Kordali et al., 2003) and the gum and galls (anti-inflammatory activity via the inhibition of leukotriene synthesis by oleanonic acid: Giner-Larza et al., 2001a, 2001b; the protection of human LDL from oxidation: Andrikopoulos et al., 2003), nothing is known about the phytopharmacology and phytochemistry of these fruits. Hence, it would be worthwhile to carry out appropriate bio-scientific evaluations of this drug.

3.2.3. *Peganum harmala* fruits and seeds

It is widely known that the seeds of the Syrian rue contain the alkaloids harmine and harmaline, which are MAO inhibitors (Roth et al., 1994). Syrian rue seeds have been used for centuries as psychoactive drugs, having represented the “haoma” of the old Persian Zoroastrian ceremonies (Rätsch, 1998). The seeds of Syrian rue are burned by the Turks of Cologne in order to diagnose, prevent and treat the evil eye condition (*nazar*).

A few participants in the survey also reported that the same seeds are eaten to treat intestinal pains, however this internal use should be considered carefully for its toxicological relevance. Indeed, an interesting subject for further investigation could be how widespread is the use of *Peganum harmala* among Turkish migrants in Germany, and how this use is related to its potential ethnopsychiatric significance.

Medical anthropological field studies conducted among Southern Italian migrants in North America and ethnic Albanians in southern Italy have shown that the distress caused by difficulties of coping with social changes in the “new” host country could play a significant role among migrants in the permanence of beliefs, practices and rituals related to the evil eye (Migliore, 2000; Giusti et al., 2004; Quave and Pieroni, 2005), a condition that is very complex and only partially explainable in bio-medical terms (Herzfeld, 1981; Galt, 1982).

3.3. The folk pharmacy of the Turkish migrants versus the phytotherapy of the host country

In accordance with other analyses in the Mediterranean and worldwide (Pieroni, 2003; Ertuğ, 2003; Howard, 2003), we found in this survey that it is the women who retain the most valuable knowledge about plants to be used in the domestic domain (food and medicine). Nevertheless, all interviewees in our survey affirmed to traditionally use medicinal plants-based remedies, and they admitted that traditional drugs are often used together and simultaneously with Western Pharmaceuticals, which are bought in local pharmacies. Only a couple of interviewees appeared to have had any experience with industrial preparations (standardised extracts; poultices) of the modern German evidence-based phytotherapy.

Half of the ingredients of the Turkish folk pharmacopoeia have come into Germany directly from Turkey (Fig. 3), mostly “un-officially”. Generally, they have brought into the country by persons returning from visiting relatives in their

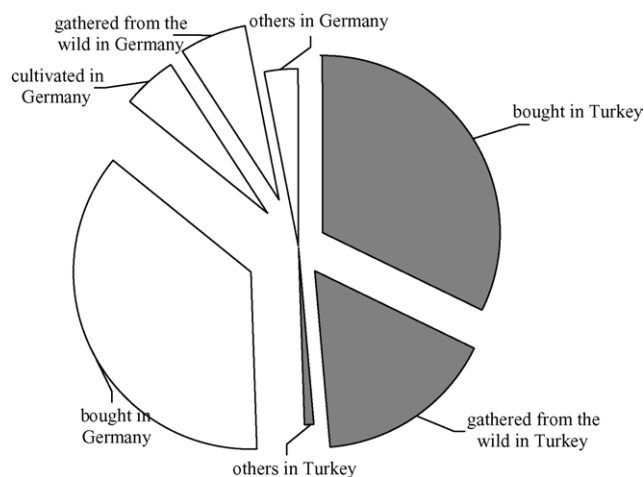


Fig. 3. Provenience of the ingredients of the folk pharmacopoeia of the Turks of Cologne.

region of origin in Turkey during the summertime. Most of the participants in the survey described how they had gathered the herbs from the wild or bought them in local markets in Turkey. The remaining half of the ingredients was acquired directly in Cologne, mostly from Turkish shops. The number of medicinal plants cultivated in local home-gardens or allotment gardens (*Schrebergärten*), or gathered from the wild in Cologne was very low (less than 10 botanical taxa). The assumption of many sociological discourses on urban agro-biodiversity is that migrants would use the natural environment and their home gardens in the host country as the main reserve for their domestic healthcare and food practices. While this has been verified in North America (Greenberg, 2003; Corlett et al., 2003), it does not seem to be the case for Turks living in Cologne.

Approximately one-third of the plants quoted by our Turkish participants are also well known in the modern German clinical phytotherapy (Schilcher and Kammerer, 2003), however only 9% of the medicinal uses of these plants is also acknowledged by the same phytotherapeutical school (clinical indications of the German Commission E, Schilcher and Kammerer, 2003) (Figs. 4 and 5).

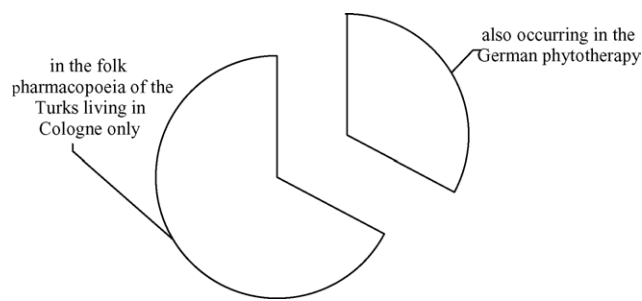


Fig. 4. Proportion of the medicinal plants mentioned and used by the Turks of Cologne, which are currently in use also in the German modern evidence-based phytotherapy.

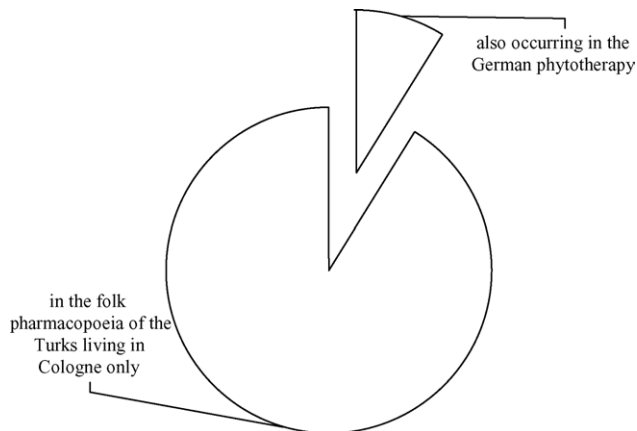


Fig. 5. Proportion of the medicinal plants *uses* mentioned by the Turks of Cologne and also known and recognized in the German evidence-based phytotherapy.

3.4. Cultural adaptation

The aforementioned data address the issue of cross-cultural adaptation. This phenomenon has been simplified in the communication sciences as encompassing two processes that occur simultaneously: deculturation (from the original culture) and enculturation (towards the culture of the host country). The result of these two processes is known as assimilation (Kim, 2001).

In Fig. 6 we have schematised this complex process, taking as example the ongoing changes affecting the folk pharmacopoeia of the Turks of Cologne: if two thirds of its ingredients represent the heritage of the original Turkish TPhK only, we could assume that, although a few medicinal plants occur in both the German and the Turkish phytotherapy, the Turks could have acquired knowledge related to the few medicinal plants used by Germans in the host country (e.g. dill and grapefruit), especially from “modern” phytotherapy, which is generally spread in Germany via a broad range of popular literature in ecological-alternative cultural circuits and shops. For example, the folk use of red beets, which are not generally used in Turkish cuisine, is central to German traditions. Red beets are for example also medicinally used by Turkish migrants in Cologne to stop nose bleeds, a practice which seems to have been derived from the cognitive association of the colour of the beet and that of blood. We could see here traces of a phenomenon similar to that defined in medical anthropology as “indigenization” of Western (chemical) medicines (Etkin et al., 1990; Cosminski, 1994; Cocks and Moller, 2002): in other words, the drug would be “diverted” from its original use, in some ways “de-contextualized”, and embedded in the original cognitive schemes of migrants.

It is reasonable to foresee that in a few decades this process will continue, and maybe original Turkish elements in the folk medical practices of Turkish migrants will decrease. These processes will raise the following scientific questions:

- Why have a few elements remained, while others have not?

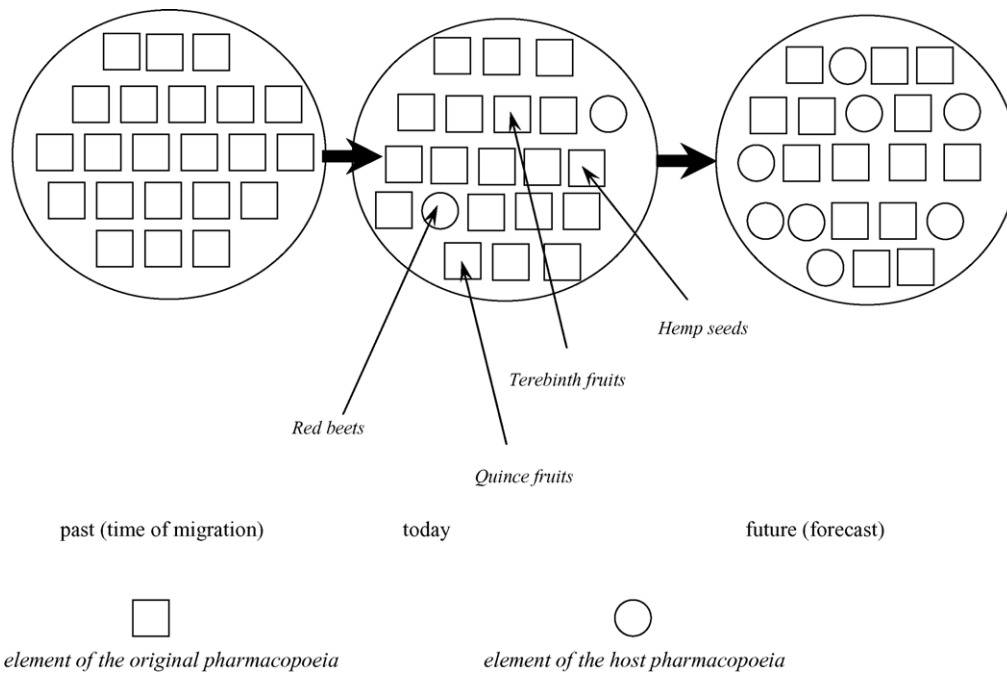


Fig. 6. Diagrammatic representation of the cultural adaptation regarding the folk pharmaceutical knowledge and affecting the Turkish community of Cologne over time.

• Which are the most “conservative” elements/drugs?

We postulate that these conservative elements represent:

- Plants/remedies whose folk medical function is not easily replaced by other plants/remedies of the host country.
- Plants that are important cultural markers, and have the function of strengthening cultural identity.

The problem of analysing the cultural importance of botanicals and quantifying the consensus among informants for the specific use of a given specific plant is an important one in ethnobotany, since too many fieldworks are generally missing this point, and do not look deeply into the basic questions: “How frequently is a remedy quoted, how frequently is it used, and in which ways is it considered important/essential?” This issue is especially pertinent in discussions in the field of folk pharmacognostic data under the perspective of social pharmacy and pharmacy practice. General quantitative ethnobotanical methods have been well discussed by [Alexiades and Sheldon \(1996\)](#), [Höft et al. \(1999\)](#), and a few years ago, while the first author of this article proposed a new index of cultural importance related to food plant uses ([Pieroni, 2001](#)).

In the present research, we have considered the quotation index (% of interviewees quoting a single remedy, [Table 1](#)) as partially representative of the plants’ cultural importance. For example, plants claimed to be rarely used but quoted by almost all of the interviewees could indicate a high cultural importance: in our study, Syrian rue was mentioned by all as being used mainly to prevent, diagnose and heal the evil eye. On the other hand, many anthropological analysis have well underlined in the last decades that ethnicity is also the result

of a social process ([Barth, 1969](#)), and that cultural boundaries are very dynamic, and represent indeed the result of very complex continuous negotiations (in our case between the autochthonous German population and the Turkish newcomers). Moreover, cultural boundaries are *also* constructs created by our own process of representations ([Clifford and Marcus, 1986](#); [Marcus, 1998](#); [Bashkow, 2004](#)).

4. Conclusions

The data we have presented in this article show that Turkish migrants in Cologne currently use remedies of the folk pharmacopoeia of their country of origin. Most of these drugs are “imported” unofficially from Turkey. A few of them could have interesting phytotherapeutic perspectives; others present serious toxicological concerns.

These findings are relevant to modern phytotherapy and pharmacy practice, as well as trans-cultural health policies. They also have important implications for GPs/pharmacists/health care professionals as they are urgently required to cope with the new questions arising from the current Western multi-cultural societies. It is reasonable to assume that traditional knowledge about a few of these drugs will probably be passed on to future generations of Turks in Cologne, while other original drugs will disappear, having been substituted by other phytotherapeutics of the host country. On the other hand, plants used in migration contexts are much more than simply biological drugs; they are often used to strengthen and even negotiate cultural identities with the host population.

In this research, we have tried to demonstrate how an ethnobiological and ethnopharmaceutical approach can provide important insights for the study of the dynamics of TPhK within a given culture. We suggest that future interdisciplinary and transdisciplinary studies and trajectories should investigate in a more systematic way the interactions between the use of traditional phytotherapeutics and Western Pharmaceuticals among migrants, as well as the interactions and eventual mutual exchanges over a long period of time of the knowledge about medicinal plants between migrants/newcomers and the host population.

Acknowledgements

Special thanks are due to all Turkish informants of Cologne who accepted to share their knowledge on folk remedies. Special thanks are due to Sarah Keeler, Department of Anthropology, University of Kent, UK and to an anonymous reviewer, for their very interesting comments and suggestions. This research could only be possible by the help of a generous grant of the EU Commission, who funded the research consortium RUBIA (“Circum-Mediterranean ethnobotanical and ethnographic heritage in traditional technologies, tools, and uses of wild and neglected cultivated plants for food, medicine, textiles, dyeing, and handicrafts”, contract no.: ICA3-2002-10023, <http://www.rubiaproject.net/>), involving eight European and Mediterranean universities and research centres, and that A. Pieroni is currently coordinating from the Wageningen University and Research Centre in the Netherlands. I (Andrea Pieroni) would like to acknowledge here also the inputs of all the scholars and researchers involved in RUBIA.

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