Tradition and change in the urban milieu. The popular use of medicinal plants in Valencia (Spain)

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The city of Valencia is the capital of the Valencian Region and also of the L'Horta district. It is situated in the centre of an alluvial, irrigation plain crossed by eight main irrigation channels: four on each side of the river Turia. The municipal area covers some 134.7 km^2, stretching 30 km from north to south but barely 7km from east to west. Its official population in 1996 was 746,683 with 764,924 actually living there.

No information was available about the use of medicinal plants by the population before hand. Publications on this subject range from first rate botanical research to those aimed at a wider audience. None of them takes into account data obtained from field work and they provide very little information about present-day uses in folk medicine.

Research objectives

The methodological approach and objectives of this research are the same as those used by our group in La Ribera Alta region (Valencia) and the towns in the proximity of the La Albufera lake (Valencia). Our intention is to determine which plants are used in folk medicine in the city of Valencia, the names they are known by, the parts used and how they are prepared and administered, and finally, their therapeutical purposes. In this particular case, we also sought to determine differences that may exist in comparison with the results obtained in rural areas.

Material and methods

Three hundred semi-structured interviews conducted over a ten year period (1986 - 1996) were selected from the ethnographic material housed in the Instituto de Historia de la Ciencia y Documentación (CSIC-UV), eliminating those involving herbalists and health science experts. After checking the botanical nomenclatures, the information obtained was classified by families, genera and species. The original, colloquial names and descriptions of their uses have been retained since this is precisely one of the aspects of most importance to us in this research. We have used such terms to compile a thesaurus enabling us to then draw up an overview of the folk-illnesses encountered in Valencian folk medicine.

At no time has our sample purported to be representative of the entire population. Of the 300 interviews, 127 interviewees were men and 173 women. Table 1 shows their distribution by age and Table 2 by level of education.

Results

The families

Table 3 shows the distribution by botanical families of all the species of plants used in folk medicine in the city of Valencia. As we can see, unlike the outcome of research in La Ribera Alta and in the municipalities of the Parque Natural de l'Albufera, the compositae family was the largest group (18), followed in descending order by the labiatae (14) and rosaceae families (8), with the gramineae (7) and leguminosae (7) families in fourth and fifth position.

The species

A comparison of these results with those of our earlier research (table 4) reveals that a total of 146 species belonging to 64 families were reported in the city of Valencia as opposed to 126 in La Ribera (54 families) and 110 in the municipalities of the Parque Natural de l'Albufera (49 families). Four levels of use were defined for the most frequently used. The first level includes the 13 plants used most frequently in the sample (8.90% of the total botanical species), which are:

Camellia sinensis (L.) Kuntze (Theaceae) or tea (té)
Cassia angustifolia Vahl (Leguminosae) or senna (sen)
Citrus aurantium L. (Rutaceae) or orange tree (naranjo)
Coffea arabica L. (Rubiaceae) or coffee (café)
Eucalyptus globulus Labill. (Myrtaceae) or eucalyptus (eucalipto)
Lippia triphylla Kuntze (Verbenaceae) or lemon verbena (hierbaluisa)
Malva sylvestris L. (Malvaceae) or mallow (malva)
Matricaria chamomilla L. (Compositae) or camomile (manzanilla)
Menta x piperita L. (Labiatae) or mint (menta)
Peumus boldus Mol. (Monimiacae) or boldo (boldo)
Pimpinella anisum L. (Umbelliferae) or anise (anís)
Rosmarinus officinalis L. (Labiatae) or rosemary (romero)
Salvia lavandulifolia Vahl (Labiatae) or sage (salvia)

The second level includes 8 plants (5.47% of the total botanical species):

Achillea millefolium L. (Compositae) or yarrow (mil en rama)
Althaea officinalis L. (Malvaceae) or marshmarrow (malvavisco)
Cynara scolymus L. (Compositae) or artichoke (alcachofa)
Cynodon dactylon (L.) Pers (Gramineae) or Bermuda grass (grama)
Foeniculum vulgare Miller. (Umbelliferae) or fennel (hinojo)
Inula montana L. (Compositae) or arnica (árnica)
Jasonia gluticosa (L.) DC (Compositae) or mountain tea (té de monte)
Ruta angustifolia Pers. (Rutaceae) or rue (ruda)

Twenty-four plants lie in the third level (16.43% of all the botanical species):

Allium cepa L. (Liliaceae) or garlic (ajo)
Allium sativum L. (Liliaceae) or onion (cebolla)
Arctostaphylos uva-ursi (L.) Sprengel or bearberry (gayuba)
Artemisa vulgaris L. (Compositae) or mugwort (artemisa)
Ecballium elaterium L. (Cucurbitaceae) or cucumber (pepino)
Frangula alnus Miller (Rhamnaceae) or alder buckthorn (frángula)
Gentiana lutea L. (Gentianaceae) or gentian (genciana)
Herniaria glabra L. (Caryophilaceae) or arenaria (rupturewort)
Hordeum vulgare L. (Gramineae) or barley (cebada)
Hypericum perforatum L. (Guttiferae) or St-John's-wort (hipericón)
Juniperus communis L. (Cupressaceae) or common juniper (enebro)
Lycopersicum esculentum Miller (Solanaceae) or tomato (tomate)
Origanum virens Hoffmanns & Link. (Labiatae) or marjoram (orégano)
Oryza sativa L. (Gramineae) or rice (arroz)
Raphanus sativus L. (Cruciferae) or radish (rábano)
Petroselinum crispum (Miller) A.W. Hill or parsley (perejil)
Sambucus nigra L. (Caprifoliaceae) or elder (sauco)
Santolina chamaecyparissus L. (Compositae) or lavender cotton (manzanilla amarga)
Secale cereale L. (Gramineae) or rye (centeno)
Sideristis angustifolia Lag. (Labiatae) or rabo de gato (lit. "cat's tail")
Taraxacum officinale Weber in Wiggers (Compositae) or dandelion (diente de león)
Theobroma cacao L. (Sterculiaceae) or cocoa (cacao)
Triticum aestivum L. (Gramineae) or wheat (trigo)
Thymus vulgaris L. (Labiatae) or thyme (tomillo)

Finally the fourth level includes those plants that did not comply with the criterion established by Johns, T. *et al.*, i.e. those mentioned in fewer than three interviews. This group includes a total of 101 species, i.e. 69.17% of the total.

The first striking fact is that, in the city of Valencia, unlike in La Ribera Alta and the Parque Natural de l'Albufera municipalities, most of the first level plants used are not autochthonous and many are not even grown in the area. This seems logical bearing in mind that city dwellers have less access to them than inhabitants of rural areas. There are however a greater number of specialist shops where they can be bought.

Use in folk medicine

We have retained colloquial terms as we did in our research on the plants used in folk medicine in the Parque Natural de L'Albufera municipalities and La Ribera Alta area. According to linguistics, such terms objectivize and consolidate the knowledge that people have of health and disease, at least in part. We also know that the constitution of the meaning of language has a historical element and consequently, the meaning of the commonplace words in a language evolve constantly. It would be very interesting in this respect to know how a plant that has been used traditionally to remedy certain complaints, is now attributed properties known by names taken from modern, scientific medicine such as "reduce cholesterol", "scurvy", "sinusitis", etc.

This process is closely linked to the needs, interests, scope and culture of each community. Language is also closely linked to people's world-view therefore the expressions we have recorded can help bring us at least a little closer to the general public's concept of disease. We are however aware that a great deal of research is still necessary, particularly into the structure and function of the different parts of the body and also disease and its origins. Although we cannot rid ourselves of the knowledge and taxonomy inherent in present-day modern, scientific medicine, we have created a simple thesaurus of the expressions recorded with reference to the use of medicinal plants. Thesauri are at present the most effective tool for controlling vocabulary in a data collection system.

Our thesaurus consists of an alphabetical list of the generic and-specific relationships between terms (See the example in Table nº 6). The semantic trees are indented and offer the complete set of each hierarchy stemming from a main generic term. The numbers appearing next to each expression are those of the botanical species in the plant inventory. The expressions in inverted comas - of which there are very few - were added by us. A total of 247 different uses were recorded. Table nº 7 shows the number of botanical species

used in folk medicine to remedy the pathological complaints encompassed by the main generic terms. The group of complaints for which the largest number of botanical species is used in Valencia, comes under the heading of "digestive problems". This is totally in keeping with previous research. In the present study however, "blood problems" and "circulation" are in second place, followed by "respiratory problems", "external complaints", and everything requiring "tonics, stimulants and vitamin supplements", and in sixth place, the processes that affect the kidneys and urinary tracts. These results differ considerably from those obtained in the La Ribera Alta and L'Albufera, and are very interesting although we cannot be sure what they are due to. One explanation could be that many of the people in the sample have a high level of education and that in this instance the zone under study is a large city. The pattern is more like the results obtained in other places in Europe and the USA although the type of study was different.

A close look at the inventory and the complementary information it contains about each plant reveals that in most cases, their use in folk medicine can be scientifically justified. In others however, such as plants we could call multipurpose, not all their uses can be scientifically explained. This type could include those based on magic whose provenance was lost in the remote past eg juniper galbuli carried in the pocket to cure haemorrhoids, picking *Centaura calcitrapa* on St John's night, using rue to stave off evil eye, or rosemary to find "true love". One might think that this type of magic remedies were transmitted orally from one generation to the next but such recipes appear in some extant fragments of documents from Classical times, in medieval manuscripts and also in early printed books. The advent of the printing press made it possible to publish books for the general public about all sorts of remedies to combat disease. One classic example is the Libro de medicina llamado Tesoro de pobres en que se hallarán remedios muy aprobados para la sanidad de diversas enfermedades (1519) attributed to Petrus Hispanus, which was reprinted many times in different versions. Literature is also full of instances that mention magical remedies to combat illnesses and misfortunes, the best known of which include Lazarillo de Tormes, La Celestina and the Retrato de la Loçana andaluza.

Some uses originated in classical, scientific medicine and remained unchanged or were distorted by different influences as time went by. Others obviously originated in modern, scientific medicine - both present-day and that of the 19th century - sometimes conserving the scientific meaning and sometimes redefining it within the framework of folk medicine. It would be particularly interesting in this respect to know which plants used traditionally have found new applications such as "lowering the level of cholesterol in the blood". Finally, people use plants that are totally foreign to their own territory, as this study clearly demonstrates. Some, such as tea, coffee, eucalyptus, boldo etc, were integrated into local heritage in the past, whilst others such as guarana and ginseng, from completely different places and medical systems, have been acquired recently. The media - press, radio, TV, etc - play an important role in diffusing them, as do shops selling plants and new-style food supplements. John K. Crellin provides a good description of an example of this in Newfoundland (Canada). Chart nº 1 is an attempt to portray the complex relationships and influences involved in the use of plants in folk medicine.

Notes on the origin of actual popular uses of most frequent plants in the sample (level 1)

Senna (sen) is one of the plants available in shops and is often an ingredient of the mixtures sold as slimming aids, laxatives etc. It originated in Arabia and spread subsequently throughout India. It does not feature in Materia Medica by Dioscorides but is mentioned in Andrés Laguna's commentaries on chapter 79, Book III, about Delphinio which was said to be grown usually in Italy. The species usually employed are Cassia angustifolia or Arabian senna and C. acutifolia or Alexandrian senna. The senna found in Spain is C. obovata, apparently introduced in the 18th century, much later than in Italy. It is used for the same reasons in folk medicine and by the medical profession. It must however be remembered that extended use can cause colon problems. This plant is nevertheless often included in "dietary products with fibre" under the generic name of "pulse flour" giving rise to many cases of rectocolitis.

The orange tree (naranjo) is very well-known and held in high esteem in Valencia although it originated in the east. The properties of its flowers (orange blossom) are common knowledge, and in recent decades, due to the considerable impact of modern medicine, great importance has been given to the vitamin C content of its fruit. It is eaten habitually in Valencia to prevent common colds. Besides oranges, grapefruit and lemon are also used frequently.

Despite having been introduced to Valencia as late as the 1860's, the eucalyptus (eucalipto) has taken root well in this region and is to be found in the streets and gardens of the city and the surrounding areas. The household use of this plant undoubtedly arose from the use that scientists made of it in the second half of the 19th and early decades of the 20th century. Its vapours are used in Valencia to remedy bronchitis, asthma, coughs and sinusitis, to soothe sore throats and even combat acne.

Lemon verbena (marialuísa or hierbaluísa) is a plant that originated in South America and was introduced into southern Europe by the Spanish. It is also grown in northern Africa and Morocco is now one of its main producers. Its name is said to have come from that of the wife of Charles IV of Spain. It is grown in kitchen gardens, gardens and plant pots. Its applications in folk medicine are basically the same as those described by scientists. In Valencia, it is mainly used in folk medicine as a painkiller (stomach aches, period pains, toothache etc).

As regards mallow (malva), we can say that it was already known in Classical times. It figures in Dioscorides' Materia medica with properties similar to those in present-day folk medicine as a pectoral, laxative, to combat rheumatic pain, to cleanse wounds, for eye infections etc. We found that it could be used to soothe bites, a fact reminiscent of the use recommended by Dioscorides as a remedy for bees and wasp stings. Its very high mucilage content means mallow can calm coughs and is an effective emollient. The Iberian Peninsula is home to another one and a half dozen mallows with constituents similar to those of the silvestris variety.

Camomile (manzanilla) is a widely used plant that originated in Europe and the north of Africa. It was undoubtedly known in Classical times, but there is apparently considerable confusion in the texts describing other species similar in appearance. Chapter 16 of Dioscorides' Materia Medica on camomiles, for example, distinguishes three different species, whilst chapter 149 on Parthenio, is said by Laguna to be none other than the matricaria. As the inventory shows, this plant has many uses in folk medicine, most of which have been confirmed by scientific research. It is taken internally for digestion problems and externally for eye complaints.

Mint (menta) is also a plant that originated in Europe. It is very widespread and often naturalised in many locations. It is a sterile hybrid from England that is consumed in vast quantities in both Europe and the United States. A certain Eales was the first to observe it in Hertfordshire. He notified Ray, who included it in the second edition of Synopsis Stirpium Britannicarum (1696), under the name of "Mentha spicis brevioribus et habitioribus... ", and in his Historia plantarum (1704), as Mentha palustris...Peper-Mint". It entered the London Pharmacopoeia of 1721 as *Mentha piperitis sapore*. In the region of Valencia, other varieties are possibly consumed under this name since it has become a generic term used to describe several species. The applications in folk medicine that we have recorded are very similar to its scientific uses. Its main application in Valencia is to remedy digestive problems (particularly to prevent vomiting), and also dizziness, headaches and as a depurative etc.

Another commonplace plant not grown in Spain is boldo, which originated in the dry mountains of Chile and is grown sporadically in Italy and the north of Africa. It is therefore a plant which was introduced late. According to Dujardin-Beaumetz in a paper we located in the Bibliothèque Nationale, Paris, it was described by Molina in 1782 under the name of *Peumus boldus*. He goes on to say that in 1782, Ruíz and Pavón described the same plant, which they called Ruizia fragans. In 1807 Person baptised it as *Peumus fragans* and in 1809, on the basis of the preceding research, A.L. de Jussieu called it Boldea fragans. M. de Candolle took up Peumus again as the name for the genus. In 1869, in his Histoire des plantes, H. Baillon provided a comprehensive study of boldo, which he referred to as *Peumus boldus* - the name by which it is known today. Dujardin also said that boldo was first introduced into French trade in 1868 or 1869 by the Chilean company Fabian. Since there were several varieties, the different samples were analysed in order to isolate and compare their active principles. It is used in folk medicine in Valencia to protect the liver and as a choleretic-cholagogue, properties of its boldine and alkaloid content in conjunction with flavonoids and essential oil.

Anise (anís or matalahúva) is a plant from eastern Mediterranean countries. It was known to and used by the Egyptians. It is mentioned in the work of Pliny, Theophrastus and in Dioscorides' Materia Medica. Spain and Greece are the main producers of anise essential oil. According to Flükiger, Alicante was one of the places where it was made and sold. We found it was used in folk medicine in Valencia for the same reasons as ever: for its carminitive properties.

Rosemary (romero) is a plant that originated in the Mediterranean countries. Long ago, Pliny attributed it many powers. Andrés Laguna, in his commentary on chapters 81, 82 and 83 about Libanotis in Materia Medica by Dioscorides, identified the third species as rosemary. The preparation of rosemary essence in an alcoholic solution is frequently attributed to Arnau de Vilanova or Ramón Llull. Its use has always been highly praised in treatises on household medicine. In Valencia, rosemary has many uses in folk medicine - many of which have been confirmed by scientific research.

Sage (salvia) originated in southern Europe, particularly in the Mediterranean area. It features in Materia Medica by Dioscorides. The varieties used are *Salvia officinalis, S. lavandulifolia* and other similar species, whose essential oil is less toxic than that of the first, endemic to the Iberian Peninsula. Most of its household uses have been completely ratified by pharmacological research. It is used in Valencia to combat bronchitis and colds, period pain, cramps and also as a vasodilator, to improve the circulation, "regulate the sugar in the blood", etc. However, little is known about its toxicity. It has an oestrogenic effect and can cause contact dermatitis and be detrimental to the central nervous system.

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Table I. *Interviews about the plants used in folk medicine in the city of Valencia. Distribution of interviewees by age*

Age groups	Men	Women	Total
10-14	2		2
15-20	12	21	33
21-25	18	14	32
26-30	8	11	19
31-35	7	12	19
36-40	11	13	24
41-50	11	10	22
46-50	13	19	32
51-55	11	15	26
56-60	11	17	28
61-65	5	15	20
66-70	10	14	24
71-75	5	6	11
76-80	1	2	3
81-85	2	1	3
86-90	-	3	3
Totals	127	173	300

Table II. *Distribution by level of education of persons interviewed about plants used in folk medicine in the city of Valencia*

Level	Men	Women	Total
No schooling	10	8	18
Primary school	37	76	113
Secondary school	35	37	72
Higher education	41	29	70
Not recorded	4	23	27
Total	127	173	300

Table III. Species of folk medicine plants used in Valencia: Distribution by botanical family

Family	Nº of species	Family	Nº of species
Compositae	18	Convolvulaceae	2
Labiatae	14	Crassulaceae	2
Rosaceae	8	Crupressaceae	2
Gramineae	7	Ericaceae	2
Leguminosae	7	Euphorbiaceae	2
Umbelliferae	6	Gentianaceae	2
Cruciferae	4	Guttiferae	2
Liliaceae	4	Malvaceae	2
Solanaceae	4	Polypodiaceae	2
Boraginaceae	3	Rhamnaceae	2
Apocynaceae	2	Rubiaceae	2
Aquifoliaceae	2	Rutaceae	2
Cannabaceae	2	Violaceae	2
Chenopodiaceae	2	38 more families	One species each

Table IV. Number of species and botanical families of plants used in folk medicine recorded in research in the municipalities of Parque Natural de l'Albufera (Valencia), the Ribera Alta area (Valencia) and the city of Valencia

Area studied	Nº of species	Nº of families
L'Albufera	110	49
La Ribera Alta	126	54
Valencia	146	64 (+ 1 lichen)

Table V. Coincidence between species in the three areas studied: Parque Natural de L'Albufera,La Ribera Alta and Valencia

L'Albufera	#		#	#
La Ribera Alta	#	#	#	
Valencia	#	#		#
Coincidences	41 species	20 species	25 species	19 species

Table VI. Fragment of the semantic tree showing terms related to the main generic "Digestive complaints". The numbers are the reference to the botanical species in our inventory of plants used in folk medicine in the city of Valencia

Problemas digestivos (Digestion problems), 25
Apéndice (dolores de) (Appendix, pains in), 75
  Barriga (Belly),
  Barriga sucia (fouled belly), 31
Dolores de barriga (Belly ache), 143
Colitis, 61
Diarrea (Diarrhoea), 29, 62, 86, 113, 118, 147,
Digestión, facilitar la (Digestion, to facilitate the) (=digestivo=digestiones pesadas), 18, 20, 22, 29, 35, 31, 32, 37, 48, 72, 77, 78, 82, 88, 133, 134, 139, 141, 143
Dolor abdominal (Abdominal pain) (=dólor de barriga), 25, 81
Espasmos (Spasms), 19, 31
Estómago (Stomach), 43, 56
  Acidez (Acidity), 53, 74
  Dolor (Pain), 29, 31, 123, 141
  Calmante para el dolor de (Pain killer for pain in), 29
  Estomacal (Stomach) (=estomáquica), 18, 29, 102, 145
  Inflamación de estómago (Inflammation of the stomach), 35, 99
  Limpieza de estómago (Cleansing of the stomach), 104
  Pesadez de estómago (Heaviness in the stomach), 77
  Secreción de estomago, activa la (Secretion in the stomach, to stimulate), 55
  Ulceras de estómago (Ulcers in the stomach), 22, 38
Estreñimiento (Constipation), 63, 64, 85, 99, 110, 141
  Estreñimiento infantil (Constipation in children), 115
Gases (wind) (=flato), 72, 137,141
  Carminativo, 139, 141
  Expulsar gases en niños (Getting children's wind up), 141
Hígado (Liver), 22, 31, 32, 35, 82
  Inflamación (Inflammation) (=hepatitis), 99
  Cólico hepático (Biliary colic), 30
Indigestiones (Indigestion), 115
Intestino, molestias de (Intestines, problems in), 47
  Cólicos intestinales (Intestinal colics), 116
  Dolor de tripa (stomach ache) (=dolor de vientre), 141, 143
  Irritación de intestinos (Irritated intestines), 97
  Estimulante de las functiones del intestino (Stimulant of intestinal functions), 54
  Laxante (Laxative), 26, 31, 77, 82, 85, 98, 106, 108, 110, 117,
  Limpiar el intestino (Cleanse the intestine), 83, 81
  Lombrices (Worms), 67, 92, 108, 109
  Purgante (Purgative), 14, 51, 52, 93
  Resfriados de intestino (Chill on the intestines) 98
Retortijones, (Stomach cramps) 25
Vesícula, (Vesicle)99
  Bilis (eliminar la) (Bile, to eliminate), 99
  Cálculos biliares (gallstones), 32, 35
  Dolor de vesícula (vesicle, pain in) 32
  Inflamación de vesícula (vesicle, inflammation of), 32
  Litiasis (Lithiasis) (=cálculos=piedras), 57, 66, 99
Vómito (Vomiting), 72
  Emético (emetic), 32, 52
  Vómito en niños (vomiting in children), 141

Table VII. List of main generic terms and number of species of plants used in folk medicine in the city of Valencia, in descending order

Main generic terms (colloquial terms)	Nº of species used
Digestive problems (Problemas digestivos)	64
Blood and circulation (Sangre y circulación)	42
Respiratory problems (Problemas respiratorios)	34
External complaints (Afecciones externas)	29
Tonic (Tónico)	26
Kidneys and urinary tracts (Riñón y vías urinarias)	23
Inflammation (Inflamación)	14
Bones, muscles and joints (Huesos, músculos y articulaciones)	10
Sedatives, tranquillisers, relaxants (Sedantes, tranquilizantes, relajantes)	10
Mouth (Boca)	9
Nerves (Nervios)	8
Women's complaints (Problemas de la mujer)	8
Eyes (Ojos)	7
Infections (Infecciones)	6
Fever (Fiebre)	5
Hair (Pelo)	5
Diabetes (Diabetes)	4
Insomnia (Problemas de sueño)	4
True love (Amor verdadero)	1
Cold, to fight the (Frío, combatir el)	1
Hyporthyroid (Hipotiroideo)	1
Young, staying (Juventud, mantener la)	1
Evil eye (Mal de ojo)	1
Malaise (Malestar)	1
Dizziness (Mareo)	1
Obesity (Obesidad)	1

Chart 1. Origin of the use of medicinal plants