ETHNOBOTANICAL RESOURCES IN THE PROVINCE OF ALMERÍA, SPAIN: CAMPOS DE NIJAR[1]

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Martínez-Lirola M. J., M. R. González-Tejero *and* **J. Molero-Mesa** *(Departamento de Biología Vegetal. Facultad de Farmacia, Universidad de Granada 18071 Granada (Spain).* ETHNOBOTANICAL RESOURCES IN THE PROVINCE OF ALMERÍA, SPAIN: CAMPOS DE NIJAR. *Economic Botany 50(1):40–56. 1996. An ethnobotanical study was carried out in the region of Campos de Níjar, comprising Cabo de Gata-Níjar Nature Park and neighboring zones. The geology of the region combined with its location in the South East of the Iberian Peninsula, the most arid area of Europe, has resulted in the presence of a flora rich in endemic and North African elements rare in Europe. Socioculturally, it is a uniform region characterized by its population living in a multitude of nuclei, each with few inhabitants. The field work was based on 221 interviews with inhabitants of the region with knowledge of the plants and their uses. Information was compiled on the use of 253 taxa with a total of 558 medicinal and 240 other uses. We present a summary of the study with data on the uses of 98 species mentioned at least three times by the interviewees.*

Recursos Etnobotánicos en la Provincia de Almería: Campos de Nijar. *Se ha realizado un estudio etnobotánico en la comarca denominada Campos de Níjar, abarcando el Parque Natural de Cabo de Gata-Nijar y otras zonas aneias. La naturaleza geológica de la comarca, así como su situación en el sureste ibérico, la zona más árida de Europa, ha condicionado una flora rica en elementos endémicos y norteafricanos, raros en Europa. Desde el punto de vista sociocultural constituye una comarca continua y uniforme, caracterizada por una población disgregada en múltiples núcleos de pocos habitantes. El trabajo de campo se apoya en 221 entrevistas con los habitantes de la zona conocedores de las plantas y sus usos, recogiendo información sobre la utilización de 253 taxones, con un total de 558 usos medicinales y 240 usos diversos. En este trabajo presentamos un extracto del estudio con datos relativos al uso de 98 especies referidas en tres o más de tres*

Key Words: ethnobotany, Spain; Almería; Campos de Níjar; Cabo de Gata-Níjar Nature Park.

Although the flora and vegetation of the Iberian Peninsula are now generally well-known, little information is available regarding human uses of the plants. Apart from Font Quer's work (1961), the most complete in terms of the utilization of plants and other related aspects, there are only a few references to this subject in other not–strictly ethnobotanical texts (e.g., Cuatrecasas 1929; Espantaleón Muñoz 1947; Laza Palacios 1942). In spite of the importance of these studies within the Iberian Peninsula, authentic ethnobotanical studies were not developed until the last decade (Bonet 1992; Gúzman 1986; Mulet 1991; Muntané 1991; Villar et al. 1991) when Spanish researchers began to comment on the lack of knowledge of this field and the need for study. The studies carried out by Obon de Castro and Rivera (1991) in the province of Murcia and by González-Tejero (1990) and Muñoz (1989) in Granada have been particularly useful for our research, because of the proximity of these regions to our study area.

This report is the first ethnobotanical study (1991–1993) of the uses of plants in Almería, a geographically and ethnically uniform area.

The study area comprises the Cabo de Gata-Níjar marine and terrestrial Nature Park created by the Andalusian Regional Government in 1987. It is situated in Southeastern Spain in the province of Almería (Fig. 1) and includes parts of three municipal areas: Carboneras, Almería and, above all, Níjar (80% of the surface area). The first stage of the study was the exploration of the nuclei of population within the Park. This

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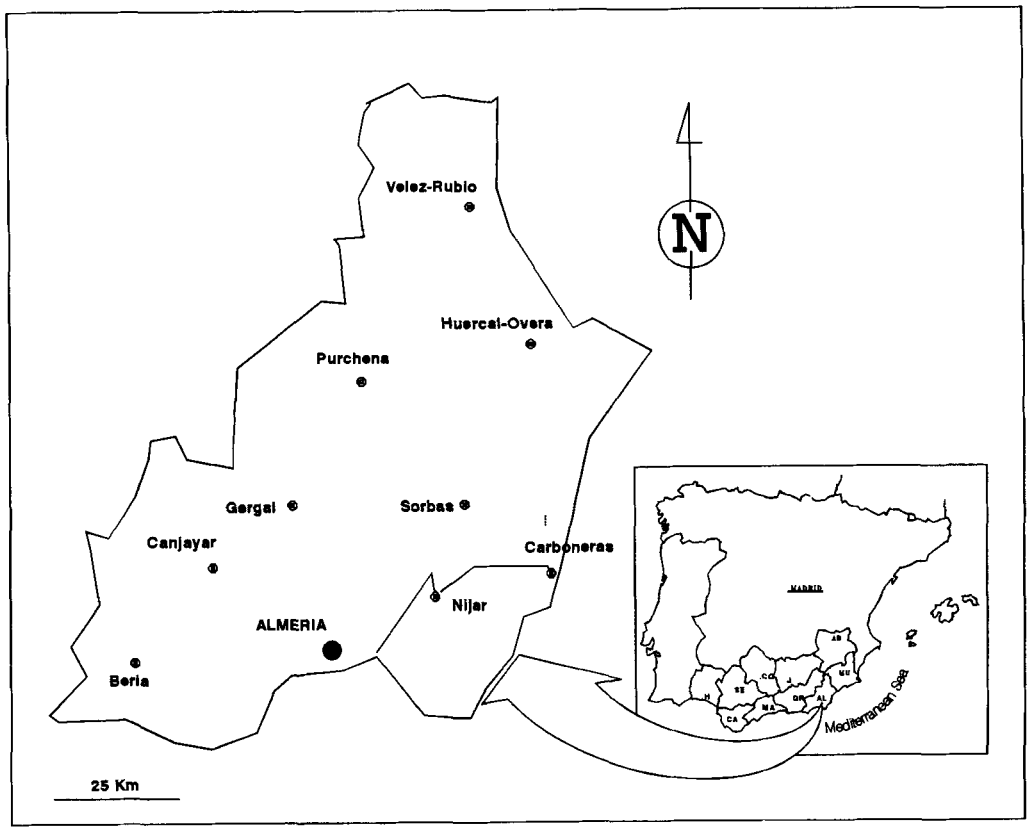

Fig. 1. Geographical location of area studied.

was later extended to include neighboring populations in the same socioculturally homogeneous area. In the total area of study, known as Campos de Níjar, 39 places were investigated (Fig. 2)

Low rainfall is the crucial environmental feature in the region. This area contains not only the most arid zones of the province of Almería but of all Western Europe, averaging less than 200 mm of rain per year. Average temperatures are uniformly high in the coastal region, between 12° and 18°C, falling slightly further inland as a result of the increase in elevation and the subsequent continental climate. These factors have resulted in highly characteristic flora and vegetation. Also, the paleobotanical features of the region have given rise to a close relationship between the local flora and that of North Africa, since there is a high number of elements with an Iberian-North African distribution.

Campos de Níjar is a large region with many small population nuclei, each with few inhabitants, but with a uniform culture, economy and collective memory. This can be seen in the architecture and the fact that customs and beliefs are fairly homogenous throughout the zone (Provansal and Molina 1991).

The region's economy is based on agriculture and livestock, the two being strongly connected. These activities are complemented—particularly in low-income families—by fishing, mining and the collection of esparto grass (*Stipa tenacissima* L.), saltwort ("Barrilla", *Salsola vermiculata* L.), palm leaves, palm hearts (*Chamaerops humilis* L.) and wood. Other local ways of earning a living include craft industries, such as working with esparto, pottery or weaving, and emigration. At the beginning of the second half of the 20th century, this agro-pastoral system was altered by the low agricultural yields and the disappearance of complementary activities. This was compensated to some extent by emigration to Latin America, Europe and to other parts of Spain. From the end of the 1950s, reaching a peak in the 1960s, colonization markedly changed the region. The process was slow but

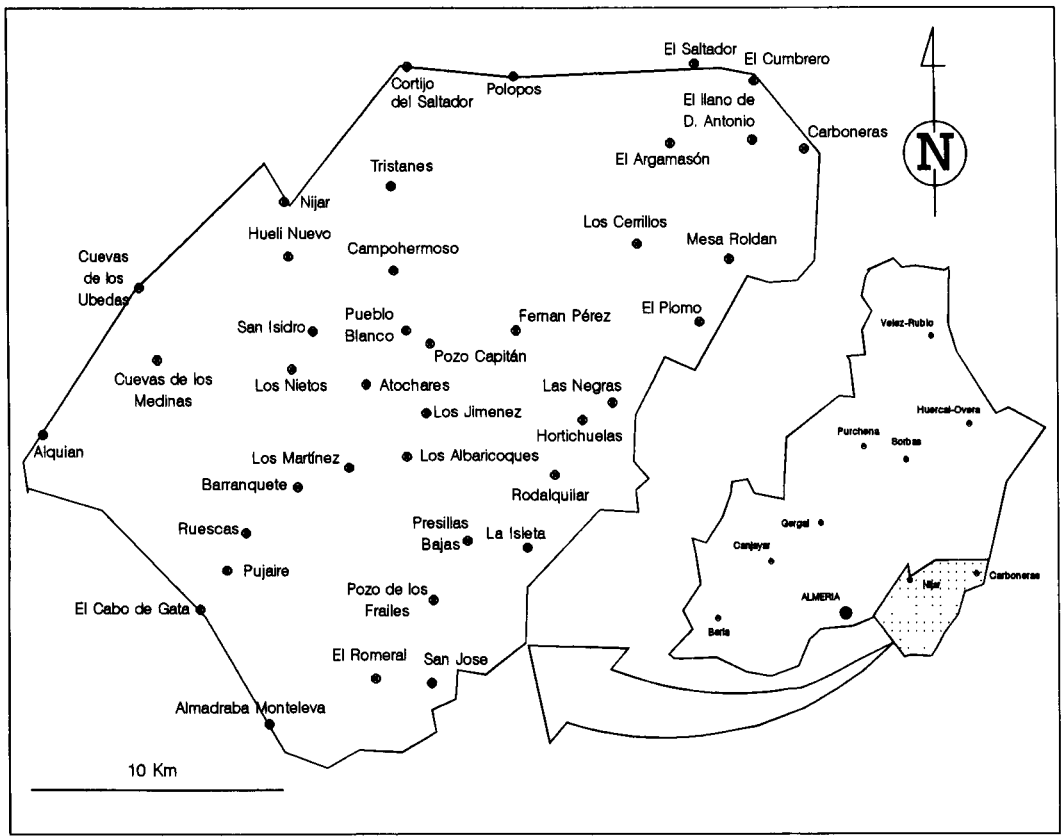

Fig. 2. Localities studied.

eventually changed the agricultural panorama of the region with the introduction of sandy-soil crops and greenhouses. Some complementary activities such as working with esparto grass reappeared as a result of the increasingly important tourist industry, but this time for decorative rather than functional purposes. In the last few decades the promotion of tourism and the declaration of the Nature Park have triggered a drastic social transformation which, has ended the region's historical isolation and has meant a loss of cultural identity.

These factors explain the need for this investigation. On the one hand, there is a rich flora with a high number of endemic species and a population with a well-established culture closely related to the environment. On the other hand, recent social changes are causing this society to be less dependent on the environment, leading to a rapid and irreversible loss of the ethnobotanical heritage of the region. This research project will, to a certain extent, permit the preservation and dissemination of this folk knowledge and may provide useful information in such fields as, pharmacology, phytotherapy, agriculture, and veterinary science, thus contributing to the development and management of the region.

Methodology

Ethnobotanical information was obtained through interviews with knowledgeable people: 221 interviews with 153 different people from 39 population nuclei were carried out. During each conversation notes were taken or the entire conversation recorded. With a view to carrying out an impartial study which reflects the current ethnobotany, no information has been excluded in case it may be useful to any of the different groups of people interested in this field.

A team of two carried out 90% of the interviews, with one researcher taking notes while the other kept the conversation flowing and received any samples offered by the interviewee. Furthermore, frequent field trips were made with

informants for in situ identification of the plants they mentioned. A voucher herbarium specimen of each species was deposited in the Herbarium of the University of Granada, Faculty of Pharmacy (GDA).

Results and Discussion

Three hundred eleven taxa (including vernacular names) were catalogued. 253 of these taxa are used in folk culture. A total of 798 uses were recorded: 558 used medicinally and the remaining 240 used for various other purposes (animal fodder, food, dyes, firewood, etc.) Table 1, following the example of Johns, Kokwaro and Kimanan (1990), lists 98 species with uses referred to by three or more interviewees. (The others were only mentioned once or twice.) The complete list of plants and their uses can be found in Martínez-Lirola (1993). The following information is recorded in the table: family, scientific name and accession number in the University of Granada, Faculty of Pharmacy Herbarium (GDA), common name (in Spanish), uses and illnesses treated if used medicinally, parts of the plant used, method of use, and the number of references to each application.

We completed 221 interviews among 153 people. All live in the region and most were born there. A small percentage live in the study region for only part of the year, or have migrated in from other areas. Consequently, some information given may not be traditional within the study area.

It is difficult to confirm the present use of many plants, as we often could not establish whether the application had fallen into disuse. On some occasions the uses of plants were described very vaguely, and in many cases the ingredients or treatment had been forgotten. Treatments were often described in the past tense, which would suggest that they are no longer used. Nevertheless, it seems that people maintain great faith in the curative properties of many plants which are still used to treat minor ailments or as the first step towards a cure. An example of this is the still widely practiced custom of gathering "all the flowers of the fields" on Good Friday. These are subsequently dried and stored and then taken in infusions at the slightest sign of illness during the following year.

It appears that most of this information has been passed on from generation to generation. Other uses have been acquired by observation and imitation of animal behaviour. Less traditional practices have taken root through television, radio, and, to a lesser extent, books. Also, in recent years, the continued and massive arrival of foreigners has also contributed applications previously unknown in the area. Generally, these sources can be considered acculturating factors which serve to homogenize different cultures and origins.

Many of these medicinal remedies have a purely intuitive origin based on the association of ideas. It seems that necessity has nearly always promoted the development of these recourses. We believe that most cases of plants being used nowadays are due to knowledge acquired in the period following the Spanish civil war. Some interviewees commented that in the area known as "Las Hortichuelas", there was a group of "maquis" (anti-Franco resistence), known as "Los Ricardos", who "used a lot of natural medicines" and some of the current remedies were learned from them.

Most of the plants (62%) have only one common name. An important group (24.35%) have two, and 11.1% have three names. The rest (4.6%) have four or more common names. In some of the plants with two names, each name corresponds quite clearly to a particular area. As plants may have two different names corresponding to different cultural areas, in spite of being well-known, this suggests that the popular nomenclature of plants could be useful for identifying different cultural zones. In this study two sectors can be distinguished: an eastern sector, influenced by Murcia (to the east), and a western sector, influenced by Andalusia. For example, *Nerium oleander* L. is known as "abelfa" or "adelfa" in the most westerly part of the study area, whereas in the eastern area it is referred to as "baladre." Similarly, *Piptatherum miliaceum* (L.) Cosson, is called "ñiosa" in the east and "trigera" in the west.

The useful plants are distributed among 73 families. Asteraceae (20 spp.) and Lamiaceae (22 spp.) constitute 16.6% of the total. As 81 families are recognized in this area (Sanz Fabrega 1986) it can be seen that approximately 91.2% of the families present have popular applications.

Table 1 shows 61 uses (although some, such as dyspepsia and digestive problems are grouped together), 48 for medicines and the remaining 13

TABLE 1. PLANTS TRADITIONALLY USED IN CAMPOS DE NIJAR; UH: HUMAN USE; UV: VETERINARY USE; UM: FOLK-MAGIC USES; R: REFERENCES NUMBER.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Adiantaceae					
Adiantum capillus-veneris L. (GDA 25255)	Culantrillo, culandrillo	Amenorrhea (pregnancy)	Aerial parts	Ingestion of infusion	13
		Placentary retention (UV/UH)	Aerial parts	Ingestion of fresh plant/infusion	4
Agavaceae					
Agave americana L. (GDA 26094)	Pita, pitaca	Rheumatism	Pulp/Leaf	Rubbing with pulp or decoction with added garlic	3
		Animal fodder	Leaf		3
Apiaceae					
Apium graveolens L. (GDA 11531)	Apio	Digestive problems	Leaf	Topical poultice/oral ingestion of decoction (with oil, sugar, and sometimes *Pimpinella anissum* L.)	6
		Infantile astenia	Leaf	Ingestion of decoction	11
Bupleurum gibraltaricum Lam. (GDA 25867)	Crujía, Clujía	Toothache	Stem	Mouthwash with decoction	4
Eryngium ilicifolium Lam. (GDA 25835)	Mancaperro	Acne/Boils	Aerial parts	Ingestion of decoction (sometimes with *Verbascum sinuatum* root)	10
		Boils	Aerial parts	Topical poultice with decoction residues	10
Petroselinum crispum (Miller) A. W. Hill (GDA 9457)	Perejil	Placentary retention	Leaf	Ingestion of fresh leaves/decoction	3
Apocynaceae					
Nerium oleander L. (GDA 25252)	Adelfa, aberfa, abelfa, baladre	Toothache	Latex/Root/Leaf	Local application or ocular instillation with latex/mouthwash with decoction of root or infusion of leaf	5
		Warts	Latex	Local application	6
Araceae					
Arisarum vulgare Targ.-Tozz. (GDA 25864)	Candilico, zomillo, zumillo	Animal fodder	Tuber		3
Asteraceae					
Aetheorhyza bulbosa (L.) Cass. (GDA 25232)	Castañuela	Food	Bulb	Edible raw	4
Anacyclus clavatus (Desf.) Pers. (GDA 25209)	Mojino blanco, mojigato	Food	Young stem	Edible cooked	3
Artemisia arborescens L. (GDA 26062)	Asensio, artemisia, artamisa, mata del sarampión, sensio, sencio	Measles (UM)	Stem with leaves	Pass plant over eyes or whole body	10
		Gardening	Plant	Ornamental	5
A. barrelieri Besser (GDA 25212)	Bojantina, boja	Indigestion (UM)	Stem with leaves	Form cross over belly	3
		Diabetes	Stem with leaves	Ingestion of infusion (sometimes with bark of *Quercus rotundifolia* Lam., leaves of *Eucalyptus* sp. or *Allium cepa* L.)	8
		Insecticide	Aerial parts	Placed in animal pens against fleas	3

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Dittrichia viscosa (L.) Greuter (GDA 26065)	Mata mosquera, mosquera, olivarda, artirraga, olivarda basta, ernica, mosquerilla borde	Wound/Burns (UH/UV)	Aerial parts	External washing with decoction (sometimes with *Sideritis granatensis* and *Thymus hyemalis/Cistus ladanifer*)	36
		Bruise (UH/UV)	Aerial parts	Local washing with decoction (sometimes with *Malva sylvestris*, in which case residue of decoction can be used as poultice)	7
		Insecticide	Aerial parts	Fly trap hung from the ceiling	10
Onopordum macracanthum Schousboe (GDA 26067)	Cardo, cardoncha, pincho burrero	Food	Stem and shoot	Edible raw and cooked	5
Pallenis spinosa (L.) Cass. (GDA 25881)	Pincho, pincho de las diarreas, pincho cuco, patagallo, pincho amarillo	Diarrhea	Aerial parts/Root	Ingestion of infusion (sometimes with *Zea mays*, *Silene vulgaris* (Moench) Garcke and *Opuntia ficus-indica*)/root decoction	6
Scolymus hispanicus L. (GDA 25887)	Cardo de comer, cardo, tagarninas, cardo santo, cardo cristo	Food	Stem	Edible cooked and sometimes raw	3
Sonchus oleraceus L. (GDA 25901) *S. tenerrimus* L. (GDA 25210)	Cerraja	Food	Leaf	Edible raw	8
Boraginaceae					
Lithodora fruticosa (L.) Griseb. (GDA 25248)	Hierba de la sangre, hierba de las siete sangrías	Hypertension	Aerial parts	Ingestion of infusion	4
Brassicaceae					
Eruca sativa Miller subsp. *longirostris* (Utrechtr.) Jahandiez & Maire (GDA 25265)	Oruga, picograjo, aballicos	Animal fodder	Aerial parts		3
Cactaceae					
Opuntia ficus-indica (L.) Miller (GDA 26090)	Chumbera, penca. Palas (stems). Chumbos (fruits).	Diarrhea with tenesmus	Flower	Ingestion of infusion (sometimes with *Silene vulgaris/Pallenis spinosa/Zea mays*).	8
		Respiratory problems	Stem	External application of hot stem	14
		Pain	Stem	External application of hot stem	14
Capparidaceae					
Capparis ovata Desf. (GDA 25247)	Alcaparra. mata panera	Torpid ulcer	Stem and leaf	External washing with decoction	3
		Toothache	Root	Mouthwash with decoction	3
		Arthralgia	Root	Topical lotion with decoction with *Punica granatum*	3

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Caryophyllaceae					
Herniaria fontanesii Guy subsp. *almeriana* Brummiitt & Heywood (GDA 25877)	Rompepiedra	Renal lithiasis	Aerial parts	Ingestion of infusion	29
H. cinerea DC (GDA 25240)					
Paronychia argentea Lam. (GDA 25243)	Yerba de la sangre, hierba de la plata, lapilla, yerba la sangre del campo, sanguinaria.	Blood disorder	Aerial parts	Ingestion of infusion	29
Cistaceae					
Cistus albidus L. (GDA 25238)	Estepa, quiebraollas, revientaollas.	Toothache	Leaf	Mouthwash with decotion	4
		Animal fodder	Shoot of stem		4
		To smoke	Dry leaf	Cigarettes	8
C. ladanifer L. (GDA 25236)	Jara	Gastroduodenal ulcer	Stem with or without leaves	Ingestion of infusion (with *Sideritis granatensis*)	9
		Wound (UH/UV)	Stem with leaves	External washing with decoction prepared with *Dittrichia viscosa* or *Sideritis granatensis*	18
Convolvulaceae					
Convolvulus althaeoides L. (GDA 25259)	Carrigüela, campanillera, corregüela.	Animal fodder	Aerial parts		3
Cucurbitaceae					
Citrullus colocynthis (L.) Schr. (GDA 25267)	Tuera	Diabetes	Seed	Ingestion	11
		Scorpion bite	Fruit pulp	Friction or local application	4
		Animal fodder	Seed		4
		Weaning	Fruit pulp	Topical (spread on nipple)	6
Chenopodiaceae					
Atriplex halimus L. (GDA 25836)	Salao, salá, salao blanco	Animal fodder	Aerial parts	Mixed with *Hordeum vulgare* L.	9
Beta maritima L. (GDA 26043)	Acelga del monte	Food	Leaf	Edible cooked	15
Salsola vermiculata L. (GDA 25270)	Barrilla, sosa, patagusano	Domestic	Burnt stem	Soap for washing clothes	15
Ephedraceae					
Ephedra fragilis Desf. (GDA 25280)	Encarnaillo, carnaillo, canutillo, apalaín fino	Cough/Colds	Stem/Root	Ingestion of syrup (See *Ficus carica*)/inhalation of decoction vapour	18
Euphorbiaceae					
Euphorbia serrata L. (GDA 25944)	Lecheterna, lechetrezna, lechiterna	Warts	Latex	Topical	3
E. characias L. (GDA 25283)					

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Fabaceae					
Anthyllis terniflora (Lag.) Pau (GDA 25318)	Albaida, mata blanca, albaida castellana, albaida negra. Albaida fina or albaida blanca to *A. terniflora.*	Fuel	Aerial parts	Firewood for ovens	5
A. cytisoides L. (GDA 25319)		Animal fodder	Aerial parts		6
Ceratonia siliqua L. (GDA 25829)	Algarrobo. Algarrobas or garrobas (fruits)	Cough/Colds	Fruit	Forms part of a syrup with multiple ingredients (See *Ficus carica*)	42
		Animal fodder	Chopped fruits		3
Cicer arietinum L. (GDA 25317)	Garbanzo	Diarrhea	Toasted seed	Ingestion (sometimes with liquor)	3
Retama sphaerocarpa (L.) Boiss. (GDA 25854)	Retama	Toothache	Stem or juice of stem/Root	Mastication or direct application to the sore tooth/ Mouthwash with decoction	5
		Fractured bone (UV)	Stem	Splinting of the limb preparing a paste with salt, vinegar and stems of *Stipa tenacissima*	10
Scorpiurus muricatus L. (GDA 25320)	Orejicas de liebre	Food	Leaf	Edible raw	3
Ulex parviflorus Pourret (GDA 25310)	Aliaga, olaga, abulaga	Fuel	Aerial parts	Firewood for initial heating of oven	8
Juglandaceae					
Juglans regia L. (GDA 21014)	Noguera, nuccero	Infection after childbirth	Leaf	Washing of genitals with decoction	3
Juncaceae					
Juncus acutus L. (GDA 25830)	Junco, hunco	Warts	Leaf	Local friction accompanied by magic ritual	3
		Toothache	Fruit	Mouthwash with decoction	3
		Respiratory problems	Fruit/Base of leaf	Ingestion of decoction (sometimes with *Ficus carica,* shed skin of snake, abundant sugar)	4
Lamiaceae					
Acinos alpinus (L.) Moench subsp. *meridionalis* (Nyman) P.W. Ball (GDA 25305)	Poleo, té de la sierra té del monte	Dyspepsia	Aerial parts	Ingestion of infusion	7
Ballota hirsuta Benth. (GDA 25306)	Marrubio, manrubio, marrubio blanco, cola de caballo. Marrubio negro	Hypertension	Aerial parts	Ingestion of infusion	3
Marrubium vulgare L. (GDA 25303)		Hepatic complaints	Plant	Magic/ritual	3
M. alysson L. (GDA 26081)		Gastroduodenal ulcer	Aerial parts	Ingestion of infusion with *Sideritis granatensis*	4
		Diabetes	Aerial parts	Ingestion of infusion	4
		Hypercholesterolemia	Aerial parts/Flowering part	Ingestion of infusion	72
		Domestic (scourer)	Aerial parts	Used for scouring	3

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Lavandula multifida L. (GDA 25300)	Cantueso, cantagüeso, cantigüeso	Digestive problem	Aerial parts	Ingestion of infusion (sometimes with *Sideritis granatensis*)	10
		Anorexia	Aerial parts/Root	Ingestion of infusion	7
		Fatigue	Aerial parts	Ingestion of infusion with *Sideritis granatensis* and *Thymus hyemalis*	3
		Animal fodder	Aerial parts		3
Nepeta amethistina Poiret subsp. *mallophora* (Webb. & Heldr.) Ubera & Valdés var. *bourgaei* (Briq) Ubera & Valdés (GDA 25307)	Artamisa	Pregnancy (Abortion)	Aerial parts	Ingestion of infusion or plant is placed beneath the pillow (object not clear aromatic?)	5
Phlomis purpurea L. subsp. *almeriensis* (Pau) Losa & Rivas Goday (GDA 25297)	Matagallo, melera	Diarrhea	Stem/Tip of stem	Ingestion of infusion	5
		Gastralgia	Aerial parts	Ingestion of infusion	3
		Colds	Aerial parts	Ingestion of syrup with *Ficus carica*	3
		Domestic	Stem with leaves	Scourer	6
		To smoke	Dry leaf	Cigarettes	4
		Fuel	Aerial parts	Firewood	4
Rosmarinus officinalis L. (GDA 9734)	Romero, romero blanco	Alopecia	Aerial parts	External washing with decoction/lotion (with cologne)/oily liniment	35
		Circulatory problems	Aerial parts	Ingestion of infusion/inhalation of decoction vapours (with *Thymus hyemalis*)	6
		Gastroduodenal ulcer	Aerial parts	Ingestion of infusion (with *Thymus hyemalis*/*Sideritis granatensis*)	6
		Colds	Aerial parts	Inhalation of decoction vapours/oral ingestion of syrup (See *Ficus carica*)/massage with alcoholic lotion	5
		Loss of vision	Aerial parts	Ingestion of infusion (with *Thymus hyemalis* and and *Sideritis granatensis*)	6
		Reumatism/neuritis	Aerial parts	Rubbing alcoholic lotion	11
		Diabetes	Aerial parts	Ingestion of infusion	11
		Wound/bruise	Aerial parts	Washing with decoction (sometimes with *Thymus hyemalis* and *Satureja obovata* Lag.)	3
		Pain	Aerial parts	Ingestion of syrup with *Zea mays*/infusion (with *Thymus hyemalis*)	3
		Blood problems	Aerial parts	Inhalation of decoction vapours/Oral ingestion of infusion (with *Thymus hyemalis*)	6
		Amulet	Aerial parts	Burnt to "ward off spirits"/good luck charm "Where there's rosemary there's always money"	4
Salvia verbenaca L. (GDA 25302)	Salamanquesa, mata salamanquesa, romero real	Cough	Aerial parts	Ingestion of infusion (with *Urtica urens*)/syrup (with *Ficus carica, Ceratonia siliqua* and *Origanum vulgare* L.)	3
		Burns	Leaf	Local application of fresh or burnt leaves	3

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Sideritis granatensis (Pau) Rivas Goday and Gómez García (GDA 25668)	Giarranchuelo, zajareña, rabogato, jajareña, jereña	Hepatic complaints	Aerial parts	Ingestion of infusion (sometimes with *Thymus hyemalis* and spoonful of oil)	3
		Gastroduodenal ulcer	Aerial parts	Ingestion of infusion (sometimes with *Thymus hyemalis*/*Lavandula multifida*/*Cistus ladanifer*/*Rosmarinus officinalis*/*Ballota hirsuta*)	79
		Colds	Aerial parts	Ingestion of infusion (with *Thymus hyemalis* or *Olea europaea, Rosmarinus officinalis, Dittrichia viscosa*)	4
		Wound (UH/UV)	Aerial parts	External washing with decoction (sometimes with *Dittrichia viscosa*)	65
		Anorexia	Aerial parts	Ingestion of infusion (sometimes with *Thymus hyemalis*)	3
		Fatigue	Aerial parts	Ingestion of infusion (sometimes with *Lavandula multifida* and *Thymus hyemalis*)	3
Teucrium charidemi Sandwith (GDA 25293)	Mata de las fiebres maltas	Brucellosis	Aerial parts	Ingestion of decoction	3
T. murcicum Sennen subsp. *hieronymi* (Sennen) Navarro and Rosúa (GDA 25288)	Yerbaiba, yerba la iba, alcaudonera, hiel de la tierra, tomillo borde, hierba de la tensión	Hypertension/Hypertensive crisis	Aerial parts	Oral ingestion of infusion	12
Thymus hyemalis Lange (GDA 25258)	Tomillo, tomillo negro, tomillo salsero, tomillo colorado. Tomillo blanco (*Th. Zygis*)	Circulatory/blood problems	Aerial parts	Ingestion of infusion [with *Paronychia argentea* or *Paronychia capitata* (L.) Lam.]/Inhalation of decoction vapours (with *Rosmarinus officinalis*)	5
T. Zygis L. subsp. *gracilis* (Boiss.) R. Morales (GDA 22915)		Dyspepsia	Dry leaf	Ingestion of infusion	6
		Hepatic complaints	Aerial parts	Ingestion of infusion (with *Sideritis granatensis*/*Lavandula multifida* and a spoonful of olive oil)	6
		Toothache	Aerial parts	Mouthwash (sometimes with *Teucnum murcicum* subsp. *hieronymi*) /oral ingestion of decoction (with *Ocimum basilicum* L.)	4
		Digestive problems	Aerial parts	Poultice (with *Plantago albicans, Rosmarinus officinalis* and *Sideritis granatensis*)/Oral ingestion of infusion/Infusion (with *Matricaria recutita* L./peel of fruit of *Citrus limon, Citrus sinensis, Origanum vulgare* and honey/*Artemisia barrelieri*/*Sideritis granatensis*/*Rosmarinus officinalis*/hip bath in decoction (with *Dittrichia viscosa, Populus alba* L., *Malva sylvestris*)	30

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
		Colds	Aerial parts	Ingestion of infusion (Sometimes *Thymus zygis* is recommended)/Infusion (with *Olea europaea, Rosmarinus officinalis, Sideritis granatensis, Dittrichia viscosa, Eucalyptus* sp./*Opuntia ficus-indica,* juice of *Citrus limon* and honey/Oral ingestion of syrup (See *Ficus carica*)	11
		Wound	Aerial parts	External washing with decoction (with *Sideritis granatensis, Rosmarinus officinalis* and *Satureja obovata*)	3
		Anorexia	Aerial parts	Ingestion of infusion (sometimes *Thymus zygis* is recommended)	4
		Fatigue	Leaf	Ingestion of infusion (with *Sideritis granatensis* and *Lavandula multifida*) (sometimes *Thymus zygis* is recommended)	10
		Pain	Aerial parts	Ingestion of infusion (with *Zea mays*, etc)/Local washing with decoction	3
		Aromatic	Leaf	Extraction of essence	10
		Fuel	Plant	Firewood for ovens	5
T. longiflorus Boiss. (GDA 25256)	Tomillo real, mejorana, tomillo doble, pitos reales	Digestive problems	Leaf and flowering plant	Ingestion of infusion	4
T. mastichina L. (GDA 25296)	Mejorana	Dyspepsia	Aerial parts	Ingestion of infusion	5
Liliaceae					
Allium roseum L. (GDA 25330)	Ajoporro, ajo	Toothache	Bulb	Local application/Mouthwash, decoction of bulb in vinegar	7
		Rheumatism	Bulb	Ingestion/Topical lotion with decoction of garlic and leaves of pita (*Agave americana*)/Alcoholic lotion made of crushed bulb macerated in alcohol	10
		Warts	Bulb	Local friction accompanied by magic ritual	3
		Anorexia	Bulb	Ingestion	3
		Food	Bulb	Edible raw or cooked	G
Urginea maritima (L.) Baker (GDA 26095)	Cebolleta, cebolla almorranera, cebolla albarrana, cebolla marranera	Haemorrhoids (UE/UM)	Bulb	Hip bath with decoction/ritual, place it under the bed until it dries	3
Malvaceae					
Lavatera maritima Gouan (GDA 25334)	Malvariseo, rosalicos	Colds	Flower	Ingestion of syrup (See *Ficus carica*)	25
		Pain	Flower	Ingestion of infusion	3

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Malva sylvestris L. (GDA 25333)	Malva	Boils /Eczema/Abscesses	Leaf	Poultice (sometimes with *Lycopersicon esculentum* and oil/oil and unsalted butter)	10
		Digestive problems	Leaf/Stem	Ingestion of decoction (sometimes with unsalted butter and oil)/hip bath with decoction	5
		Colds	Stem with leaves/ Crushed leaf	Inhalation of decoction vapours/Poultice for topical use	3
		Wound	Leaf	External washing with decoction and later application of poultice of decoction residues (with *Dittrichia viscosa*)	6
Moraceae					
Ficus carica L. (GDA 25335)	Higuera	Colds (UH/UV)	Dried fruit	Ingestion of syrup (with water, sugar/honey. *Lavatera maritima, Plantago albicans, Xanthoria parietina, Prunus dulcis, Olea europaea, Ceratonia siliqua,* snake skin/Following are optional: *Anthyllis cytisoides, Pimpinella anisum, Avena* sp, *Lavandula multifida, Rhamnus alaternus, Ephedra fragilis, Eucalyptus* sp., *Citrus sinensis, Opuntia ficus-indiea, Citrus limon, Sideritis granatensis, Paronychia argentea, Malva sylvestris, Marrubium vulgare, Ballota hirsuta, Phlomis purpurea, Dittrichia viscosa, Origanum vulgare, Verbascum sinuatum, Ulmus minor Miller, Thymus hyemalis, Thymus zygis* subsp. *gracilis.*	66
		Animal fodder	Fruit	Pig food	4
		To smoke	Chopped dry leaf	Cigarettes	3
Oleaceae					
Jasminum officinale L. (GDA 26006)	Jazminero	Eye infection	Flower/Leaf	Local washing with decoction (sometimes with *Ocimum basilicum* and salt/Leaves of *Rosa* sp. and *Matricaria recutita*)	3
Olea europaea L. (GDA 25338)	Olivo	Hypertension	Leaf	Ingestion of infusion (sometimes with *Brachypodium retusum* (Pers) Beauv./*Matriearia recutita* y *Sideritis granatensis*)	47
		Gastrointestinal colic	Oil	Ingestion/External massage	4
		Diabetes	Leaf	Ingestion of infusion	3
		Colds	Oil/Leaf	Ingestion of oil/Topical use of oil spread on brown paper/ Syrup (see *Ficus carica*)	4
		Pain (UV)	Pickle of fruit	Ingestion	4
		Wasp sting	Oil	Topical use with and ointment prepared with crushed garlic	3

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Orobanchaceae					
Orobanche ramosa L. (GDA 22362)	Follón de lobo. cipote de burro, tarugo	Diarrhea with tenesmus	Aerial parts	Ingestion of infusion	4
Oxalidaceae					
Oxalis pes-caprae L. (GDA 25991)	Vinagrera, agrio, trebo, canario, matacañas	Food	Rhizoma	Edible raw	3
Palmae					
Chamaerops humilis L. (GDA 25837)	Palmito, palma, parma. Cohollo (annual shoots). Dátiles, dátiles zorreros (fruits). Palmizón (dried plant)	Food	Shoots/Fruit	Edible raw	4
		Crafts	Leaf	Baskets, hats, brooms, etc.	5
Papaveraceae					
Papaver rhoeas L. (GDA 25342)	Amapola, amapol, anapol, amapolo, amapol fino	Measles	Flower	Ingestion of infusion	3
		Animal fodder	Leaf/Whole plant		4
Plantaginaceae					
Plantago albicans L. (GDA 25347)	Pelosilla, pelusilla, villosa, rampetes	Colds	Leaf	Ingestion of infusion/Syrup (with *Ficus carica*)	6
P. ovata Forsskal (GDA 25344)					
Plumbaginaceae					
Limonium sinuatum (L.) Miller (GDA 25355)	Capitana. Siempreviva (flower)	Food	Leaf	Edible raw or cooked	6
Poaceae					
Arundo donax L. (GDA 26040)	Caña	Toothache	Root	Mouthwash with decoction	3
		Construction	Stem	Shutters, roofs, etc	4
Phalaris canariensis L. (GDA 23059)	Alpiste. alpiste blanco	Placentary retention (UV)	Seed	Ingestion (sometimes mixed with *Adiantum capillusveneris*)	3
Piptatherum miliaceum (L.) Cosson (GDA 25989)	Triguera, triguera borde, iñosa, ñiosa, añosa	Eye infection (UV)	Stem	Introduction in animal's tear duct	10
		Animal fodder	Aerial parts		4
Stipa tenacissima L. (GDA 25367)	Atocha, atochón. Esparto (leaves)	Placentary retention/ Diarrhea (UH/UV)	Leaf	Plaited around body or neck of animal	8
		Crafts	Leaf	Baskets, etc.	15
		Domestic	Leaf	Scourer	4

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Triticum aestivum L. (GDA 22455)	Trigo	Dermatosis	Seed oil	Topical	3
Zea mays L.	Maíz, panizo. Panocha or mazorca (fruit)	Prostate problems	Style	Ingestion of infusion	11
Portulacaceae					
Portulaca oleracea L. (GDA 13104)	Verdolaga, verdulaga	Food	Aerial parts	Edible cooked	3
Rhamnaceae					
Rhamnus alaternus L. (GDA 25378)	Durillo, mesto, árbol de la medicina, enllecto, ernesto	Hypertension	Stem and leaf	Ingestion of infusion	6
		Colds	Stem and leaf	Ingestion of infusion	3
Rosacesae					
Prunus dulcis (Miller) D.A. Webb (GDA 26096)	Almendro	Colds	Endocarp fruit	Ingestion of syrup (see *Ficus carica*)	58
Rutaceae					
Citrus limon L. (GDA 26098)	Limonero	Hypertension	Fruit juice	Ingestion/topical (applied to joints)	6
		Digestive problems	Fruit juice/Epicarp fruit	Ingestion with or without water/infusion with: *Thymus hyemalis*, peel of *Citrus sinensis*, *Origanum vulgare* and honey/with liquor and honey	8
		Respiratory problems	Flower/Epicarp fruit/Fruit juice	Ingestion of infusion/syrup (see *Ficus carica*)/decoction with sugar/with honey and sometimes with liqour	14
		Diarrhea (UV)	Fruit juice	Ingestion	3
C. sinensis (L.) Osbeck (GDA 26099)	Naranjo. Azar (flowers)	Gastrointestinal colic	Flower	Ingestion of infusion	4
		Colds	Epicarp fruit/Flower	Ingestion of syrup with multiple ingredients (see *Ficus carica*)	7
		Nerves	Flower	Ingestion of infusion (sometimes with stigmas of *Zea mays* and flowers of *Opuntia ficus-indica*)	9
Ruta angustifolia Pers. (GDA 25382)	Ruda, Rua	Pregnancy (Abortion)	Aerial parts	Ingestion of infusion	8
		Placentary retention (UH/UV)	Aerial parts	Ingestion of decoction (Sometimes with *Stipa tenacissima* and cinnamon)	14
		Toothache	Aerial parts/Juice of stem	Mouthwash with decoction/Local application	3
		Gastroduodenal ulcer	Stem with leaves	Ingestion of liquid prepared with liquer lime	15
		Rheumatism	Stem	External application of decoction/rubbing with balsam (fried in oil and decanted)	4
		Migraine	Stem	Placed in ear or on chest	13

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Scrophulariaceae					
Digitalis obscura L. (GDA 25385)	Crujía	Toothache	Stem and leaf	Mouthwash of decoction	15
Verbascum sinuatum L. (GDA 10031)	Probayernos	Blood problems	Leaf and root	Ingestion of decoction (sometimes with *Eryngium ilicifolium*)	9
Solanaceae					
Hyoscyanus albus L. (GDA 25390)	Beleño, abeleño	Toothache	Fruit without seeds	Local application of smoke (often using cigarette)	5
		Insect bite (UM)	Leaf	Ritual	7
Lycopersicon esculentum Miller (GDA)	Tomatera	Boils	Fruit	Poultice prepared with bread and olive oil	8
Nicotiana glauca R.C. Graham (GDA 25391)	Gandul, calenturero, acículito, arboltonto, gigante	Boils	Leaf	Local application (whole or crushed leaf as a poultice)	3
		Toxic	Plant	Ingestion of plant and inhalation of smoke is toxic for animals and humans	3
Solanum melongena L.	Berenjena	Hypercholesterolemia (?)	Fruit	Ingestion of macerated fruit	3
S. nigrum L. (GDA 25911)	Tomatina, yerba mora, tomaterilla borde, tomatera morisca, tomatillo zorrero, tomaterilla, yerba morisca	Toothache	Aerial parts/Fruit pulp	Mouthwash with decoction of the plant/Local application of vapors from burning fruit pulp on cotton wool	3
		Bruise/Wound	Aerial parts	Poultice of crushed plant	3
S. tuberosum L. (GDA 9169)	Patata, papa	Burns	Tuber/Juice of tuber	Local application	3
		Cough	Tuber	Ingestion of Juice (with juice of *Raphanus sativus* L. and sugar)	4
		To smoke	Leaf	Cigarettes	9
Teloschistaceae					
Xanthoria parietina (L.) Th. Fr. subsp. *ectanea* (Ach.) Clauz. et Roux (GDA 898 Líquenes)	Rompepiedra, flor de piedra	Renal problems	Aerial parts	Ingestion of decoction	8
Thymeleaceae					
Daphne gnidium L. (GDA 25870)	Torvizco, torvisco, matapollo, torovisco	Toothache	Bark	Mastication	4
		Eye problems	Fruit	Ingestion	5
		Placentary retention/ Diarrhea (UM/UV)	Stem	Plaited around neck or body of animal	25
		Evil eye and tericia (UM)	Aerial parts	Rituals	7

TABLE 1. CONTINUED.

Botanical name and voucher specimen no.	Common names	Uses	Part used	Method of use	R
Thymelaea hirsuta (L.) Endl. (GDA 25394)	Bufalaga, bojalaga, bofalaga, probayermos	Warts (UM)	Plant	Ritual	3
		Fuel	Bark	Tinder for lighters and firewood for ovens	5
Usneaceae					
Ramalina bourgeana Mout. (GDA 896 Líquenes)	Flor de piedra	Renal lithiasis	Aerial parts	Ingestion of decoction	3

mainly for food and animal fodder. Some interviewees attached more importance to the medicinal properties of a plant than to its other uses. This suggests that sectors of ethnobotanical knowledge are being lost at different rates depending on their relative importance e.g., medicines are often not as widely available as other resources such as animal fodder or food. Nevertheless, the use of wild plants for food has potential for aiding the growth of the local economy if safeguards are employed. The destructive collection of certains aromatic plants such as *Thymus hyemalis* Lange (wild thyme), should serve as a caution. We believe that the collection of this species, endemic to southeast Spain, should be controlled and its cultivation promoted.

If the number of times a plant was mentioned is a guide to the extent of its use, the most widely used plant would seem to be "garranchuelo" [*Sideritis granatensis* (Pau) Rivas Goday & Gómez García] followed in decreasing order by rosemary (*Rosmarinus officinalis* L.), thyme (*Thymus hyemalis*), horehound (*Ballota hirsuta* Benth., *Marrubium vulgare* L.), olive-tree (*Olea europaea* L.), fig-tree (*Ficus carica* L.), rue (*Ruta chalepensis* L.), "olivarda" [*Dittrichia viscosa* (L.) Greuter] and almond-tree [*Prunus dulcis* (Miller) D.A. Webb].

Plant remedies are usually administered orally, most often as infusions or decoctions made with water and the aerial part of the plant, preferably when it is in flower. These preparations are locally known as "cocitorios" and nearly always sugar is added to taste. Sometimes, specific parts of the plants are used.

The preparations are usually taken daily until the symptoms disappear. Internal preparations are usually administered in the morning before breakfast and for an odd number of consecutive mornings (the importance of this was stressed by informants). When chronic illnesses (hypertension, diabetes, stomach ulcers, etc.) are treated, treatment is usually interrupted every nine days for a week's "rest."

Compound formulas, in the form of mixtures of the best known curative species, are relatively common for the treatment of diverse symptoms. Hence thyme (*Thymus hyemalis*), "zajareña" (*Sideritis granatensis*) and rosemary (*Rosmarinus officinalis*) are added to preparations of other plants to enhance their effects.

Of the external applications the following are

the most frequent: washing of the affected part (wounds, bruises, burns, etc.) with a decoction of the plant, poultices elaborated from fresh plants or from residues of the decoction with an oily component (usually olive oil), massages with liniment or plant macerates with alcohol, baths or the inhalation of vapours. Also mentioned are ocular and auricular instillation and mouthwashes (particularly for toothache).

Folk-magical uses fundamentally consist of a ritual in which an incantation ("prayer") is recited and a plant is involved. These are used against: warts, "mal de ojo" (the evil eye), "tericia" (hepatic ailments?) or "sipela" (swelling produced by a blow or the bite of a poisonous animal). Mallow leaves (*Malva sylvestris* L.), vine (*Vitis vinifera* L.), henbane (*Hyosciamus albus* L.), Mediterranean mezereon (*Daphne gnidium* L.), horehound (*Marrubium vulgare*) and necklaces of esparto grass (*Stipa tenacissima*) are the most highly regarded plants in these rituals.

From our findings, it is evident that this region harbors a valuable and little-known ethnobotanical heritage. It is a matter of urgency that this traditional knowledge, which has been jealously guarded in some cases, be recovered before it is completely lost. This information could be invaluable for the future management and economic development of the area. Since there is a complete lack of phytotherapeutic data for many of the plants included in the present study, we strongly recommend that phytochemical and pharmacological studies be carried out in order to confirm the validity of the plant folk-medicinal use.

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