

Studies on pharmaceutical ethnobotany in the region of Pallars (Pyrenees, Catalonia, Iberian Peninsula). Part II. New or very rare uses of previously known medicinal plants

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Abstract

An ethnobotanical survey was carried out in the region called Pallars—consisting of two districts, Pallars Sobirà and Pallars Jussà—, situated in the Central Pyrenees, in North West Catalonia (Iberian Peninsula), with an approximate area of 2530 km² and a population of 19000. Through interviews with 264 people, we obtained data on 437 plant species used for health care. We detected 867 unreported or uncommon uses corresponding to 272 plant species, 52 of which had never or very rarely been cited as medicinal. This is the second paper of a series intended to present the most important findings concerning the ethnopharmacology of the area studied; it includes unreported or very uncommon uses of known medicinal plant species. A previous paper reported the general results and the new or very scarcely reported medicinal vascular plants, and a further one will deal with medicinal non vascular plants.

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1. Introduction

Ethnobotany can be very broadly defined as the study of the interactions between plants and people in their local environment (Martin, 2001). We can distinguish two different goals or approaches to this study: the contribution to the knowledge of a part of human cultural heritage and the search for new drugs or useful plant-derived products. Ethnopharmacology more usually related to this second goal, but is also concerned with the first one. As a multidisciplinary field, it must take into account the perspective of finding products, which can enhance human health, not forgetting the social structure, richness and problems of the communities from which the information is taken. As Etkin (2001) recently claimed, a higher degree of interdisciplinary activity is needed in ethnopharmacological studies.

Having in mind the precedent statements, we have been conducting for the last 15 years ethnobotanical researches in different regions of Catalonia (see Bonet et al., 1999, and references therein) with the 2-fold purpose of contributing to the knowledge and the preservation of a part of the national cultural heritage, and finding out new or rare uses of medicinal plants, which could lead to the use of new plant-based medicines. This kind of research, much rarer in Western Europe than in less industrialized areas, has largely increased in the last decade in the countries of the Iberian Peninsula. The list of Iberian contributions to ethnobotany—basically pharmaceutical ethnobotany—given in Raja et al. (1997) and updated in Bonet et al. (1999), Agelet and Vallès (2001) has been supplemented by the recent works of Torres (1999), Blanco et al. (1999, 2000), Álvarez (2000), Blanco and Cuadrado (2000), Villar and Ferrández (2000), Bonet (2001), Bonet et al. (2001), Rodrigues (2001).

Our work in the region presently considered was also conducted with both above-stated objectives. This paper follows a previous one based on the same territory

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(Agelet and Vallès, 2001) and presents the second part of the results dealing with the applied research on popular phytotherapy that is relevant for the search for new drugs, on the basis of the conviction that plants from the Mediterranean region have a real medicinal potential. In the first paper we treated the plants which were not previously mentioned as medicinal in the literature and the present one deals with the new or very rare uses of already known medicinal plants. The territory studied is called Pallars, constituted by two mountain districts ('comarca', in plural 'comarques', in Catalan) situated in the Pyrenees: el Pallars Jussà (or el Baix Pallars) and el Pallars Sobirà (or l'Alt Pallars). The geographical and socioeconomic description of the area considered is given in Agelet and Vallès (2001).

2. Methodology

Information was obtained, as detailed in Agelet and Vallès (2001), by the method of the ethnobotanical interview with people without scientific culture, born or having lived most of their lives in the region studied, and usually quite elderly. During our meetings with people, we tried to assess every question linked to the uses of plants by people with health purposes, in persons and animals. The field and laboratory work lasted more than 5 years, during which we performed 155 interviews (395 h of interview recorded) concerning 264 from 30 to 101-year old people (mean age, 70 years; 48% women, 52% men). Voucher herbarium specimens of every taxon cited were prepared and deposited in the Herbarium of the Laboratory of Botany, Faculty of Pharmacy, University of Barcelona (BCF). Complete records of the interviews are also kept in this Laboratory. Details on informants and the transcription of the interviews are given in the Doctoral Thesis of one of the authors (Agelet, 1999). For plant nomenclature, we follow Bolòs et al. (1993).

To establish the originality of our research, we compared our results with an extensive corpus of the most relevant Iberian and European ethnobotanical studies and a wide selection of other papers and treatises covering the uses of medicinal plants all over the world. These studies are the same as those used and cited by Raja et al. (1997), Bonet et al. (1999), Agelet and Vallès (2001), which, with the literature used to compare the results, reaches 77 papers.

3. Results and discussion

The Pallars ethnoflora (Agelet, 1999; Agelet and Vallès, 2001) consists of 529 species, 437 of which (82.6%) are used in the field of health, 60 (11.34%) have other uses (among which food is the most

important) and 32 (6.04%) have only popular names, but no use. The 437 health plants can be grouped in the following way, taking into account that one plant may belong at the same time to more than one group: 410 (93.82%) therapeutic, 94 (21.51%) prophylactic, 40 (9.15%) with magicoreligious use, 12 (2.74%) diagnostic elements, 55 (12.58%) with other uses linked with health; 146 (33.4%) plants are considered noxious or toxic.

The complete catalogue of the useful plants of the areas studied is given in Agelet (1999). We are presenting in this paper the unreported uses of plants already known as medicinal, as well as some comments on prophylactic and toxic properties of plants. The general results of the work concerning pharmaceutical ethnobotany as well as the information about plants unreported to date as medicinal are given in Agelet and Vallès (2001), and a further article will deal with the non-vascular medicinal plants used in the territories studied. Following a reliability criterion established in studies dealing with quantitative ethnobotany, such as Le Grand and Wondergem (1987) and Johns et al. (1990), we are presenting in Table 1 the 87 vascular medicinal plant species for which we found at least one use not reported in the literature and cited by three or more independent informants; they are grouped by families in alphabetical order.

3.1. Plants with uses cited by only one or two informants

The normal length of an article does not allow us to include in Table 1 the remaining 178 species with new or uncommon uses that have been only cited by one or two informants; a few of them will be shortly commented in this and the next subheadings, and Agelet (1999) can be consulted to find complete information on these plants and their uses. Irrespective of the usefulness of reliability criteria to validate folk uses of plants, we believe that plants cited by a very small number (even one) of informants must be taken into account, because, particularly in our European countries, they can be the last remainders of a wider knowledge of last generations, for which popular uses of plants were much more common. In addition, it is worth mentioning that some of the new or very scarcely reported uses cited by one or two informants are considered of particularly high efficacy by the informants. This means that knowledge of plants with these uses by people is not superficial and that they may also be reliable. We list here some examples: *Agave americana* L. (antialgic), *Anagallis arvensis* L. (salutiferous), *Arctium minus* Bernh. (antiasthmatic, anticholagogue, antiherpetic), *Artemisia chamaemelifolia* Vill. (bechic), *Arundo donax* L. (antiulcerous), *Helichrysum stoechas* (L.) Moench. (antiprosthetic, ocular antiseptic), *Hieracium pilosella* L. (antigangrenous), *Lactuca sativa* L. (antidepressive), *Leuzea conifera* (L.) DC. in Lam. et DC. (for warts, hypotensive, oxytocic, for

Table 1
Unreported or very scarcely cited properties of vascular plant species already known as medicinal or toxic, used in folk phytotherapy in Pallars and with uses reported by three or more independent informants

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Anacardiaceae</i>							
<i>Pistacia terebinthus</i> L. (BCF 38018, 38199)	Púdol, pudoler	Fruit Branch	Antiproststatic Antiseptic Salutiferous	Tisane Direct ingestion	Oral	Palliative	1 4 5
		Aerial part	Hypotensive Cephalalgic	Tisane Contact	Topical	Toxic	1 1
<i>Apiaceae</i>							
<i>Eryngium campestre</i> L. (BCF 37556)	Panical	Aerial part	Antierthematous	Lotion, direct ingestion	Oral	Curative and pro- phylactic	10
			Enuretic	Tisane		Toxic	1
			For bleeding	Direct use	Topical	Palliative	2
			Antisudorific			Curative	1
<i>Meum athamanticum</i> L. (BCF 38234, 38312)	Comi de muntanya	Aerial part	Aphrodisiac	Direct use	Oral	Palliative	4
		Fruit	Intestinal antiseptic	Tisane		Curative	6
<i>Aquifoliaceae</i>							
<i>Ilex aquifolium</i> L. (BCF 38268)	Boix grèvol	Leaf Aerial part Stem	Antialgic Hypotensive Intestinal antiseptic	Tisane Direct use	Oral Topical	Symptomatic Palliative Curative	1 1 4
<i>Araliaceae</i>							
<i>Aedera helix</i> L. (BCF 38022)	Hedra	Aerial part	Anaphrodisiac	Direct ingestion	Oral	Palliative	1
		Leaf	Anticholagogue			Prophylactic	1
			Antiasthmatic	Tisane	Topical	Symptomatic	1
			Antigangrenous	Lotion	Oral	Prophylactic	1
		Fruit	Buccopharyngeal antiseptic	Tisane		Curative	1
		Leaf, fruit	Oxytotic	Enema or tisane	Internal or oral		6
<i>Aristolochiaceae</i>							
<i>Aristolochia pistolochia</i> L. (BCF 38224)	Herba felera	Aerial part	Hepatobiliar anti-inflam- matory	Tisane	Oral	Palliative and prophylactic	3
<i>Asteraceae</i>							
<i>Artemisia absinthium</i> L. (BCF 37250)	Donzell, aixenç	Aerial part	Antiasthmatic Antibrucellosic	Tisane	Oral	Symptomatic Curative	1 3
			For warts	Lotion	Topical		1
			Laxative	Enema	Internal		2
		Flower head	Antialgic, anti-inflamma- tory	Lotion	Topical	Palliative and symptomatic	3
<i>Doronicum grandiflorum</i> Lam. (BCF 37922)	Àrnica		Hypotensive	Tisane	Oral	Palliative	1
		Flower head	Vulnerary	Lotion	Topical	Curative	3
<i>Pallenis spinosa</i> (L.) Cass. (BCF 37213)	Àrnica	Aerial part or flower head	Anticatarrah, intestinal antiseptic	Tisane	Oral	Symptomatic	2
<i>Tanacetum parthenium</i> (L.) Schultz Bip. (BCF 37516)	Camamilla, camamilla borda					Curative	12

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Taraxacum officinale</i> Weber in Wiggers (BCF 37898)	Camamilla Amarga		Digestive Laxative Ocular antiseptic Vulnerary To diminish blood thickness	Collyrium Lotion Direct ingestion Tisane	Topical Oral	Palliative Curative Palliative	57 3 9 1 4
<i>Tussilago farfara</i> L. (BCF 37507, 37508)	Pota de cavall	Leaf, flower Leaf	Hypotensive Sedative Antieczematous Antipyrotic	Lotion Poultice	Topical	Curative	1 1 1 3
<i>Betulaceae</i>							
<i>Betula pendula</i> Roth. (BCF 37533)	Bedoll	Bark, leaf	Antiarthrosic Against hypercholesterolaemia Anticephalalgic Anticholagogic Antihelminthic Salutiferous	Tisane Direct ingestion	Oral	Palliative Symptomatic	2 3, 1
<i>Boraginaceae</i>							
<i>Lithospermum officinale</i> L. (BCF 37514)	Mill del sol	Aerial part in fruit	Anticatarrrhal Anticephalalgic Antiseptic Hypotensive Laxative Sedative Tonic	Tisane	Oral	Symptomatic Palliative Curative Palliative	1 2 1 1 6 1 1
<i>Buxaceae</i>							
<i>Buxus sempervirens</i> L. (BCF 38094)	Boix	Aerial part	Anticholagogic Antihelminthic Antinauseous Bechic Carminative Reconstituent	Tisane, direct ingestion	Oral	Palliative Symptomatic	9 1 1 1 2 1
<i>Caryophyllaceae</i>							
<i>Paronychia kapela</i> (Hacq.) Kerner. (BCF 37560)	Sanguinària	Aerial part	Anticatarrrhal Antidermatomic To diminish blood thickness Toxic	Tisane	Oral	Symptomatic Curative Palliative Toxic	2 1 3 4

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Chenopodiaceae</i>							
<i>Beta vulgaris</i> L. subsp. <i>vulgaris</i> var. <i>crassa</i> (Alef.) Helm. (BCF 38997)	Sucre (name of plant-derived product)	Sugar	Anticatarrrhal	Aerosol	Oral	Symptomatic	10
			Antipyretic				1
			Ocular antiseptic	Direct use	Topical	Curative	11
			Cautery				11
			Vulnerary				8
		Leaf	Parasitiferous		Oral	Toxic	1
<i>Cistaceae</i>							
<i>Cistus laurifolius</i> L. (BCF 37548)	Barcets, guàbets, guàrdols	Aerial part	Antialgic, anti-inflammatory	Lotion	Topical	Symptomatic	5
			Antiseptic				1
			Vulnerary				8
			Antitulerous	Tisane	Oral	Curative	2
<i>Cupressaceae</i>							
<i>Juniperus communis</i> L. (BCF 37902)	Ginebre	Galbule, oil	Acaricide in animals	Lotion, embrocation	Topical	Curative	5
			Antiparasitic				4
			Antieczematous				1
			Cicatrizing				1
			Vulnerary				8
			Renal antialgic	Tisane	Oral	Symptomatic	1
			Intestinal antiseptic			Curative	1
			Anticholagogue			Palliative	4
			Hepatobiliar anti-inflammatory				1
			For tooth troubles	Embrocation	Topical	Curative	19
			Larvicide				16
			To avoid hyperlactation				1
			Ocular antiseptic	Collyrium			5
			Anticholagogue	Tisane	Oral	Palliative	3
			Hepatic anti-inflammatory				1
			Hematocathartic				3
			Parasiticide			Curative, prophylactic	9
<i>Equisetaceae</i>							
<i>Equisetum arvense</i> L. (BCF 37230)	Cua de cavall	Sterile aerial part	Antialopepic	Tisane	Oral	Palliative	2
			Antiedematous				1
			Urinary antiseptic			Curative	1
			Hematocathartic			Palliative	1
			Hypocholesterolemiant				3
<i>Fabaceae</i>							
<i>Astragalus baeticus</i> L. (BC 78920, 104107)	Cafè, cafè bord	Seed	Laxative	Tisane	Oral	Palliative	3

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Genista balansaе</i> (Boiss.) Rouy subsp. <i>euro-paea</i> (G. López et Ch. E. Jarvis) O. Bolós et J. Vigo (BCF 37226)	Escoba	Aerial part	Antialgic/anti-inflammatory	Lotion	Topical	Symptomatic	2
			Antiechymotic			Palliative	1
			Buccopharyngeal antiseptic	Collutorium		Curative	1
			Anticholagogue	Tisane	Oral	Palliative	1
			Galactagogue	Direct ingestion			1
			Cholepoietic			Toxic	3
			Colipeptic				11
			Dyskynetic				7
			Lethal in animals				4
			Narcotic	Inhalation			1
			Cephalalgic				1
			Dystonic				1
			Infectious	Direct ingestion	Oral	Toxic	1
			Gastric tympanitic			Toxic (may be lethal)	5
<i>Medicago lupulina</i> L. (BCF 41782, 41783)	Melgó	Aerial part					
<i>M. sativa</i> L. (BCF 37536)	Alfals, sanfuèn	Aerial part					7
<i>Onobrychis viciifolia</i> Scop. (BCF 37216)	Esparceta, trepadella	Aerial part					1
			Galactacrasic	Direct ingestion	Oral	Toxic	4
			Laxative				1
			Salutiferous			Palliative	5
			Antidiarrhoeal	Tisane	Oral	Curative	2
<i>Ononis spinosa</i> L. (BCF 37540)	Adragull	Whole plant					
		Root					6
<i>Trifolium alpinum</i> L. (BCF 37225)	Regalissia	Root					1
			Antihelmintic	Tisane	Oral	Symptomatic	3
			Antiasthmatic				3
			Anticatarrhal				
			Buccopharyngeal antiseptic			Curative	
			Hypotensive			Palliative	1
			Antiseptic	Lotion	Topical	Curative	1
			Salutiferous	Direct ingestion	Oral	Palliative	4
			Galactagogue				1
<i>T. pratense</i> L. (BCF 38330)	Trèfola	Aerial part					
			Galactagogue	Direct ingestion	Oral	Palliative	1
			Gastral tympanitic			Toxic	4
<i>Vicia ervilia</i> (L.) Willd. (BCF 37272)	Erb	Seed					
			Aphrodisiac	Direct ingestion	Oral	Palliative	1
			Salutiferous				1
			Lethal for pigs			Toxic	3
<i>Fagaceae</i>							
<i>Quercus coccifera</i> L. (BCF 37921)	Garric, coscoll	Fruit					
			Hypotensive	Direct ingestion	Oral	Palliative	4
			Abortive			Toxic	1
			Toxic				1
<i>Q. humilis</i> Mill. (BCF 38218, 38280)	Roure	Fruit					
			Salutiferous	Direct ingestion	Oral	Palliative	4
			Abortive			Toxic	1
			Weakening				5

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation	
<i>Q. ilex</i> L. (BCF 37894)	Alzina	Leaf	Antialgic	Tisane		Symptomatic	1	
		Bark	Antiapopleptic	Tisane	Oral	Palliative	1	
		Ash	Hypotensive	Collutorium	Topical	Symptomatic	1	
		Fruit	Antiodontalgic	Lotion			2	
<i>Gentiana</i> sp.			Abortive	Direct ingestion	Oral	Toxic	3	
			Salutiferous			Palliative	4	
			Antiapopleptic	Tisane	Oral	Palliative	1	
			Anticoagulant				1	
<i>Gentiana erythraea</i> Rafn (BCF)		Aerial part	Anticholagogue				1	
			Antipneumonic			Curative	1	
			Intestinal antiseptic			Palliative	1	
			Hematocathartic				7	
			Hypotensive			Curative	1	
			Antidermatosis	Tisane	Oral	Palliative	1	
			Antihaemastenic				1	
			To diminish blood thickness				2	
			Buccopharyngeal antiseptic			Curative	2	
			Intestinal antiseptic				3	
<i>Gentiana lutea</i> L. and <i>G. bursari</i> Lap. (BCF 37512, 38298, 38300)		Root	Weakening			Toxic	5	
			Laxative			Palliative	1	
			Antiodontalgic	Direct ingestion		Symptomatic	1	
			Antierythematous	Lotion	Topical	Curative	1	
			Vulnerary				7	
			Antidermatosis					
			To diminish blood thickness					
			Antipyretic					
			Antipneumonic					
			Antiseptic					
<i>Gesneriaceae</i> <i>Ramonda myconi</i> (L.) Reichenb. (BCF 37551)	Herba de setge, orella d'ós	Leaf	Intestinal antiseptic			Curative	1	
			Weakening			Palliative, Symptomatic	1, 6	
			Laxative			Curative	1	
			Antidermatosis					
			To diminish blood thickness					
			Antipyretic					
			Antipneumonic					
			Antiseptic					
			Intestinal antiseptic					
			Hematocathartic					
Hypotensive								
<i>Iridaceae</i>			Weakening			Toxic	11	
			Cicatrizing			Curative	1	
			For warts	Lotion	Topical	Curative	1	

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Iris germanica</i> L. (BCF 38273)	Camisoles, contell, lliri	Rhizome	Antihelminthic Laxative	Tisane	Oral	Curative Palliative	3 1
<i>Lamiaceae</i>							
<i>Balota nigra</i> L. subsp. <i>foetida</i> Hayek (BCF 38232)	Marrèvol	Aerial part	Antipruriginous	Lotion	Oral	Symptomatic	4
<i>Hyssopus officinalis</i> L. (BCF 37260)	Hisop	Aerial part or floral summits	Lethal in animals Antidysmenorrhoeic	Direct ingestion Tisane	Oral	Toxic Symptomatic	15 3
			Hepatic anti-inflammatory			Palliative	1
			Antinauseous				10
			Antipyretic			Symptomatic	1
			Parturifacient			Curative	1
			Vulnery	Lotion	Topical		1
<i>Marrubium vulgare</i> L. (BCF 37892)	Marrameus	Aerial part	Anticholagogue Antivariolous	Tisane	Oral	Palliative Curative	5 1
			Lethal	Direct ingestion		Toxic	4
			Antipruriginous	Lotion	Topical	Symptomatic	3
<i>Mentha longifolia</i> (L.) Huds. (BCF 37242)	Menta blanca, menta borda	Aerial part	Anticatarrhal Antidiarrhoeal	Tisane	Oral	Symptomatic Curative	1 5
			Intestinal antiseptic				4
			Hepatoprotective			Palliative	1
			Laxative				1
			Parasiticide	Direct use	Topical	Curative	1
<i>Nepeta cataria</i> L. (BCF 37222)	Nepta	Aerial part	Antiasthmatic Antidysmenorrhoeic	Tisane	Oral	Symptomatic	1 4
			Antiechymotic				1
<i>Rosmarinus officinalis</i> L. (BCF 37920)	Romani, romer	Aerial part	Antidermatosis Intestinal antiseptic	Poultice Lotion, tisane Tisane	Topical Topical, oral Oral	Palliative Curative	3 1
			Ocular antiseptic	Collyrium	Topical		1
<i>Sideritis hyssopifolia</i> L. (BCF 37571)	Cua de gat, te de port	Aerial part	Anticatarrhal Anticephalgic Antidiarrhoeal	Tisane	Oral	Symptomatic	4 6
			Diuretic			Curative	1
			Hypotensive			Palliative	1
<i>Teucrium chamaedrys</i> L. (BCF 37236)	Brotonica	Aerial part	Antifibrotic	Tisane	Oral	Curative	6
<i>Thymus vulgaris</i> L. (BCF 37518)	Timó, tremonecell	Aerial part	Antihæmastic To diminish blood thickness	Tisane	Oral	Palliative Curative	3 2, 1
			Antulcerous			Palliative	4
			Hematocathartic				3
			Hematonic	Tisane, enema	Oral, internal	Curative	4
			Oxytoic For abscesses	Lotion	Topical		2
<i>Liliaceae</i>							

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation	
<i>Allium sativum</i> L. (BCF 38258)	All	Bulb	Antihypotensive	Direct ingestion	Oral	Prophylactic	1	
			Antihypothermic			Palliative	3	
			Cardiotonic					1
			Hematonic	Poultice	Topical	Curative	1	
			Antibrucellosic	Lotion			2	
<i>Lilium martagon</i> L. (BCF 37268)	Consolta	Bulb	Antinauseous			Palliative	2	
			Antialgic, anti-inflammatory	Poultice	Topical	Symptomatic, palliative	3	
			Hemostatic	Tisane	Oral	Palliative	4	
			Anticatarrhal	Tisane	Oral	Symptomatic	4	
<i>Viscum album</i> L. (BCF 37224)	Vesc, visc	Aerial part	Intestinal antiseptic			Curative	1	
			Antivariolous			Prophylactic	3	
<i>Malvaceae</i> <i>Malva neglecta</i> Wallr. (BCF 37538, 37554)	Malva	Aerial part	Parasiticide			Curative	1	
			Salutiferous			Palliative	6	
			Sedative				1	
			Antialgic, anti-inflammatory	Lotion	Topical	Symptomatic, palliative	3	
			Gastrointestinal anti-inflammatory	Tisane	Oral	Palliative	2	
			Buccopharyngeal antiseptic			Curative	1	
			Intestinal antiseptic				3	
			Oxytocic	Enema	Internal		5	
			Anticatarrhal	Tisane	Oral, internal	Symptomatic	1	
			Digestive	Direct use	Oral	Palliative	1	
<i>M. sylvestris</i> L. (BCF 37547)	Malva	Aerial part	Abortive	Direct use	Oral	Curative	1	
			Abortive	Direct use	Oral	Curative	1	
			Antixanthematous	Lotion	Topical	Symptomatic	1	
			Gastrointestinal anti-inflammatory	Tisane	Oral	Palliative	6	
Oxytocic			Curative	5				
<i>Oleaceae</i> <i>Fraxinus excelsior</i> L. (BCF 37257)	Freixe, freixa	Branch, leaf, fruit	Antibrucellosic	Tisane	Oral	Curative	1	
			Anticatarrhal			Symptomatic	1	
			Antihæmastic			Palliative	1	
To diminish blood thickness			Curative	3, 1				
Antipneumonic			Palliative	1				
Digestive				2				
Hypotensive				1				

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Olea europaea</i> L. var. <i>europaea</i> (BCF 37905)	Oliver, olivera	Fruit oil	Vasotonic	Direct ingestion			2
			Reconstituent				1
			Aphrodisiac				16
			Salutiferous				
			Hepatic antialgic				1
<i>Syringa vulgaris</i> L. (BCF 37521)	Lilà	Branch, leaf Flower Leaf, flower Leaf	Hepatic antialgic	Direct ingestion	Oral	Symptomatic	1
			Carminative	Direct use	Topical	Curative	5
			Cautery				3
			Antiparasitic				6
			Antianorectic	Direct ingestion	Oral	Palliative	1
			Antibrucellosis	Tisane	Oral	Curative	1
			Gastrointestinal antiseptic				3
Hypotensive			Palliative	1			
<i>Papaveraceae</i>	Celidònia	Whole plant	Anticholagogue	Tisane	Oral	Palliative	4
			Antianorectic	Direct ingestion	Oral	Palliative	1
			To diminish blood thickness				3, 22
<i>Papaver rhoeas</i> L. (BCF 38264)	Rosella, curucallo, peperep	Basal leaves	Hematocathartic				
<i>Pinaceae</i>	Avet	Aeicles, trementine	Antialgic	Poultice	Topical	Symptomatic	24
			Renal antialgic				4
			Anti-inflammatory				34
			Epithesic				4
			Gastric antialgic	Direct application			2
			Antiodontalgic				1
			Cautery				2
			Hematocathartic				1
			For abscesses				3
			Antiasthmatic	Tisane	Oral	Symptomatic	4
			Antulcerous	Emulsion		Curative	1
Laxative			Palliative	4			
Epithesic	Poultice	Topical	Curative	17			
Antialgic, anti-inflammatory			Palliative	5			
<i>Pinus sylvestris</i> L. (BCF 38255)	Pi, pi rojalet	Colophony	Gastral antialgic	Direct ingestion	Oral		1
			Antiparasitic	Poultice	Topical		1
			Salutiferous	Direct ingestion	Oral	Prophylactic	6
			Antidiarrhoeal	Poultice	Topical	Palliative	1
			Vulnery, hemostatic	Poultice	Topical	Curative	4

Poaceae

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Brachypodium phoenicoides</i> (L.) Roem. et Schultes (BCF 37517)	Fenàs	Stem	Ocular drainage in animals	Direct use	Topical	Curative	3
<i>Triticum aestivum</i> L. (BCF 38209)	Blat, forment	Toasted bread	Anthelmintic Hematoecathartic	Direct ingestion	Oral	Curative Palliative	3 3
		Bran	Antihemorrhoidal Mucolytic	Lotion Aerosol	Topical Oral	Symptomatic	3 1
<i>Polypodiaceae</i>							
<i>Ceterach officinarum</i> DC. In Lam. et DC. (BCF 37254)	Herba rovellada, herba de les set sagnies	Fronde	Antialgic	Tisane	Oral	Palliative	3
			Antiamenorrhoic Antivariolose in pigs For measles				1 4 1
<i>Primulaceae</i>							
<i>Coris monepaliensis</i> L. (BCF 37211)	Herba de la diarrea, herba sangumària	Aerial part	Antidiarrhoeal	Tisane	Oral	Curative	5
			Hypotensive			Palliative	1
<i>Ranunculaceae</i>							
<i>Anemone hepatica</i> L. (BCF 38095)	Herba fetgera	Aerial part	Hepatic antialgic Hepatobiliar anti-inflammatory	Tisane	Oral	Symptomatic Palliative	8 18
			Ocular antiseptic Acaricide Parasiticide For warts	Collyrium Lotion	Topical Topical	Curative Curative	1 6 1 3
<i>Helleborus foetidus</i> L. (BCF 38100)	Escampador	Aerial part	Antiedematous Carminative Antipneumonic	Poultice Aerosol		Palliative Curative	1 13 1
<i>Rosaceae</i>							
<i>Agrimonia eupatoria</i> L. (BCF 37244)	Servereta, serverola	Aerial part	Antiapoplectic Antidermatomic To diminish blood thickness Weakening Hematonic Antimycotic	Tisane	Oral	Palliative Curative Palliative, Toxic	1 3 2, 1 2 2
<i>Alchemilla alpina</i> L. (BCF 37246)	Herba desinflamatoria, peucrist	Aerial part	Buccopharyngeal antiseptic Amaurotic	Tisane, collutorium Tisane	Topical Oral	Curative Palliative	2 3
<i>Amelanchier ovalis</i> Medic. (BCF 37220)	Corner, cornera	Aerial part, flower	To improve blood circulation Antipyretic	Tisane	Oral	Toxic Palliative Symptomatic	1 1 6

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Crataegus monogyna</i> Jacq. (BCF 37930)	Arç blanc	Flower, leaf	Buccopharyngeal antiseptic Weakening Antianemic To improve blood circulation	Tisane	Oral	Toxic Palliative	2 4 1 4, 2
<i>Cydonia oblonga</i> Mill. (BCF 37537)	Codonyer	Root Spiny branch	Hypotensive Parasiticide Infectious Laxative	Direct contact	Topical	Curative Toxic	1 17
<i>Prunus dulcis</i> (Miller) D.A. Webb (BCF 37919)	Ametller	Fruit, quince jelly		Tisane or direct ingestion	Oral	Palliative	3
<i>Prunus persica</i> (L.) Batsch. (BCF 37913)	Presseguer	Endocarp, seed	Buccopharyngeal antiseptic	Tisane, collyrium	Oral	Curative	4
<i>Prunus spinosa</i> L. (BCF 37910)	Arç	Mesocarp Leaf Flower Fruit Spiny branch	Anticatarrhal Larvicide Antihæmastic Sialogogue Infectious	Tisane Poultice Tisane Direct use Contact	Oral Topical Oral Topical	Symptomatic Curative Palliative	1 3 1 4
<i>Rosa canina</i> L. (BCF 37522, 38252, 38217, 38297, 38644)	Gavarrera	<i>D. rosae</i> L.- induced galls	Ocular anti-inflammatory	Collyrium	Topical	Toxic Palliative	1 1
<i>R. × cantifolia</i> L. (BCF 38658, 38657, 38656, 38655, 38654, 38653, 38652, 38651)	Roser, roser de malalt	Aerial part Flower Root Fruit Flower	Renal anti-inflammatory Antiodontalgic Hematocathartic Hypocholesterolemiant Hypotensive Salutiferous	Tisane Collutorium Tisane Direct ingestion	Oral Topical Oral	Symptomatic Palliative	1 1 1 1 1 10
<i>R. × damascena</i> L. (BCF 38650)	Roser de tot l'any		Anticatarrhal	Tisane	Oral	Symptomatic	1
<i>Rutaceae</i>							
<i>Ruta chalepensis</i> L. subsp. <i>angustifolia</i> (Pers.) Ruda Cout. (BCF 37214)			Antidiarrhoeal Intestinal antiseptic Antidermatosis Antiseptic Vulnerary Antierithematous Ocular antiseptic Ocular antiseptic	Lotion Dirate use Collyrium Collyrium	Topical	Curative Symptomatic Curative	2 1 1 1 5 1 56
		Flower			Topical	Curative	3
		Stem	Antifungal in plants	Direct use	Topical	Prophylactic	1
		Aerial part	Antimycotic Antinauseous Antiparasitic Intestinal antiseptic Antigalactogenic	Lotion Direct ingestion Direct use Tisane	Oral Topical Oral	Curative Palliative Prophylactic Curative Palliative	1 4 1 2 1

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation
<i>Salicaceae</i>							
<i>Populus nigra</i> L. (BCF 39212, 40496)	Clop, xop	Branch	Digestive Salutiferous	Direct ingestion	Oral	Palliative	1 3
<i>Saxifragaceae</i>							
<i>Saxifraga longifolia</i> Lap. (BCF 38212)	Corona de rei	Basal leaves	Hypotensive Oxytocic	Tisane	Oral	Palliative Curative	1 15
<i>Solanaceae</i>							
<i>Nicotiana tabacum</i> L. (BCF 43676)	Tabac	Leaf ash Leaf	Antierthematus Larvicide	Direct use	Topical	Curative	2 4
<i>Solanum tuberosum</i> L. (BCF 39726)	Patata, patatera	Flower Tuber	Gastral antialgic Antidiarrhoeal	Tisane	Oral	Symptomatic Curative	1 1
			Antiecclymotic For measles	Poultice Fomentation	Topical	Symptomatic Palliative	1 1
			Pulmonary decongestive Diaphoretic			Symptomatic	2
			Mucolytic	Aerosol	Oral		3 6
<i>Tiliaceae</i>							
<i>Tilia platyphyllos</i> Scop. (BCF 37261, 38245)	Tell, til_ler	Aerial part Braet and flower	Antipyrotic Antipneumonic Hematocathartic Galactogenic Ocular antiseptic	Lotion Tisane	Topical Oral	Curative	3 1
				Collyrium	Topical	Palliative	2 1
						Curative	1
<i>Ulmaceae</i>							
<i>Ulmus glabra</i> Huds. (BCF 37543)	Olmissera, om	Leaf, bark Leaf	Antidiarrhoeal Antiecclymotic Laxative Diarrhoeal Anti-inflammatory Weakening Galactacraic	Direct ingestion Lotion Direct ingestion Lotion Direct ingestion	Oral Topical Oral Topical Oral	Curative Palliative Toxic Palliative Toxic	2 1 2 1 3 3 1
<i>Urticaceae</i>							
<i>Parietaria officinalis</i> L. subsp. judaica (L.) Béguinot (BCF 37896)	Esparcinelles, herba paretinya, morella roquera, pariteària	Aerial part	Antialgic, anti-inflammatory	Poultice, lotion	Topical	Palliative	3
<i>Urtica dioica</i> L. (BCF 37903)	Ortiga	Aerial part	Gastral antialgic Antiprostatic Against hypercholesterolaemia Antialgic Antiapoplectic Antiecclymotic Antibrucellosic Ovulgentic	Tisane Direct use Tisane	Oral Topical Oral	Symptomatic Palliative Curative Palliative	1 1 1 5 7 1 1 6

Table 1 (Continued)

Scientific name (voucher specimen)	Local Catalan name	Part used	Popular use	Preparation	Administration	Type of use (Peters, 1987)	Frequency of citation		
<i>U. urens</i> L. (BCF 37924)		Aerial part, rhizome	Salutiferous	Tisane, direct use			6		
			Toxic				Toxic	1	
			Weakening					1	
			Antipneumonic				Curative	4	
			To improve blood circulation	Tisane			Palliative	5	
			To diminish blood thickness					6	
<i>U. urens</i> L. (BCF 37924)	Ortiga petita, ortigó	Aerial part	Antialgic	Direct use, lotion, bath	Topical	Symptomatic	3		
			Valerianaceae	Valeriana	Root	Antialgic	Tisane	Oral	1
						Hematocathartic			Symptomatic
<i>Valeriana officinalis</i> L. (BCF 37223)		Root	Amaurotic			Palliative	1		
			Weakening			Toxic	1		
			Haemostatic			Palliative	1		
			Antidiarrhoeal			Curative	1		

bscesses), *Pinguicula vulgaris* L. (anti-inflammatory, vulnerary), *Rumex longifolius* DC. in Lam. et DC. (antidiarrhoeal, vulnerary), *Thymelaea tinctoria* (Pourr.) Endl. (antialgic, anti-inflammatory, antitoxic), and *Trigonella coerulea* (L.) Ser. in DC. (anticatarrhal, anticephalalgic).

3.2. New medicinal uses

The number of new medicinal plant uses in Pallars is 745, and concerns 265 taxa. It raises to 867, concerning 317 taxa, if we count not only those of known medicinal plants—object of the present study—but those of new or very rarely reported medicinal plants (Agelet and Vallès, 2001) as well. This figures are very high in absolute value and in comparison with what is reported in work carried out in other Mediterranean regions (see references cited in table 2 of Agelet and Vallès, 2001). Some of the new or very scarcely reported uses can be found in the literature for taxa very closely related to those we are dealing with. This is the case, for instance, of *Inula helenioides* DC. in Lam. et DC., the antialgic activity of which is largely known in other species of the genus. Some of the new uses may be only slightly different from some others already reported for one plant. As an example, *Centaurea calcitrapa* L., considered to be hematocathartic (blood depurative) by our informants is reported as depurative—a concept that can include blood or not—by Muntané (1991, 1994). We must be also aware of some nomenclatural or terminological problems, i.e. the possible use of different medical terms to synthesize in one or a few words the concept expressed by the informants, which is often a difficult question. An illustration of this situation can be the troubles of the menstruation and the menstrual cycle. We interpreted as antiamenorrhoeal one of the uses claimed by our informants for *Ceterach officinarum*; for the same species, Verde et al. (1998) reported a use which fits the concept of antidysmenorrhoeal. The terms are very related and the use or one or another can depend on every author. Paying attention to Etkin (2001) assessment that a bigger interdisciplinary collaboration is required in ethnopharmacological studies can contribute to the solution of this problem. The application of the precedent statements in the analysis of the ethnopharmacological catalogue can slightly diminish the number of strictly new uses. In addition, some of the claimed plant properties (general salutiferous, intestinal antiseptic or vulnerary, for example) can be considered as not very strong, because they are known in many plants and usually related to not very serious illnesses. Irrespective of all the mentioned problems, and even if we do not pay attention to a certain amount of plants, the number of new or very rare medicinal plant uses still remains high. This is an argument that proves without any doubt that European plants can be

promising as a source of medicinal products and as a basis for further (chemical and/or pharmacological) investigations on this subject. In consequence, we can conclude that it is worth, even in the applied field of ethnopharmacology, conducting researches on European ethnobotany.

In fact, ethnobotanical researches continue to detect new or very rare plant uses, even in very well-known medicinal plants. This is the case, for instance, of *Sambucus nigra* L. Two of the uses reported in Pallars (to diminish blood thickness and antipneumonic) are new for this species, despite being one of the most widely known, appreciated and utilised plants in Catalonia (Muntané, 1991, 1994; Agelet, 1999; Bonet, 2001).

Most blood depurative plants have a large activity spectrum. They are often claimed to be useful against infections and infestations (antidermatologic, antiseptic, antipneumonic). This fact is particularly remarkable in seven species (*Abies alba* Mill., *Centaurium erythraea* Rafn, *Equisetum arvense* L., *Ramonda myconi* (L.) Reichenb., *Rosa canina* L., *Thymus serpyllum* L. and *Tilia platyphyllos* Scop.), which accumulate up to 26 uses concerning very different ailments. Anticholagogue plants form another group with many different activities: they are used for 15 different medicinal purposes.

3.3. Drug preparation methods

Most of the plants are used internally (68% over 32% externally). Tisanes (49.9%) and lotions (12.5%) are the two predominant preparation forms. Tisanes are seen by the informants as the most genuine products of folk phytotherapy. The predominance of these forms—particularly tisanes, obtained by infusion or decoction—agrees with the general results in our study in Pallars (Agelet and Vallès, 2001), and can also be found in neighboring regions (Mulet, 1990, 1991; Muntané, 1991, 1994; Bonet et al., 1992, 1999; Raja et al., 1997). It should be emphasized that in 20.6% of the remedies reported there is no pharmaceutical form, i.e. a part of the plant is directly used. Aerial part (29.7%) and leaves (14.5%) are the predominant plant portions used, which is also in agreement with the data in the above cited papers carried out in other Mediterranean areas. As an original use, involving a particular plant part, we can mention that of the galls formed by the insect *Diplolepis rosae* L. in *R. canina* L., which are claimed to have ocular and renal anti-inflammatory, antidontalgic and renal antiseptic properties. Some elaborate products, such as olive or juniper oils, bread or vinegar are also used.

3.4. Drug activities

The main therapeutic groups of the new plant uses are coincidental with those of the complete Pallars pharma-

ceutical ethnoflora, and also agree with those reported for other Mediterranean territories: hypotensive, intestinal antiseptic, laxative, general salutiferous and antitarrhal are the main activities. Stronger medicinal powers, such as against hypercholesterolemia (reported, among other species, for *Achillea millefolium* L., *Betula pendula* Roth., *E. arvense* L., *E. telmateia* Ehrh., *Fraxinus angustifolia* Vahl, *Parietaria officinalis* L., *Raphanus raphanistrum* L. subsp. *sativus* (L.) Domin., *R. canina* L. and *Rubus ulmifolius* Schott) or antigan-grenous (*Hedera helix* L. and *H. pilosella* L.) have also been claimed for some species, but in a much lower proportion as compared with activities against mild and chronic diseases. Another strong plant use, antiophidian (against *Vipera* sp. bites), has been reported by our informants for *F. angustifolia* Vahl. This species is not included among the around 900 collected by Houghton and Osibogun (1993) in their review of flowering plants used against snakebite, although there is an Asian species of the same genus, *F. pubinervis* Blume.

3.5. Plants with possible immunostimulant applications

Plants that reinforce the immune system are of special interest in phytotherapy (Reuter, 1991). Thirteen species of Pallars medicinal ethnoflora have been reported to have immunostimulant or immunomodulating properties by several authors (Arnold-Apostolides, 1991; Arteché et al., 1993; Bézanger-Beauquesne et al., 1990; Font, 1961; Peris et al., 1995; Reuter, 1991; Ribon, 1993; Rombi, 1991): *A. millefolium* L., *Althaea officinalis* L., *Bryonia cretica* L., *Calendula officinalis* L., *Cinnamomum zeylanicum* Nees, *Gentiana lutea* L., *Marrubium vulgare* L., *Matricaria recutita* L., *Pinus sylvestris* L., *Plantago lanceolata* L., *R. canina* L., *Rosmarinus officinalis* L., and *Viscum album* L. *Alchemilla alpina* L. could be added to this list, since a close species (*A. vulgaris* L.) has also immunomodulative activity (Reuter, 1991). All these taxa have been claimed, directly or indirectly, by our informants to be able to increase immunologic responses of the organism or to favor hematopoietic or trombocytopenic processes. Antiseptic or salutiferous uses often attributed to these plants may be considered under this point of view, and the species concerned constitute a good group for chemical and/or pharmacological studies in view of their use in case of illnesses involving an immune system depression.

3.6. Prophylactic uses

The general results of our study (Agelet, 1999) and the data reported by other authors (Muntané, 1991; Parada, 1997) lead to the conclusion that preventive plant uses are not very common in folk phytotherapy. In Pallars, we found references to such properties in just 94 of the 437 species cited (21.5%), and no one taxon was used

with only prophylactic purposes. Antiseptic, general salutiferous and antiparasitic are the main uses in this field. In human medicine, some antihypertensive species are used for the prevention of apoplexy, as they are also in other territories (Villar et al., 1992). Most of prophylactic species are used in veterinary medicine. One species, *Ruta chalepensis* L., is used in phytopathology, in the preventive treatment of *Capsicum annuum* L. against mildew caused by *Phytophthora capsici* Leonian.

3.7. Toxic or noxious plants

Some of the new medicinal plant properties correspond to toxicity or other types of noxious activities. As we stated earlier (Agelet and Vallès, 2001) several plants that are well known as toxic by our informants are also used, with the necessary precautions, as medicinal agents. Conversely, some medicinal plants can become toxic if they are abusively or uncorrectly used. This is the case, in Pallars, of *Rumex pulcher* L., claimed to be antipyretic, diuretic and antihypertensive, the abuse of which can cause drastic hypotension. Most of the observed noxious activities correspond to weakening effects linked to the consumption of some plants during a long period of time. The debility caused can be general or particularly focused in the sense of vision. *Agrimonia eupatoria* L. (with, among other uses, antiapoplectic and antidermatologic), *Amelanchier ovalis* Medic. (antihæmastic, antipyretic), *Urtica dioica* L. (antialgic, antiapoplectic, antipneumonic), and *Valeriana officinalis* L. (sedative, hematocathartic, hemostatic) share these weakening and/or amaurotic activities. In order to avoid these undesirable side effects, it is often advised not to take one or another plant during more than 7 or 9 days. Irrespective of the fact that some numbers, such as seven or nine, have some magic significance in folk medicine, the idea of taking a remedy during some days and then refraining from taking it during a similar period of time tends to counterbalance the possible toxic or adverse effects of this medicine. The same facts are observed in other Iberian territories (Peris and Stübing, 1993; Gavilanes, 1995; Bonet et al., 1999). Lethal uses reported by our informants refer to observations done on domestic animal (rabbits, pigs, sheeps or cows) feeding. Ten species are in this situation; some of them are always lethal (*Ballota nigra* L., *Brassica oleracea* L. subsp. *oleracea*, *M. vulgare* L., *Rubia peregrina* L.), whereas some others (*Genista balansae* (Boiss.) Rouy, *Medicago lupulina* L., *Quercus humilis* Mill., *Trifolium pratense* L., *T. repens* L., *Vicia ervilia* (L.) Willd.) are only occasionally lethal, in case of abuse or of ingestion in special circumstances, such as when the plant is humid and subsequently warmed by the sun.

Some plants known as toxic in internal administration can have medicinal external uses. A lotion prepared with the roots of *Sambucus ebulus* L. is considered to be

antieczymotic in topical use, whereas most parts of the plant (including roots) are toxic (Boada and Romanillos, 1999). Mulet (1997) also reports some medicinal activity of this noxious plant. Even more, there are plant parts specifically known as toxic, which are used in Pallars folk medicine. This is, for instance, the case of *H. helix* fruits, reported to be haemolytic, emetic, purgative and even lethal (Boada and Romanillos, 1999), but taken in internal use in the region studied as a buccopharyngeal antiseptic and as an oxytocic.

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