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AP designed the study; AP, HMA, and HZ conducted the field study; AP identified the plant specimens and analyzed the data; AP designed the paper structure and drafted the manuscript, which was later reviewed and accepted by all authors

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ORIGINAL RESEARCH PAPER

The spring has arrived: traditional wild vegetables gathered by Yarsanis (Ahl-e Haqq) and Sunni Muslims in Western Hawraman, SE Kurdistan (Iraq)

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Kurdistan represents a crucial region in the Middle East for understanding patterns of human evolution in the use of food plants and especially wild vegetables as well as for assessing the influences of the major, surrounding bio-cultural macro-area.

In this research, an ethnobotanical field study focusing on wild vegetables traditionally gathered and consumed during the spring was conducted in a few villages of the Western Hawraman area, in South Kurdistan (Iraq), both among Sunni Muslims and Yarsanis (Ahl-e Haqq), the latter of which represent followers of a tiny, threatened, ancient monotheistic religion.

Through interviews with 25 elderly informants, the folk uses of 34 botanical and mycological taxa were recorded. A few of the recorded species have never, or very rarely, been described in the ethnobotanical literature of the Middle East and for some of them (most notably *Allium koelzii*, *Bongardia chrysogonum*, *Dorema aucheri*, and *Johrenia aromatica*) their sensory chemistry and nutraceutical properties are largely unknown. No differences were found between the folk taxa mentioned by Sunni Muslims and those reported by Yarsanis.

The high cultural value and consumption of raw young shoots of *Imperata cylindrica* should be further investigated considering the history of the development of agriculture in the area, as explanations for the domestication of wild grasses have never considered the hypothesis of gastronomic appreciation of their young aerial parts.

Moreover, some of the most mentioned vegetables are also considered food-medicines.

A comparison with all the pre-existing food ethnobotanical literature of the Middle East shows that the most culturally salient wild vegetables recorded in the Hawraman area are shared with Arabic, Turkish, Caucasian, and especially Persian food heritages.

These findings suggest that investigating the ethnobiology of Kurdistan is more than ever urgent in order to document folk plant uses at a crucial crossroad of historical and cultural trajectories in the Middle East.

Keywords

ethnobotany; wild food plants; Hawraman; Yarsanis; Kurdistan

Introduction

The ethnobotany of Kurdistan is a very interesting and unexplored subject in ethnobiology, despite the fact that this region is crucial in human ecology for a number of reasons: it is home to the Neanderthal site of Shanidar Cave, at which a few scientists have argued the earliest evidence of medicinal plant use (dating to 35 000–65 000 years ago) [1,2]; it hosts the Neolithic community of Jarmo (Charmo in Kurdish, 7090 BC), which is considered among the first settlements to have developed agriculture in the Fertile Crescent [3,4]; and, last but not least, it is located at the complex crossroads of four main bio-cultural macro-regions: the Persian one to the east, the Caucasian region to the north, the Turkish region to the northwest, and the Arabic one to the south and west.

Ethnobotanical field surveys in Kurdistan have mainly addressed medicinal plants and quite exclusively in North Kurdistan (Turkey) and within Zaza-speaking areas in Turkey [5–16], while in the Iraqi and Iranian portions of Kurdistan only the traditional medicinal plant knowledge of healers, herbal drug sellers, and dye plant traders have been sometimes evaluated [17–23].

Very few studies have addressed the wild food plants used by Northern (Kurmanji speaking) Kurds [24–26] and, only *en passant*, those utilized by Southern (Sorani speaking) Kurds [27,28], while mainly sporadic studies have investigated the wild food plants used by surrounding populations in the Middle East [29–49], apart from a specific review conducted by Rivera et al. [50]. On the other hand, the food traditions of Kurdistan have been scarcely addressed in the international anthropological literature [51,52].

We decided to focus on Western (Iraqi) Hawraman (also known as Hawrāmān, or Avroman, or Awroman) in South Kurdistan, a mountainous area located along the border between Iraq and Iran, since this region has been more remote than others and it has been and still remains the home of a linguistic minority, that of the Hawramis (also known in the historical literature as Gurans or Gorans), who speak the most archaic dialect of the Zaza-Gorani branch of the NW Iranian languages, which also include a few linguistic “isles” in Northern Kurdistan (Turkey and Iraq) and are still spoken by approx. 300 000 individuals [53]. Moreover, Hawraman is home to the ancient religious community of Yarsan (or Ahl-e Haqq or Yeresan) followers. These community members, most commonly known in Kurdistan as Kakais or Kakeis, belong to an ancient religion, founded by the Kurdish religious leader Sultan Sahak in the fifteenth century in Iranian Hawraman [54–58]; they are considered by some authors – together with Kurdish Yezidis and Ishik Alevis – part of a Kurdish monotheistic religious system, for which the name Yazdanism has been proposed [59].

The upper Iraqi Hawraman has also been historically inhabited by the Naqshbandi order, a major spiritual order of Sunni Sufism. Moreover, in the famous *Parchments of Hawraman*, found in 1909 on the Iranian side of the Hawraman area, and dated 88 BC – 33 AD, scholars found Parthian usage of Zoroastrian terminology among the locals [60], confirming the strong connections of the local Yarsanis and Naqshbandis to ancient Zoroastrianism.

We believe that these complex circumstances make the Hawraman area an ideal location for conducting in-depth cross-cultural ethnobiological studies.

The specific aims of this study were:

- to record the local names and specific traditional culinary uses of local wild vegetables, which are gathered in the selected area during the spring;
- to compare the data collected for the Yarsani and Sunni Muslim communities; and
- to compare the ethnobotanical data with the Middle Eastern wild food ethnobotanical literature in order to point out possible new or unusual plant culinary uses.

Material and methods

Research area and field study

The field study was conducted in the Hawraman region of SE Kurdistan (Iraqi Kurdistan).

The following mountain villages were visited in April 2016: Tawella (1466 m a.s.l.), Byara (1121 m a.s.l.), Ahmadhawa (645 m a.s.l.), Ababayle (972 m a.s.l.), Eneb (742 m a.s.l.), and Hawar (1015 m a.s.l.) (Fig. 1), each village counting a population between 80 and approx. 1000 inhabitants. While the first five villages are inhabited by Sunni, Hawar (Fig. 2) is the only remaining village entirely inhabited (nowadays only during

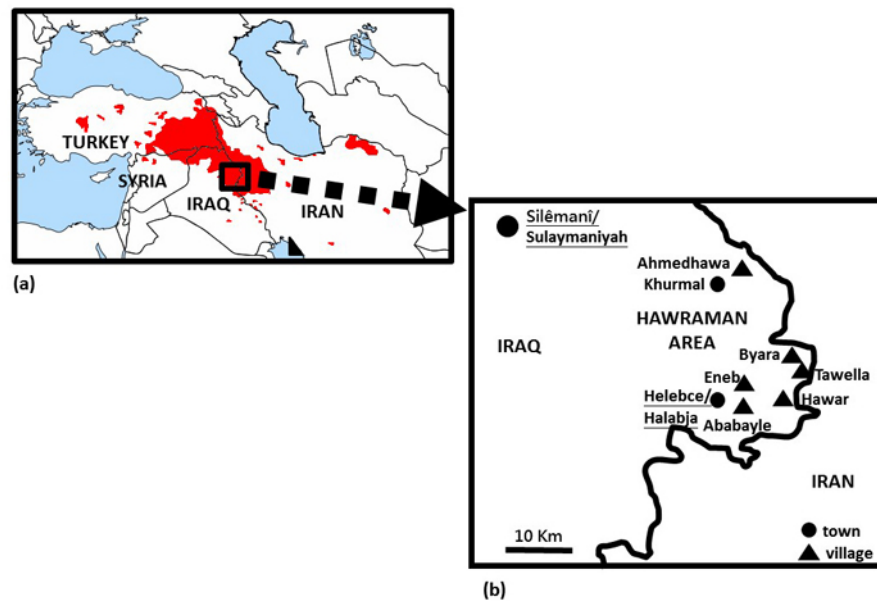


Fig. 1 Map of Kurdish speaking areas (a) and the study site (b).



Fig. 2 The Yarsani village of Hawar (photo: A. Pieroni).



Fig. 3 Terraced walnut orchard in Tawella (photo: A. Pieroni).

the spring and summer months) by a few dozen Yarsanis. Locals in Hawar agree that the original Yarsani heritage is in fact no longer present in their native mountainous villages in Iraqi Hawraman, since they have been not only systematically persecuted for centuries, but also severely mistreated even in recent years by Sunni Salafist Islamists, such as the Ansar al-Islam insurgent movement, which between 2001 and 2003 imposed a strict application of Sharia in the upper (Sunni Muslim) villages of our study area. As a consequence of the actions of these groups, today Yarsani live in large towns of SE Iraqi Kurdistan, and some have even converted to the Islamic faith.

The visited villages in the study area have a horticultural and pastoralist economy, with a specific focus on the traditional production and trade of walnuts gathered from beautiful terraced walnut orchards (Fig. 3), especially in the highest villages (i.e., Tawella and Byara), and for which the Hawraman area has been and continues to be famous throughout all of Kurdistan and the Middle East.

Most of the locals are bilingual in Hawrami and Sorani (Central) Kurdish, and they consider themselves Kurds, despite the fact that Hawrami is not regarded as a Kurdish language by linguists.

An increasing number of members of the middle generations work, however, in the surrounding main center of Halabja (Helebce in Sorani Kurdish).

Additionally, the vegetable markets of the main centers of Halabja (Kurdish: Helebce; 721 m a.s.l.; approx. 120 000 inhabitants), the capital of the newly (2014) established fourth province of the Kurdistan Regional Government, and Khurmal (564 m a.s.l.; approx. 7500 inhabitants) were visited on numerous occasions. Also, the main vegetable market in the city center of Sulaymaniyah (Kurdish: Silêmanî; 882 m a.s.l.; approx. 1.5 million inhabitants), the cultural capital of South Kurdistan, was examined in order to assess possible differences between the Hawramani and “mainstream” South Kurdish use of wild vegetables.

The vegetation of South Kurdistan belongs to the Armeno-Iranian province of the Irano-Turanian region [61] (Fig. 4).

Twenty-five elderly informants (20 males and five females; eight Yarsani and 17 Sunni Muslims) were interviewed after PIC (prior informed consent) was verbally obtained. The focus of the interviews, which were conducted in both Hawrami and Sorani Kurdish with the aid of two interpreters, was the folk knowledge (name and use) of the wild vegetables they gather and consume during the spring months.

The Code of Ethics of the International Society of Ethnobiology [62] was strictly followed.



Fig. 4 South Kurdistan landscape (photo: A. Pieroni).

The wild plant species mentioned by the informants were collected, when available, and identified by the first author according to *Flora Iranica*, which covers the Hawraman region [63] and includes the most comprehensive review of *Allium* subg. *Melanocrommyum* in Iran [64]. The collected specimens were later stored in the University of Gastronomic Sciences Herbarium. Nomenclature follows the standards set by The Plant List database [65], while plant family assignments follow the current Angiosperm Phylogeny Group designations [66].

Local plant names were given in the Latin alphabet, following the rules of Sorani Kurdish.

Data analysis

Collected data was compared with the food ethnobotanical literature of Kurdistan and the Middle East [24–50], as well as with the two most comprehensive worldwide reviews of wild food plants [67,68].

Results

Tab. 1 presents the wild vegetables and mushrooms reported by the informants as commonly consumed during the spring season. In the table, together with the botanical taxa, families, and voucher codes, we reported the folk names that we recorded in the study area (transcribed following the rules of Sorani Kurdish, reported in Latin alphabet), as well as the used plants, their traditional culinary uses, and the quotation index (QI; expressed as percentage of the overall informants quoting the food use of a given vegetable).

In total, 34 taxa were recorded. No significant differences were recorded between the species mentioned by the Sunni Muslims and those quoted by the Yarsani and between those cited by male and female informants.

One third of the taxa were mainly consumed raw, while a large majority of the gathered wild vegetables were also brought to local markets, thus indicating the persistence of small-scale circuits of wild vegetable trade, which still have an important impact in terms of rural development and as a source of additional cash for the (mainly male) gatherers and their families.

In the following paragraphs we will discuss in detail the most mentioned and culturally salient vegetables that are eaten raw or cooked, with a specific focus on those that have never, or only rarely, been reported in the food ethnobotanical literature of the Middle East [50].

Tab. 1 Wild vegetables gathered and consumed during the spring season in the Iraqi Hawraman area, SE Kurdistan.

Botanical taxon or taxa, family, and voucher specimen code	Local name(s)	Used parts	(Etic) taste and smell perception	Traditional culinary use	Medicinal perceptions	Occurrence in the local vegetable markets of Khormal and Halabja	QI
<i>Allium jesdianum</i> Boiss. & Buhse, Amaryllidaceae (?)	Sûrebne	Young aerial parts	Odor and taste between those of garlic and leek	Boiled or fried	Blood strengthening	No	0.12
<i>Allium koelzii</i> (Wendelbo) Perss. & Wendelbo, Amaryllidaceae, UNISGKUR010	Lûshe	Young aerial parts	Garlic-like odor; taste between that of onion and leek	Boiled (rice and lentil soup), fried		Yes	0.84
<i>Allium paradoxum</i> (M. Bieb.) G. Don, Amaryllidaceae, UNISGKUR001	Pîçk	Leaves	Garlic-like odor and taste	Boiled in soup, or put in dough and fried		Yes	0.60
<i>Anchusa italica</i> Retz., Boraginaceae, UNISGKUR005	Gozrwan	Young leaves, flowers		Boiled, then fried in oil with onion and egg; tea	Remedy for counteracting abdominal pain (tea)	Yes	0.36
<i>Arum rupicola</i> Boiss. and other <i>Arum</i> spp., Araceae, UNISGKUR013	Kardû, Xaz	Leaves		Cooked with dried mulberries, ground wheat, and pomegranate sauce (and possibly sumac); as wrapping leaves for dolma	Gastro-intestinal tract cleansing	Yes	0.40
<i>Bongardia chrysonomum</i> (L.) Spach, Berberidaceae, UNISGKUR004	Geble	Young inflorescences	Odorless, slight astringent and "cheesy" taste	Boiled or fried with eggs to make a special type of omelette; tea	Anti-diabetic (one glass of tea every morning)	Yes	0.80
<i>Dorema aucheri</i> Boiss., Apiaceae (Fig. 13), UNISGKUR008	Bana	Young aerial parts	Aromatic odor, taste vaguely resembling that of parsnip	Boiled in soup or boiled and then fried		Yes	0.36
<i>Eremurus spectabilis</i> M. Bieb., Xanthorrhaceae	Aslêrk, Xwzhe	Leaves		Cooked with onion	Anti-diabetic, anti-arthritis	No	0.08
<i>Ficaria fascicularis</i> K. Koch, Ranunculaceae (Fig. 14)	Seyare	Young leaves	Odorless, neutral, juicy, slight pungent taste	Cooked with eggs	Anti-hypertensive	No	0.08
<i>Gundelia tournefortii</i> L., Asteraceae, UNISGKUR011	Kingr	Young shoots or upper underground parts	Odorless, slight bitter thistle-like taste	Boiled, or boiled and then fried in oil and onion (or eggs), or roasted	Anti-diabetic; remedy for counteracting gastro-oesophageal reflux	Yes	0.96

Tab. 1 Continued

Botanical taxon or taxa, family, and voucher specimen code	Local name(s)	Used parts	(Etic) taste and smell perception	Traditional culinary use	Medicinal perceptions	Occurrence in the local vegetable markets of Khormal and Halabja	QI
<i>Imperata cylindrica</i> (L.) Rausch., Poaceae, UNISGKUR009	Pêqaze	Young aerial parts	Odorless, grass-like taste	Raw or cooked with onions and eggs	Anti-ulcer remedy	Yes	0.80
<i>Johrenia aromatica</i> Rech.f., Apiaceae, UNISGKUR012	Barêze	Young aerial parts	Aromatic odor and taste, vaguely resembling those of chervil and sea fennel	Raw	Diuretic, digestive	Yes	0.96
<i>Malva neglecta</i> Waller and other <i>Malva</i> spp., Malvaceae, UNISGKUR007	Toleke	Young aerial parts		Cooked in oil with eggs and onions	Anti-ulcer remedy, laxative	Yes	0.40
<i>Melissa officinalis</i> L., Lamiaceae	Swre helale, Zozak	Leaves		Raw, recreational tea		No	0.08
<i>Mentha longifolia</i> (L.) Hudson, Lamiaceae	Pingi kêwi	Leaves		Raw, recreational tea		No	0.08
<i>Nasturtium officinale</i> R. Br., Brassicaceae	Kûzele	Young aerial parts		Raw	Diuretic	Yes	0.08
<i>Ornithogalum cuspidatum</i> Bertol., Asparagaceae, UNISGKUR002	Gêlaxe, Rûske	Whole plant		Boiled, then fried	Anti-diabetic, anti-hypertensive, anti-rheumatic	Yes	0.44
<i>Pistacia khinjuk</i> Stocks, Anacardiaceae, UNISGKUR003	Qezwan	Unripe inflorescences	Resinous, mastic-like taste	Raw, as a snack		Yes	0.36
<i>Pleurotus eryngii</i> (DC.) Quél., Pleurotaceae	Qarçki goizh	Fruiting body		Boiled in oil or fried		No	0.08
<i>Portulaca oleracea</i> L., Portulacaceae	Pelpine	Aerial parts		Raw in salads or cooked with lentils	Protection from sunlight	Yes	0.20
<i>Prunus cerasifera</i> Ehrh., Rosaceae, UNISGKUR006	Alû balû, Helûzhe	Unripe fruits		Raw as a snack		Yes	0.36
<i>Prunus microcarpa</i> C. A. Mey., Rosaceae, UNISGKUR006	Belalû	Unripe fruits	Odorless, almond-like, very slightly astringent and sour taste; crunchy texture	Raw as a snack		Yes	0.20

Tab. 1 Continued								
Botanical taxon or taxa, family, and voucher specimen code	Local name(s)	Used parts	(Etic) taste and smell perception	Traditional culinary use	Medicinal perceptions	Occurrence in the local vegetable markets of Khormal and Halabja	QI	
<i>Rheum ribes</i> L., Polygonaceae, UNISGKUR023	Rêwas	Stalks (petioles)	Rhubarb-like odor and taste, slight sweetish and gently sour	Raw as a healthy and social snack, often consumed with salt	Anti-diabetic (white lower portion), anti-hypertensive (green upper portion)	Yes	0.96	
<i>Rumex crispus</i> L. and other <i>Rumex</i> spp., Polygonaceae	Sopal, Trshoke	Young leaves		Raw		Yes	0.08	
<i>Satureja</i> sp., Lamiaceae, UNISGUR020	Asbela, Jatre	Aerial parts		Seasoning, cooked with wheat or chickpeas		Yes	0.08	
<i>Scorzonera</i> sp., Asteraceae	Shing	Leaves		Boiled in soup with onion and rice	Blood depurative	Yes	0.36	
<i>Silybum marianum</i> (L.) Gaertn., Asteraceae	Çaw baze	Stem		Raw as a snack		No	0.32	
<i>Sinapis arvensis</i> L., Brassicaceae	Xertele	Young leaves and stems		Raw or pickled		No	0.08	
<i>Smyrniium cordifolium</i> Boiss., Apiaceae	Dori, Gnor	Young stems	Aromatic smell and taste, resembling angelica	Raw as a snack		No	0.08	
<i>Tragopogon collinus</i> DC., Asteraceae	Helekok	Young leaves		Boiled or fried		No	0.16	
<i>Viola odorata</i> L., Violaceae	Gwle wewenshe	Leaves and flowers		Recreational tea		No	0.08	

(?) – identification made on the basis of the plant description and folk name only; QI – quotation index.

Vegetables consumed raw

The most quoted wild plant ingredient was represented by the young stems of *Rheum ribes* (*rêwas*), which are gathered from the mountains by men and brought into villages and homes, as described in many other parts of Kurdistan and the Middle East [50], where they are widely consumed as a spring snack. The outer part of the stem was removed and the inner juicy tissue eaten (Fig. 5), sometimes dipping the inner stem in salt. This consumption is extremely popular and had an enormous social significance in the study area, since offering fresh *rêwas*' stalks to snack is an important element of the Kurdish (spring) hospitality and the same consumption is very common when men gather together and chat. The locals also ascribed a sophisticated medical value to this consumption practice (Tab. 1).

Similarly, and sometimes together with *rêwas*, the young aerial parts of *Johrenia aromatica* (*bareza*; Fig. 6) were very popular (high QI in Tab. 1): they are eaten raw as a snack or simply with some *nan* bread, which is also offered to guests. This species was collected from high mountain stone cliffs (Fig. 7) and its daily consumption in spring was considered a panacea.

Both species were also widely sold in local vegetable markets, not only in Hawraman, but also in the Sulaymaniyah area of South Kurdistan.

The third culturally salient species, which in the study area was widely eaten raw, as a snack, or in salads was *Imperata cylindrica* (young aerial parts; Fig. 7).

This finding is of particular interest, as *Imperata cylindrica*, together with other grasses, has often been found in archaeological remains in the Middle East, and in ancient Egypt its use has been hypothesized to have been for making baskets, mats, and other objects [69,70]. While archaeobotanists have extensively debated the possible food use of charred seeds recovered in archaeological sites [71–75], not much has been said regarding the possibility that the young, green aerial parts of grasses, and not the seeds, could have been used as a very common vegetable, as was widely observed in the study area and even in Sulaymaniyah City.



Fig. 5 *Rheum ribes* in its natural habitat (a,b); for sale in the market (c) and just before its raw consumption (after removing the outer part of the stem) (d). Photos: H. Zahir and A. Pieroni.

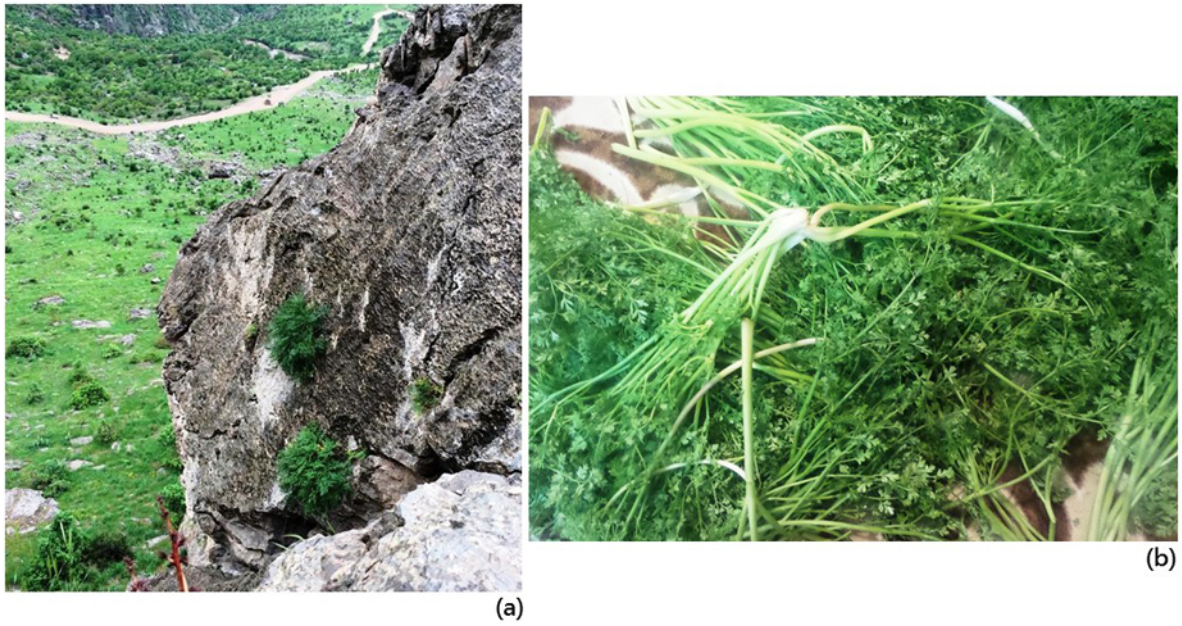


Fig. 6 *Johrenia aromatica* in its natural habitat on stone cliffs (a) and for sale in the market (b). Photos: H. Zahir and A. Pieroni.



Fig. 7 Young aerial parts of *Imperata cylindrica* (photo: A. Pieroni).



Fig. 8 Young aerial parts of *Allium koelzii* (photo: H. M. Ahmed).



Fig. 9 Young inflorescences of *Bongardia chrysogonum* (photo: A. Pieroni).



Fig. 10 Young whole plants of *Ornithogalum cuspidatum* at the vegetable market of Khurmal (photo: A. Pieroni).

It is also worth highlighting the consumption of the raw unripe fruits of *Pistacia* and *Prunus* spp., as well as that of the leaves of *Rumex* spp. and the aerial parts of *Johrenia* spp., which surely, due in part to their ecology, represented the most apparent traces of plant consumption linked to pastoralist activities, in which a few plant snacks were ingested in the higher mountains while bringing animals to pastures, especially during the late spring.

Vegetables consumed cooked

The culinary use of uncommon wild *Allium* spp. (such as *Allium kolezii*, Fig. 8) either boiled or fried, was quite interesting and should be better evaluated, also in terms of a possible nutraceutical potential. Moreover, *Arum* spp. leaves, as occurs in a number of Turkish and Near East regions, were considered an important food ingredient, after a prior detoxification with acidic sumac, whereas the use of fried *Bongardia* shoots (Fig. 9) was considered a cultural identity marker by the Hawraman people, which distinguished them from the rest of the South Kurdish population.

Food medicines

Approximately one third of the recorded gathered and consumed wild vegetables [most notably *Anchusa*, *Arum*, *Bongardia*, *Eremurus*, *Ficaria*, *Gundelia*, *Imperata*, *Johrenia*, *Portulaca*, *Ornithogalum* (Fig. 10), and *Rheum* spp.] were empirically considered able to display a therapeutic activity, while nearly all the recorded wild vegetables were considered “healthy”, i.e., they were perceived as folk nutraceuticals or folk functional foods [76].

Within this domain, the practice, widely socially shared and communitarian, of consuming large amounts of raw stalks of *Rheum ribes* and the aerial parts of *Johrenia aromatica* as snacks was remarkable, and may be related to practices experienced in nomadic pastoralism, which still retain a ritual, social, and nutraceutical significance.

Comparison with pre-existing Middle Eastern food ethnobotanical studies

Fig. 11 illustrates the overlapping of the gathered data with the wild food ethnobotanical literature of the entire Middle East. While the use of *Imperata cylindrica* seems very prototypical of the study area, the use of wild *Allium* and *Johrenia* spp., as well as those of *Dorema* (Fig. 12) and *Ficaria* (Fig. 13) spp., was shared with Western Iran, and that of *Bongardia* and *Ornithogalum* spp. with the Caucasus region. On the other hand, the use of raw *Rheum ribes* seems to represent a specific “signature” of all of Kurdistan, while the food use of *Gundelia turneformii* (Fig. 14) is well known to be widely spread throughout the Middle East.

These data confirm the hybrid nature of SE Kurdish ethnobotany, which represents a bridge between Arabic, Turkish, and Persian Near/Middle Eastern cultures, as well as between the Middle East and the Caucasus.

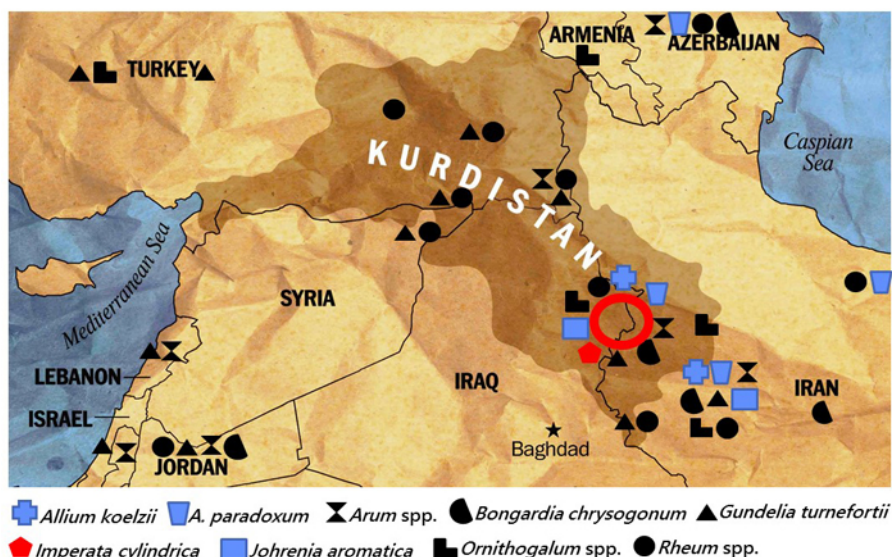


Fig. 11 Cross-cultural comparison between the recorded uses of the most reported wild vegetables in the study area and their folk use previously documented in surrounding areas of the Middle East.



Fig. 12 Young shoots (a) and leaves (b) of *Dorema aucheri* (photo: A. Pieroni).



Fig. 13 *Ficaria fascicularis* (photo: A. Pieroni).

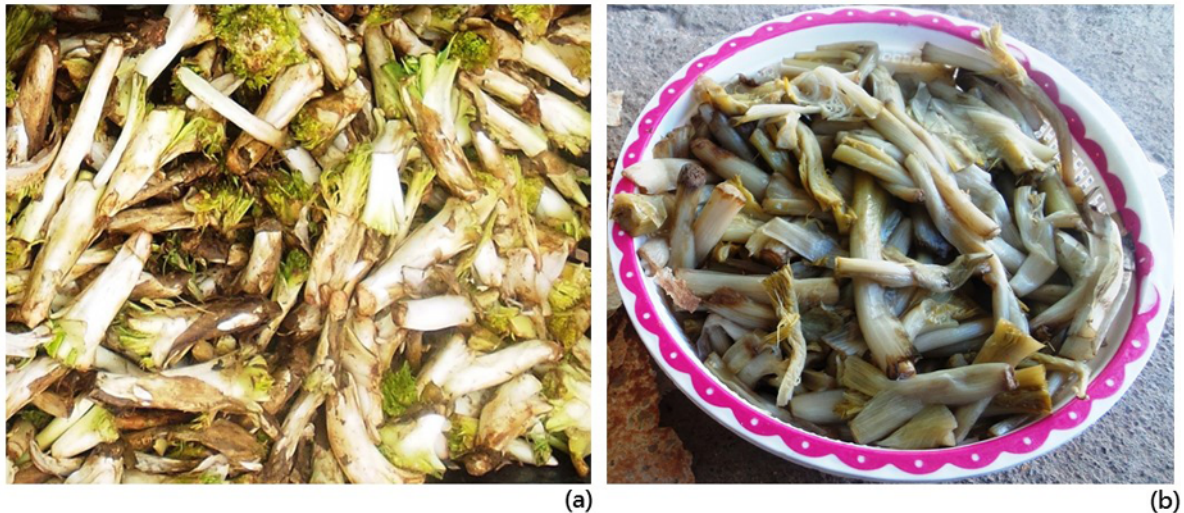


Fig. 14 *Gundelia turnefortii* tender shoots before (a) and after being boiled (b). Photos: A. Pieroni.

Discussion

The gathered data show the permanence of an interesting traditional environmental knowledge (TEK) related to wild vegetables in the study area and document several unknown or poorly known botanical taxa used as wild vegetables.

These findings could be important for a better understanding of the diachronic trajectories of use of wild greens in Mesopotamia and the Middle East from the development of agriculture up until today. We especially believe that to link archaeobotanical and ethnobotanical data could be very interesting in Kurdistan, despite the lack of data we still miss in historical or even folkloric sources of the past centuries.

Moreover, we hope that this small study could inspire further field surveys in surrounding areas and among neighboring populations aimed at analyzing if and how TEK practices concerning wild vegetables are shared among these diverse socio-ecological environments.

The bio-cultural heritage that we recorded in South Kurdistan should be, however, further documented and evaluated, given the fact that this area of the world, since a few decades, is facing tragic events and that is still, nevertheless, the home of several ethnic and religious groups, who more or less peacefully lived together for centuries. We hope that cross-cultural and cross-religious ethnobiology researches could contribute in this area to foster initiatives focusing on sustainable use of local natural resources, which could facilitate mutual recognitions and reconciliation processes.

Moreover, SE Kurdistan could offer an important arena for the implementation of eco-tourism, small-scale activities of gathering and/or harvesting of local food plants, and the establishment of local food-based farmers' markets and related speciality food restaurants.

While even in peripheral areas of Europe the traditional collection and consumption of wild food plants is sometimes disappearing and co-exists with new urban foraging trends and an increasing interest in wild plant foods-driven sustainable gastronomies [77], in our study area TEK concerning wild vegetables is still robust and alive, but could be soon threatened by the expansion of Western-oriented, industrial food systems.

On the other hand, ethnobotanical data in Kurdistan are crucial also for improving health care strategies, since the gathered and consumed wild vegetables are locally considered important for promoting the holistic well-being of the households. In order to better assess this potential, some of the most unknown taxa we reported in this study would urgently deserve sound pharmacological and nutraceutical evaluations.

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