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Sambucus nigra L. in Catalonia (Iberian Peninsula)

JOAN VALLÈS[1,*], MARIA ÀNGELS BONET[1], TERESA GARNATJE[2], JOAN MUNTANÉ[1], MONTSE PARADA[1] and MONTSE RIGAT[1]

[1] Laboratori de Botànica, Facultat de Farmàcia, Universitat de Barcelona. Av. Joan XXIII, s/n. 08028 Barcelona, Catalonia.
[2] Institut Botànic de Barcelona, CSIC-ICUB. Passeig del Migdia, s/n. Parc de Montjuïc. 08038 Barcelona, Catalonia.

We present in this paper the data about the popular uses of elder (*Sambucus nigra*) obtained in ethnobotanical studies carried out in the districts ("comarques") of Pallars Jussà, Pallars Sobirà, Cerdanya, Conflent, Capcir, Ripollès and Alt Empordà (Pyrenees) and in the Montseny massif (Catalan Prelittoral Range), complemented with others from different Catalan regions (also investigated by our group), and compared with those from other Iberian and Mediterranean territories. This bush or small tree is one of the most reported and used plants (for medicinal and other purposes), not only in the regions studied, but in all Catalonia and in many other areas as well. It is one of the most versatile plants, since its uses embrace many different fields like medicinal, food, ornamental, craft industry and games among others. It is, in addition, aremarkable fact that almost every part of the plant (bark, root, leaves, flowers, fruits) has some uses.

The genus *Sambucus* L. is widely distributed in temperate and subtropical zones (Mabberley 1990). According to a few authors, it constitutes about 20-25 species (Mabberley 1990, Bolòs and Vigo 1995), whereas a more synthetic treatment (Bolli 1994) considers only nine species with 10 subspecies. The only three European species of this genus (Ferguson 1976) are *S. ebulus* L.

S. nigra L., and *S. racemosa* L., among which the second one (named elder in English) is the most extended, known and used.

The genus *Sambucus* is classified as a member of the family Caprifoliaceae. It is also considered as the type of an independent family Sambucaceae, which is not largely accepted, and recent classifications, established on the basis of molecular criteria, have split this family and included *Sambucus* in the Adoxaceae, a synonym of which is Sambucaceae (Angiosperm Phylogeny Group 1998, Angiosperm Phylogeny Group II 2002).

Sambucus nigra is a shrub or a small tree, very common in Europe from sea level to more than 1,600 m amsl. It is well-known as a useful plant, also from old times, for popular and industrial applications. Medicinal (for different illnesses) and food (jams, beverages) are the most relevant uses of this plant, but there are some others in different and quite numerous fields; just as an example, its medulla (inner part of stem and branches) is used as an inclusion medium to prepare microscope slides (Usher 1974, Bézanger-Beauquesne *et al.* 1990, Rombi 1991, Bolòs and Vigo 1995, Cañigueral *et al.* 1998).

Extending from high altitudes of the Pyrenees to the Mediterranean Sea, Catalonia, in the North Eastern corner of the Iberian Peninsula, holds a large plant biodiversity. Rural life in the country, still existing although less stronger than earlier, has preserved many traditions linked to plants. In the last 15 years, we are conducting ethnobotanical investigations in different Catalan regions (Vallès *et al.* 2007), because erosion of traditional knowledge is becoming very fast, so that it is necessary and urgent to collect the data concerning folk uses of plants. In all our works, we realized that *S. nigra* was always both one of the most cited plants (reported by a high number of informants) and one of the plants with greater diversity of uses. In addition to this, it is outstanding by the fact that almost every part of the plant is used, and because some of the uses are quite elaborated and original. It is also relevant in the world of non-tangible symbolic uses. Finally, it is a useful plant documented in Catalonia since old times. Agustí (1617) already reported several of its uses. For all these reasons, we are presenting in this paper an account of the uses of *S. nigra* in several regions in Catalonia, complemented with punctual information from other Catalan territories also investigated by our group, and a comparison with the utilization of this taxon in neighbouring areas. The basis of the present paper is a previous work concerning two Catalan areas (Vallès et al. 2004b), which was much enlarged with data from large prospects in several more zones and punctual data from some others.

Study areas

The territories studied are fully or partly located in mountain zones of Northern Catalonia (Fig 1). Pallars is a region of 2,457 km² and 19,000 inhabitants, divided into two administrative districts ("comarques"), the pre-Pyrenean Pallars Jussà or Baix Pallars and the Pyrenean Pallars Sobirà or Alt Pallars. Montseny is a massif belonging to the Catalan Prelittoral Range, with 715 km² and 60,000 inhabitants, split in three districts, Osona, Selva and Vallès Oriental. Capcir, Cerdanya and Conflent are three eastern Pyrenean districts, the second partly under Spanish and partly under French administration, and the two others in the latter case. The high river Ter valley is a small area located in the eastern Pyrenees, with 294 km² and 4,526 inhabitants. Lastly, Alt Empordà is the district where the Pyrenees go to the Mediterranean Sea, with the easternmost spurs of this mountain range. It extends through 1,357.53 km² and has 118,718 inhabitants. In the study devoted to Alt Empordà, some information were collected from the neighbouring Vallespir, a North Catalan district under French administration. In all these areas, there is an altitudinal vegetation gradient ranging from Mediterranean to Alpine communities (the latter very scarce in Montseny) except in the Alt Empordà, whose top is constituted by mid-altitude mountains. Lower altitudes are dominated by different kinds of holm-oak (*Quercus ilex* L.) and cork-oak (*Quercus suber* L.) forests and their series; in altitudinal progression, we find deciduous forests with oaks (*Quercus humilis* Mill., *Q. faginea* Lam. and *Q. cerrioides* Willk. et Costa), chestnut (*Castanea sativa* L.) and beech (*Fagus sylvatica* L.) as the predominant trees. In Montseny, the higher points are occupied by subalpine meadows and just below them we can see the southernmost spruce (*Abies alba* Mill.) forests in Europe. In Pallars and high river Ter valley, the higher points have black pine [*Pinus mugo* Turra subsp. *uncinata* (Ramond ex DC. in Lam. et DC.) Domin] communities and alpine meadows. Peasants continue living there and natural resources are still exploited traditionally in these zones. Nonetheless, in the last a few decades, they suffered severe rural depopulation and the affluence of mass tourism basically due to the mountain (and particularly skiing) facilities in Pallars, high river Ter valley, Cerdanya, Conflent and Capcir, to both mountain and coast tourism in Alt Empordà and to the proximity of Barcelona, Catalonia's capital, in Montseny (only 50 km far). The massif of Montseny is a natural park listed as biosphere reserve in UNESCO's Man and Biosphere (MaB) programme since 1978, a high percentage of Alt Empordà is occupied by natural parks and most of the remaining territories are included in the foreseen Natural Park of Pyrenees. Data concerning the ethnoflora of the territories considered are found in Muntané (1991, 2002, 2005), Parada (1997,

2007), Agelet (1999), Bonet *et al.* (1999), Agelet and Vallès (2001, 2003), Bonet (2001), Bonet and Vallès (2002, 2003, 2006), Parada *et al.* (2002), Rigat (2005), Rigat *et al.* (2006, 2007) and Vallès *et al.* (2007).

Methods

The present work was performed in the frame of a broader ethnobotanical research carried out in the study areas, with the aims of cataloguing the respective local ethnofloras, with particular emphasis on medicinal plants. Field work and interviews were started in 1988 (Cerdanya), 1991 (Pallars), 1993 (Montseny), 1996 (Alt Empordà, Vallespir), 1999 (Capcir, Conflent) and 2004 (high river Ter valley). We interviewed, usually from two to five times, 264 people in Pallars, 172 in Montseny, 288 in Cerdanya, 60 in Conflent, 28 in Capcir, 178 in Alt Empordà (one of which actually from Vallespir) and 60 in the high river Ter valley. The mean age of the informants is 69 years, with a range from 18 to 101. 65% of the interviewed were women and 35% men.

We used the method usually named ethnobotanical interview, a combination of what the ethnographers call non-structured or non-directed interview and semistructured, direct or focused interview (Pujadas *et al.*, 2004). In a few cases, we practised what the above-cited authors termed group interview, but the conversation with only one informant was the most common situation. Interviews were conducted as general conversations, with avoidance of direct questions so as not to affect the people's spontaneity and direct their answers. With the permission of the people interviewed, their explanations were recorded on cassettes and some photographs were taken. The popular names of the plants in Catalan, as well as their pronounciation, are also recorded. We asked informants to show us how they collected, preserved, stored, prepared and used the plants, and the most relevant processes were photographed. In the laboratory, interviews were transcribed and plants were determined and prepared. Vouchers are deposited in the herbarium BCN (Centre de Documentació de Biodiversitat Vegetal, Universitat de Barcelona; *S. nigra* voucher numbers: BCN 24984 and BCN 29943).

Results and discussions

Sambucus nigra (Fig 2) is one of the most frequently cited multipurpose useful plants in the regions studied. In Montseny, it is the first one, reported in 77% of the interviews. In Pallars, it is the third one, reported in 80% of the interviews; it is placed only after *Thymus vulgaris* L. (the second one in Montseny) and *Olea europaea* L. (the third one in Montseny; many of the reports of this plant concern olive oil, largely employed as excipient for different pharmaceutical forms). In the high river Ter valley, it is the fourth one, reported

in 83% of the interviews (after *Arnica montana*, *Hypericum perforatum* and *Thymus vulgaris*). In Cerdanya, the second one, reported in 85% of the interviews (after *Matricaria recutita*). In Alt Empordà, the third one, reported in 69% of interviews (after *Thymus vulgaris* and *Olea europaea*). The number and diversity of uses is another indicative of the relevance of this plant. It is one of the most versatile species, with 51 uses in Montseny, 42 in Pallars, 24 in the high river Ter valley, 32 in Cerdanya and 47 in Alt Empordà. The medicinal, gastronomic and other uses of *S. nigra* in the territories considered are summarized, respectively, elsewhere.

Our results agree with those obtained in other Catalan regions, in which *S. nigra* always occupies an outstanding place among useful plants: Guilleries (24; Selga 1998, Bonet *et al.* 1999, Parada *et al.* 2002); Segarra (8; Raja 1995, Raja *et al.* 1997) and river Tenes valley (13; Bonet 1991, 1993, Bonet *et al.* 1992). Similar figures are found in studies conducted in other Iberian or Mediterranean territories confirming that *S. nigra* is one of the most frequently reported plants and has a large number of uses: Castelló de la Plana (22; Mulet 1990, 1991), Huesca (15; Villar *et al.* 1992), Granada (8; González-Tejero 1989, González-Tejero *et al.* 1995), Jaén (9; Fernández-Ocaña 2000), Serra de São Mamede (19; Rodrigues 2001, Rodrigues *et al.* 2003), Cyprus (21; Arnold-Apostolides 1991). Even in areas very far from the Mediterranean region, such as former Soviet countries (Chikov *et al.*, 1980) and North America (from Canada to Northern Mexico; Moerman 1998), the genus *Sambucus* (with *S. nigra* among other species) has always a high diversity of uses.

Another evidence of relevance of *S. nigra* as a useful plant is furnished by almost all its parts being used for different purposes. Contrarary to what happens in other plants, in which one organ is basically used, whereas one or a few more are only complementary, in *Sambucus* the inflorescence is the most used part, but many other organs are also highly employed; leaf, bark, internal bark (cortical parenchyma), fruit, young buds, branches, medulla, trunk, root, root bark, and even the whole plant. This is one of the rare examples in which a practically total exploitaiton of a plant is done.

Medicinal uses

Medicine is, by far, the main field of use of *S. nigra*. Its medicinal (therapeutic, prophylactic, palliative and other sanitary) uses are given elsewhere. Many parts of the plant have such uses. Apart from flowers and leaves -the most common useful parts-, cortical parenchyma, leaves, root bark, young buds and the whole plant are also used. The frequent use of the so-

called "segona pela" (second peel, meaning second or internal layer of bark) in one of the territories considered (Pallars) is specially remarkable. This part is in fact basically constituted by cortical parenchyma of the branches, because the first or external layer of bark -which is neglected by the users- corresponds to suber. This bark portion is also used, less frequently in Cerdanya (Muntané 1991, 2002) as well as in other Catalan and Iberian regions (Conill 1938, Mulet 1990, 1991; Villar *et al.* 1992), whereas in other territories (Cyprus; Arnold-Apostolides 1991) and in the Alt Empordà and the high river Ter valley either the entire bark or only the cortical parenchyma are employed.

The medicinal use of elders is undoubtedly very old. *Sambucus* species (most probably *S. nigra*) already appeared as medicinal in Egyptian papyri (Lans *et al.* 2001). Faraudo (1943) reports a Catalan translation published in 14th century of a treatise on medicinal plants written by an 11th century Iberian Arab physician, in which *S. nigra* is mentioned for its use against snake bite, burning and as expectorant (the second one also indicated by Conill 1938, and the latter, one of the most extended current utilization), among others. Agustí (1617) indicated elder against headache produced by fever (applied as a diaphoretic, as it is reported nowadays) and hydropsy and as an emetic (the two latter uses also reported in modern times in Catalonia by Conill 1938). Nevertheless, this plant was probably used basically as a folk remedy and not very commonly prescribed by physicians and sold by pharmacists, since the inventories of a 14th century apothecary (Vela 2003) and a 17th century and a 18-19th centuries druggists (Vila *et al.* 1994, Vila and Serna 2006) in Catalonia do not contain this species, although it appears (the bark being the part used) in a 15th century medico-pharmaceutical manuscript (Alcover *et al.* 1964-1975, Escudero *et al.* 1992).

Sambucus nigra is the most often used alone, but in some cases it is mixed with other plants, like *Althaea officinalis* L., *Thymus vulgaris* L., *Juglans regia* L., *Malva sylvestris* L., *Lavandula angustifolia* Mill. or *Hedera helix* L. Indeed, *S. nigra* is one of the plants most often present in mixtures; this is also one of the aspects of its versatility. In the Basque Country, *Sambucus nigra* is also combined with other plants to prepare a pomade useful for skin troubles.

The confusion between *S. nigra* and *S. ebulus* must be avoided, since the latter is a toxic plant; there is a wide popular assumption, and even some cases of lethal intoxication are reported (Boada and Romanillos 1999). Our informants perfectly distinguish both taxa (the second one is herbaceous), and name them with different terms ("saüc" and derived names for *S. nigra*, "èvol" and derived names for *S. ebulus*). A few -doubtfully currently alive- medicinal uses of *S. ebulus* are even recorded in Pallars and Cerdanya (Agelet

1999, Muntané 1991, 2002), and in the high river Ter valley it was used (with external application or in a ritual form) against Malta fevers (Rigat *et al.* 2006, 2007). Although very scarce side effects are described in *S. nigra* by our informants, some of them reported toxic activities similar -but less strong- to those attributed to *S. ebulus*. Bruneton (2001) states that toxicity of *S. nigra* is rare and low. Conversely, according to Vigneaux (1985) both *S. nigra* and *S. ebulus* fruits cause bloody diarrhoea and mydriasis. Wiersema and León (1999) qualify as poison both *S. ebulus* and *S. nigra*, and also some subspecies of *S. racemosa*. Hardin and Arena (1974) precise that unripe fruits and other parts of the plant contain poisonous alkaloids and cyanogenic glucoside causing nausea, vomiting and diarrhoea, but flowers and ripe fruits are edible. Mulet (1997) agrees with the last statements. The third European species of the genus, *S. racemosa* L., is claimed neither to be medicinal nor toxic by our informants; it is reported as tinctorial in Pallars.

Specially remarkable, new or scarcely reported uses

Anticatarrhal is, by far, the most common use of elder. Other related uses, like anti-influenzal, are also frequent. Some of our oldest informants in Pallars remembered that *S. nigra* was one of the most used medicines in the very strong influenza epidemic of 1917-1918. Following the reliability criterion of Le Grand and Wondergem (1987) and Johns *et al.* (1990), we indicated with an asterisk (*) the medicinal uses cited by at least three independent informants. According to this quantitative ethnobotany parameter, these uses are the most suitable for chemical or pharmacological prospects which would confirm or not their validity. Antiseptic and antiviral activities, cited by more than three informants, could have the added interest of being correlated with an immunostimulant effect, as suggested by Rossi (1999).

The medicinal uses of *S. nigra* are known, as stated above, from ancient times. The chemical composition of the plant was studied, at least for flowers and leaves, which are present in different phytopharmaceuticals (Cañigueral *et al.* 1998). Most of medicinal uses reported by our informants agree with those cited in ethnobotanical, pharmaceutical, botanical or pharmacological works (Vallès *et al.* 2004b, Parada 2007, and references therein): the main uses cited in phytotherapy works are anticatarrhal, for colds and influenza, diaphoretic (useful in case of fever), diuretic and laxative (Bézanger-Beauquesne *et al.* 1990, Blumenthal 1998, Cañigueral *et al.* 1998, Mills and Bone 2000, Schulz *et al.* 2002, Vanaclocha and Cañigueral 2003), and all of them confirm uses claimed by the informants. This notwithstanding, it is worth mentioning that we found some new or very rarely reported uses for *S. nigra*, as compared with a big literature set (around 150 works; see Agelet 1999,

Bonet 2001, Muntané 2005, Rigat 2005 and Parada 2007 for references) including ethnobotanical and other kinds of works related to medicinal plants and with a large geographical coverage. This is remarkable in this very widely known and used species, and we believe that these new uses -some of which were, in addition, reported by three or more informants- also deserve further verifications. They are the following (marked with a plus sign, +, in Table 1): adipsic, antiacetonemic, antiapoplectic, antibrucellosic, anticoagulant, antiflatulent in animals, antipelohemic, antiophidean, antipneumonic, bronchodilator, cardiotonic, gastric anti-inflammatory in animals, renal depurative, salutiferous in animals, urinary antiseptic. The antiophidean use is one of the most curious. Already recorded in the 11th century (Faraudo, 1943), it is only reported now by one informant in one of the territories considered. *Sambucus nigra* does no appear in the list of around 900 plants used against snake bite of Houghton and Osigobun's (1993) revision of this subject. This use was probably more extended some centuries ago and it is now close to be completely forgotten. Lastly, some rare uses reported in literature have not or only very scarcely been confirmed in the studied zones, such as cholagogue (not reported) and hepatoprotective (only cited in Cerdanya), recorded in former Soviet countries (Chikov *et al.* 1980).

Particular forms of administration : The different parts of *S. nigra* are prepared in very diverse ways for the numerous different uses, Tisane, lotion, aerosol and poultice are some of the most common pharmaceutical forms, and are also frequent in many other medicinal plants, whereas other forms of administration are more original. The inhalation of elder's flower smoke (flowers are put in hot coal, often with some sugar added, and the so-called perfumes are respired) is very common against headache, toothache and to cure wounds caused by agricultural implements; this kind of usage is coincidental with that of other, but not so much plants. Two more pharmaceutical forms that are very common in *S. nigra* are rather rare in other plants: syrup and dry distillate. Syrup is common to several plants with anticatarrhal and similar uses (bronchopulmonary decongestant, bechic or anti-influenzal among others), such as *Abies alba* Miller or *Pinus sylvestris* L. (Muntané 1991, 2002, Agelet 1999, Bonet 2001, Rigat 2005, Parada 2007). In one of the regions studied, Pallars, mature fruits of *S. nigra* are used to elaborate a syrup in a very similar way to the method to prepare a jam: 1) fruits and white or candy sugar are mixed in a similar weight and crushed; 2) the mixture is boiled for half an hour (sometimes fruits are first boiled with sugar and crushed afterwards); 3) the product is filtered and kept in pots, which are sterilized by bain-marie. A very similar recipe is used in Conflent, and, with variations, in most territories considered. The same kind of syrup is also

prepared in Pallars with *Rubus idaeus* L. fruits; it is used as intestinal antiseptic. In la Garrotxa, a region bordering two of those presently studied, the same kind of elder fruits' syrup is described (Llongarriu and Sala 2005). Distillate is a rather rare pharmaceutical form in folk phytotherapy, also used in some aromatic plants. In three other regions studied, Alt Empordà, Montseny and high river Ter valley, this form is prepared in a very constant and original way, by a sort of dry distillation, the product of which is illustrated in Fig 3) the inflorescences are put on a cloth in the top of a metal casserole; 2) a clay casserole or a pan containing hot coal is put above the flowers; approximately every half an hour, when the flowers are burnt, they are replaced by new ones; 3) the liquid collected in the metal casserole at the end of the process is kept in glass pots or bottles in fresh places. Some small variations in the process are described; sometimes a certain amount of sand is put over the flowers to avoid their direct contact with the burning casserole; and sometimes the distillate is additionally filtered before use or preservation. This distillate is commonly named "essència de saüquer" (elder's essence), "esperit de saüquer" (elder's spirit) or "esperit de flor de sabuc" (elder flower's spirit), and is used, after dilution with water (usually one or two spoons of distillate for a glass of water), to prepare the administration form, called "aigua de saüquer" (elder's water). In the neighboring regions called Vallès Oriental (Bonet 1991, 1993; L. Álvarez, pers. comm.) and Guilleries (Selga 1998) the same kind of preparation is (or was) also common. This procedure was also found in the region called Garrotxa (Agelet *et al.* 1990), and is also common in the Pyrenean district Ripollès (of which high river Ter valley is a part), but we did not find evidences of its use in other territories. It is worth mentioning that in other Iberian areas the same name, "aigua de saüquer" (or the Portuguese equivalent "agua de sabugueiro"), applies to an elder's flowers tisane obtained simply by decoction (Mulet 1990, 1991, Rodrigues *et al.* 2003, Rodrigues 2007). Although water is the universal vehicle for elder tisanes, we collected in Alt Empordà a recipe consisting in scalding the inflorescence in milk, used as antitussigene.

Gastronomic uses

Food occupies the second position in the rank of uses of *S. nigra*. Flowers, fruits and young branches with leaves are employed for different purposes. Although elder is not mentioned by Rivera et al. (2006) among the gathered Mediterranean food plants it certainly occupies a relevant position in plants collected for food purposes in many Mediterranean areas, such as those the present paper is focused on.

Human food

Fruits : Jam is elaborated with fruits in Alt Empordà, Cerdanya, Montseny and high river Ter valley (Fig 4). The same use is reported in other Catalan areas, where another species of the genus (*S. racemosa* L.) can also be used (Solé 1988). In Montseny, our informants reported that they learned this use from German people living in the zone, but in Alt Empordà and high river Ter valley the knowledge seems to be autochthonous. Pardo de Santayana (2003) reports this use in Asturias (Northern Iberian Peninsula) as relatively recent.

Flowers : In Montseny and in Alt Empordà, the inflorescences are eaten fried in batter (Fig 5). The complete corymb is collected, washed, battered and fried, leaving a free portion of the peduncle, which is used to take the elder flower doughnut ("bunyol de flor de saüc" or "crespell de flor de saüc" in Catalan) and eat it, as a desert or an accompanying for meat. Solé (1988) states that this gastronomic use came to Catalonia from Central Europe, but Rivera and Obón (1991), Couplan (1995), Pieroni (1999) and Pellicer (2000-2004) also indicate it in Iberian, French and Italian regions; Peterson (1977) recorded the same use for *S. canadensis* L. in North America, and Kunkel (1983) reported this use for *S. nigra* and a similar one (flowers used in pancakes) for *S. simpsonii* Rehd. (considered a synonym of *S. nigra* subsp. *canadensis* (L.) Bolli by Bolli 1994). Fàbrega (1997) also reported this use, and a similar one in omelette as well. Agustí (1617) reported the elaboration of vinegar aromatized with elder's flowers; two recipes of this kind of vinegar are given in an 18th century Catalan cookbook (Vila 2000).

Drinks : Elder's flowers are the most widely used to elaborate two kinds of drinks. On the one hand, as above-reported (see medicinal uses and Fig 3), the inflorescences are distilled in Alt Empordà, Montseny and high river Ter valley (and also in a larger part of the eastern Catalan Pyrenean area), and the essential oil obtained diluted in water. Coromines (1987) reported this use that he had recorded in 1953 in a neighbouring territory to high river Ter valley (Tenes, Ripollès district). People obtained this way a non-alcoholic beverage, which is used as medicinal, but also as refreshing, particularly during summer time. This elder's water is also very popular in the territories where the same traditional distillation form is used, and also in other areas in which the drink is made by simple decoction of flowers. A similar kind of beverage is very common in the former-Yugoslav countries (A. Šiljak and S. Šiljak-Yakovlev, pers. comm.), and an elder-derived alcohol-free beverage has also been elaborated in Germany (Strauss and Novak 1971). An elder's flowers syrup is also commercialised from Austria (reaching at least central European countries) to be drunk diluted with water. In Great Britain, traditionally

elaborated non-alcoholic drinks made from elder flowers also exist, and even have since a few years a commercialization process proving that folk plant knowledge and management can lead to semi-industrial or industrial exploitations (Prendergast and Sanderson 2004). A refreshing beverage is obtained in Alt Empordà diluting elder's fruits juice in water. On the other hand, *S. nigra* inflorescences are one of the ingredients of "ratafia". This is a liquor obtained by a long maceration in anisate alcohol of nut (*Juglans regia* L.) pericarp and a great deal of other (up to almost one hundred) plants (Fàbrega 2001, Vallès *et al.* 2004a). This kind of liquor is largely used in all the studied regions (Agelet 1999, Parada *et al.* 2002, Vallès *et al.* 2004b, Bonet and Vallès 2006, Rigat *et al.* 2006), as well as in many other Catalan areas, such as Guilleries (Selga 1998, Parada *et al.* 2002). In Conflent, a high number of informants know that elder's flowers were used to aromatize wine with muscat flavour. Conill (1938) and Chikov (1980) report the same use from Catalonia (in fact from the northern territories comprising Conflent) and former Soviet Union respectively. In another Iberian territory, Navarra, the corollas are accurately separate from the rest of the flower and used to aromatize wines, without any precision on the flavour (García 1992). Also in Conflent, *Sambucus nigra* inflorescences are one of the ingredients of a quite typical (popular and industrial) aperitif liquor called Byrrh. Solé (1988) reported that a sparkling beverage was also made with elder's flowers, and a wine with fruits, in Catalonia. A cordial liquor and a wine are elaborated in Great Britain (Vaughan and Geissler 1997, Prendergast and Sanderson 2004). In Italy, a traditional and also industrially elaborated liquor is called "sambuca", a word derived from *Sambucus*. This is a basically anisate liquor (made with star anise, *Illicium verum*) some variants of which, such as "sambuca romana", also contain elder's flowers as an ingredient (Garcia-Arbós 2007).

As it was mentioned above for medicinal uses, the utilisation of elder as a human food, whilst very extended and common, remains basically in the folk level. The uses falling in this concept are very frequently reported by the informants in ethnobotanical interviews and are collected in works dealing with popular cuisine or wild foods (as, for instance, Solé 1988), but they have not attained, with very scarce exceptions, the public kitchens. Although, as we have seen, Agustí (1617) reports food uses of *Sambucus nigra*, it is not included in most classical medieval Catalan cuisine texts (Faraudo 1946, 1952, Grewe et al. 2003) and the situation is the same in modern and current kitchen treatises, except for the above cited vinegar (Vila 2000).

Animal feeding

In Pallars, branches with leaves are occasionally given to animals as forage. This use is exceptional and limited to an area (Conca de Tremp) with

scarcity of forage resources and without a large tradition in livestock raising. In other zones, and in Pallars itself, different trees are preferred for this purpose, such as *Fraxinus* or *Salix*.

Other uses

Apart from medicinal and food, several other uses of *S. nigra* are reported by our informants. We briefly comment them grouped by the type of utilization.

Aromatizing. In Cerdanya and Pallars, the flowers were burned to perfume and disinfect a room or a house in case of bad smell or when a sick or a deceased person was present. The same use is reported in another Pyrenean area (Serrablo), by Navarro (1994), and in Balearic Islands by Ripoll (1985). Elder was frequently associated with other aromatic plants for this purpose. In Alt Empordà elder's flowers are put in wardrobes to aromatize clothes.

Ornamental. In the whole area considered, elders are very frequently planted in rural houses, because they are largely used, but sometimes with a secondary ornamental function as well. In Pallars, *S. nigra* was rarely directly planted as ornamental, but often became so when its primary role -medicinal- declined, almost partly due to the acculturation process suffered (cf. below, persistence of uses); then, the trees usually persisted near the houses and the homegardens just as remnants of the ancient intense exploitation. The same situation is reported in the regions of Cevennes and Vivarais (France): these plants were not originally planted as ornamental but as a "living drugstore" kept within the user's reach (Ribon 1993). In addition to that, some cultivars are currently used in gardening (Chittenden 1956, Pañella 1991). In some Pyrenean regions elders were indicative of places where a village could be built; this was probably because of their multiple uses, but also because these plants grow at habitable, not so cold altitudes.

Agricultural. Thick branches are used in Pallars as a support to cultivate grape-vine (*Vitis vinifera* L.). In the same region, trunk, branches and roots were used in the elaboration of a kind of fertilizer compost called "boïgons", which was particularly good for homegardens, specially to grow onion and garlic. Agustí (1617) stated that it was useful to build hedges around homegardens. Conill (1938) reports that elder's branches put in a garden preserve the plants against caterpillar ravages.

Melliferous. The species is reported to be frequently visited by bees in Pallars and produce a highly appreciated honey. Fajardo *et al.* (2000) report the species as melliferous in another Iberian territory, Albacete. Ricciardelli and Persano (1978) stated that bees take only moderate amounts of pollen

from elder. Seijo (1994) reports the plant as polliniferous and nectariferous, but it nourishes the bees basically with pollen (M. Suárez, pers. comm.).

Ludic. In Pallars, children used to cut straight elder branches and to eliminate the medulla in order to obtain an implement to propel, by blowing, hemp (*Cannabis sativa* L.) seeds or balls made with the fibre of this plant, alone or with water. The same toy is reported from Alt Empordà, where it is called "petadores" (bangers), without precising the kind of balls. Garcia-Arbós (2007) reports the same elder's branch use to propel hackberry (*Celtis australis* L.) fruits. Violant (1996, based on interviews made in the decade of 1930) reports this toy in different Catalan, Iberian and European areas; Ribon (1993), in two French regions; and Alvar *et al.* (1961-1973, 1979-1980), in two Iberian territories. The ease to remove the medulla from elder branches is at the origin of its Latin and most Latin language names: *Sambucus* comes from the Greek "sambuke", meaning flute, derived from the Sanskrit "bhuka", meaning hole, because ancient people made flutes with hollow elder branches (Conill 1938, Ferrari 1984).

Other uses, such as dyeing, for skin and hair (Conill 1938) or for silk tissues (Chikov et al. 1980) have not been currently recorded in the studied areas.

Persistence of uses

In the last two generations, the so-called developed countries have undergone a process of depopulation in rural areas, and of acculturation, meaning the loan of the traits of one culture considered superior (the industrial one, called modern) to another one considered inferior (the traditional one, basically agricultural), generally as a result of an external, in this case economical pressure (Ember and Ember, 1997). Traditional knowledge about plants suffered an important degree of erosion. Young people do not feel very concerned by plant use. This is why in many cases the uses reported are not yet alive; they are just remembered by elder generations, which constitute the best source of informants. For *S. nigra*, we calculated that only slightly more than 40% of the reported uses were current. This percentage of present uses includes the most common, which are usually coincidental with those reported in other territories. For this reason, it is very important to carry out studies that lead to the inventory of all uses -especially the rarest ones- in order to preserve them.

Beliefs and symbolic value

Sambucus nigra is, as already stated, one of the most used and more diversely employed plants in the regions studied. One of the intangible reflects

of this closeness between people and this plant is two Catalan proverbs which directly include its name and utilisation (Parés 1999): "a mal de cor, flor de saüquer" ('against heart pain, elder's flower', which could be interpreted in the right and figurate sense concerning heart pain and is related to cordial liquors elaborated with *Sambucus* flowers) and "perfums d'espígol i flor de saüc tornen la salut" ("perfumes of lavender and elder's flower restore health', referring to the very frequent medicinal use of elder's flowers in form of fumigation). In addition to that, a magic or religious belief on a protective character is common in the territories considered and in other zones. In fact, the constant presence of at least one *S. nigra* specimen in rural houses in Catalonia is explained by both the very big diversity of uses of the plant and this protective character. In Pallars and Cerdanya, a mixture of *S. nigra, Thymus vulgaris* and *Lavandula angustifolia* was burned as a preventive from climatic adversities. In Cerdanya, elder is one of the most reported magic plants (Muntané 1996). In Pallars, people consider that they cannot cut or burn an elder, because this can cause several types of damages to bees or to domestic animals, and different kinds of problems to the inhabitants of the house in which the action was done. The same belief is found in Cerdanya, where it is thought that someone who damages the elder will be treated in the same way. Similar behaviors are recorded from England (to burn elder wood would raise Devil) and Danemark (there would be a being avenging any injuries done to elder) (Burne, 1995). Different forms of respect towards elder are shown in the Slav countries, Germany and Sweden (Mendoza 1997). Black (1982) indicates the protective role against witches played by the elder in England. A sacred or magic character -often linked to some kind of ritual uses- is associated to this plant in many European or Mediterranean regions (Font 1961, Arnold-Apostolides 1991, Lieutaghi 1991, Muntané 1991, 2002, Cirlot 1994, Durruti 1997, Blanco 1998, Verde *et al.* 1998, Agelet *et al.* 2002). It is, for example, one of the plants that some of our informants in Alt Empordà, Cerdanya and Montseny advised to collect during the night of Saint John (from June 23 to 24) to be more powerful. This is also typical in other Catalan, Iberian and European areas (Romeu 1950, Villar *et al.* 1992, Navarro 1994, Blanco 1998, Selga 1998, Fàbrega 2001). The symbolic value of *S. nigra* is not limited to its protective character: in Pallars, this plant and some others used to be "punished", when some kind of problem occurred in a family, the so-called punishment consisting in beating the tree. The same fact is reported by Blanco (1992).

The most common Catalan names of the elder come directly from the latin *Sambucus* ("saüquer", "saüc", "sabuquer", "sabuc", "suguer" and other variants), but one of them ("bonarbre", good tree), with its deformations

"bonaubre", "bonabre", "benarbre" "benabre" and "menabre"), testifies for the high consideration of the tree in the country (Muntané 1996, Bonet 2001). Alonso (1946) reports the name "benteiro" applied to the elder in Galician (the variant of Portuguese spoken in Galicia); it comes from "bento" (blessed) and is also allusive to the above-stated sacred character. This name is united to different convictions and practices in Asturias and Galicia, comparable with those reported by our informants.

The relevance, both physical and in the collective imaginary, of *S. nigra* is stressed by its presence in Catalan onomastics (toponymy and anthroponymy). In Montseny, not far from the highest peak -Turó de l'Home- we find a place called Pla de Sauguet (Coromines, 1997) or Pla del Saüquet (López 1990), located at 1,400 m amol where a Font del Saüquet (elder's spring) exists. A village is named Saüc in another Catalan district, la Segarra (Moreu-Rey 1982). Coromines (1987, 1997) also reports 11 other minor toponyms distributed throughout the territories where Catalan language is spoken (Bosc de Savucar, Camp del Savuc, Canal de Saüc, Font del Sabuc, Font del Sabucar, Font de Saüc, El Saüquer, El Savuc, Saücosa, Saüquet, Savuquers). In addition, the Catalan family names Saüc, Saüquer and Saüquet (with orthographic variants) also exist. Similar place and people names are also found in other Iberian languages.

Concluding remarks. Is *Sambucus nigra* an underutilised horticultural crop? (and, if it is, does it has any perspective of a renewal and reinforcement of its uses?)

Coming to the end of this review of the popular uses of elder in Catalonia and neighbouring countries, it seems logical to put the question whether it falls within the category covered by this book. To try and answer it, we need to analyse all the parts of this category, i.e. underutilised horticultural crop; we will do this in the inverse order we have cited the three concepts.

Crop : Elder is certainly an economic plant (Uphof 1959, Sánchez-Monge 1991, Wiersema and León, 1999), but there is not a full agreement in assigning it the category of cultivated plant. Cañigueral *et al.* (1998) state that elder flowers used in medicine (meaning for commercial use, for phytotherapy industrial purposes) come from wild plant collection. Zohary and Hopf (1994) state that elderberries were extensively collected in Europe from ancient periods, since its remains are found in archaeological sites, but they consider the plant as wild since there is no allusion to it in the third edition of their book on plant domestication in the Old World (Zohary and Hopf, 2000), where the chapter on fruits collected from the wild, present in former editions, has not been included. Renfrew (1973) also reports seeds of elder found in different

prehistoric sites, but includes the plant in the chapter of "cultivated and wild fruits" with no assignment of precise category. Conesa (2000) treats the elder as a wild forest non-timber resource. Tardío *et al.* (2006) include it in a revision of wild edible plants in Spain. Nevertheless, in addition to its wild occurrence, it is considered a cultivated plant by several authors (Zeven and de Wet 1982, Sánchez-Monge 1991, Recasens 2000). It propagates well by seeds (Sánchez-Monge 1991). Particularly, some extensive cultivation assays are reported quite or very recently (Strauss and Novak 1971, Prendergast and Sanderson 2004) and it is, certainly, cultivated to small scale near rural houses as commented above. *Sambucus nigra* is undoubtedly planted as ornamental, and, despite no precise allusion to domestication is done, Chittenden (1956) reports several cultivated varieties of this species. Anyway, since it did not use to be regularly and extensively cultivated, it did not fit properly in the category of marginalized or neglected crops (Hernández Bermejo and León 1992), but it is a plant which yielded, and still yields, products that are regularly used by people.

Horticultural : Sambucus nigra is not one of the vegetables or fruit trees cultivated as main crops in agricultural gardens. Nevertheless, in the territories studied, it is very rare not to find it planted –and not to have reports of its use- near or in the homegardens and even close to rural houses, mostly when homegardens are far from their holders' place of life. This is a tradition followed from ancient times. Agustí (1617) already recommended planting these trees near the garden to close and protect it. More recently some cultivars have been developed, as stated above, to be planted as ornamentals in pleasure gardens (Chittenden 1956, Pañella 1991).

Underutilised : We reported medicinal, food, ornamental, agroecological, magic and ludic uses of almost every part of *S. nigra*. It is, with no doubt, one of the most prestigious and versatile useful plants in Catalonia, as it is in many other territories. In the regions studied, this plant is reported by around 80% of the informants interviewed, and for more than 60 purposes. Nevertheless, roughly counted, only 40% of these uses are persistent. For these reasons, we believe that three kinds of actions should be undertaken in future concerning this plant. On the one hand, to complete the knowledge on chemical composition and pharmacological activities, particularly to confirm or not the new or rarely reported uses. On the other hand, to conduct new ethnobotanical studies in different areas that can complement the large current catalogue of *S. nigra* uses, with special stress in elderly people who can remember uses not yet in force. Finally, to start a process of reversion of traditional knowledge about this plant through schools and other educational institutions, to preserve for future generations the 60% of elder's properties now only known by some informants but not actually used.

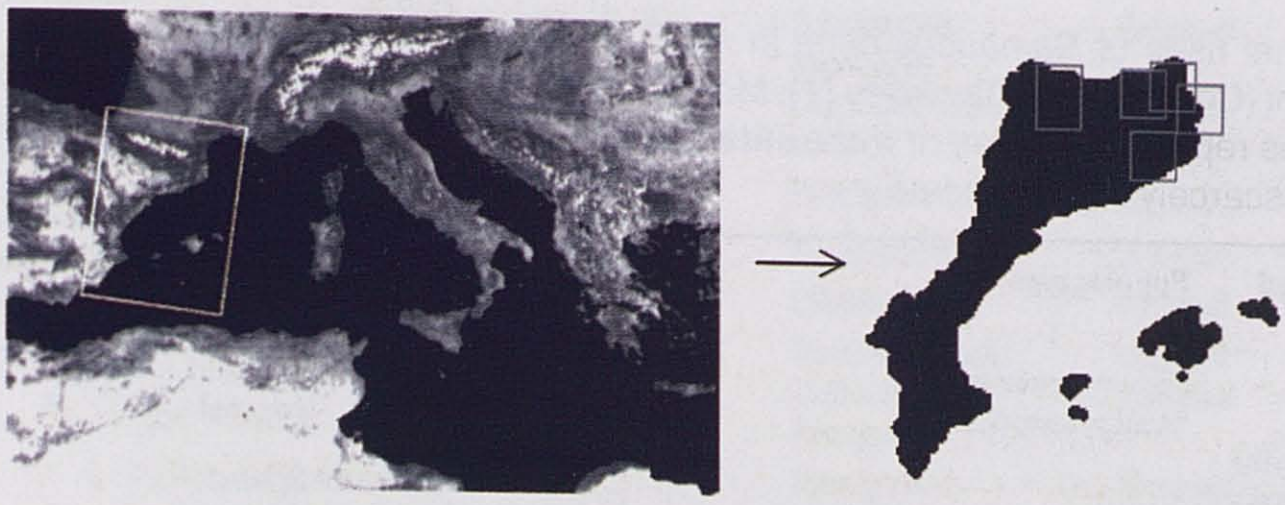

Figure 1. Location of the study zones in Europe and in the Catalan linguistic area.

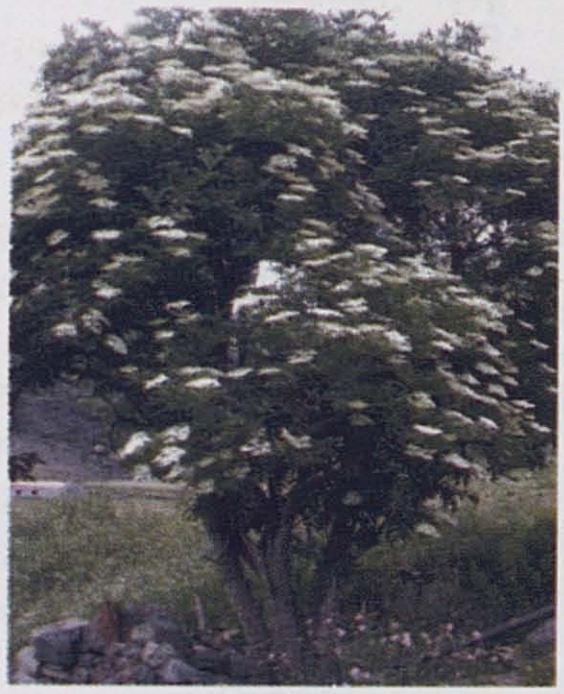

Figure 2. *Sambucus nigra* growing in the Pyrenees, near a currently disappeared rural house.

Figure 3. Products of the dry distillation of *Sambucus nigra*. From left to right: inflorescence already burned after use, essence kept in a bottle, and fresh inflorescence ready to use.

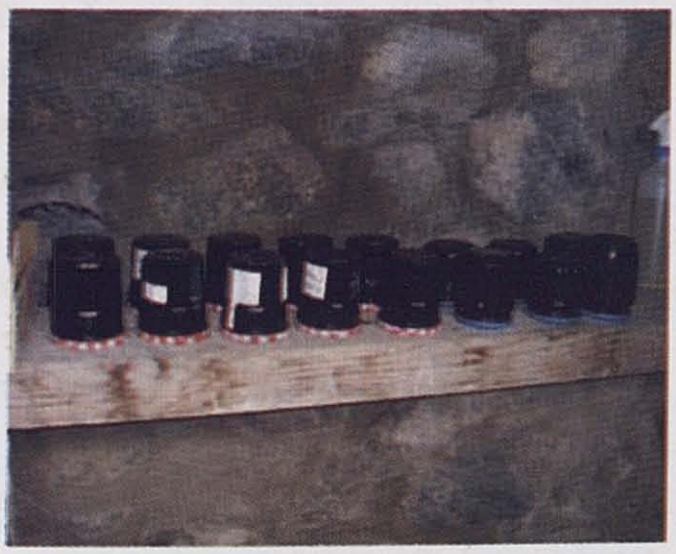

Figure 4. Elderberry jam.

Figure 5. Elder flower's doughnuts.

Medicinal uses of *Sambucus nigra* in Alt Empordà (E), Capcir (Ca), Cerdanya (Ce), Conflent (Co), high river Ter valley (T), Montseny (M) and Pallars (P). Asterisk (*) indicates the uses reported by three or more independent informants; plus sign (+) indicates the new or scarcely reported uses.

Parts used	Popular uses	Preparation	Administration	Frequency of citation
Bark	Kidney protective (E)	Tisane	Internal	1
Cortical parenchyma (inner bark)	*Antipyrotic (Ce, P)	Lotion, pomade	External	5
	Antiseptic (P) for anthrax in animals	Ointment	External	1
	Digestive (Co)	Tisane	Internal	1
	Hematocathartic (M)	Tisane	Internal	1
	Hypouricemic (antigotose) (T)	Tisane	Internal	1
	Purgative (M)	Tisane	Internal	1
	Vulnerary (P)	Pomade	External	1
Inflorescence	+Antiacetonemic (M)	Distillate	Internal	1
	*Antialgic (P, T)	Aerosol, lotion, fumigation	External	4
	*Antialgic/anti-inflammatory (E, P)	Lotion, poultice, fumigation	External	5
	*Antialgic/antiartrosic (E, M)	Fumigation	External	3
	Antiamaurotic/antiecchymotic (M)	Fumigation	External	1
	Antianorectic (P)	Tisane	Internal	1
	+Antiapoplectic (M)	Distillate	Internal	2
	Antiasthmatic (P)	Tisane	Internal	2
	+Antibrucellosic (M)	Tisane	Internal	1
	*Anticatarrhal (Ce, E, P, T)	Tisane, aerosol, distillate, fumigation, steam	Internal	185
	*Anticatarrhal/nasal decongestant/diaphoretic (M)	Aerosol, distillate, tisane	Internal	34
		Fumigation	External	
	*Anticephalalgic (Ce, E, M, P, T)	Tisane, aerosol	Internal	36
		Fumigation, cataplasm	External	
	*Antidermatosic (Co, M, T)	Poultice, fumigation	External	3
	*Antidiarrhoeal in people and animals (M, T)	Distillate, tisane	Internal	8
	Antieczematose (Ce)	Decoction, fumigation	External	2
	Antiedematose (E)	Bath	External	1
	Antiemetic (M)	Distillate	Internal	1
	Antiflatulent (M)	Distillate	Internal	2
		Poultice	External	
	*Anti-inflammatory (E, P)	Collutorium, poultice, fumigation	External	12
		Syrup	Internal	

Contd...

*Anti-inflammatory for sinusitis (Ce, Co)	Fumigation, decoction	External	3
*Anti-influenzal (Ce, Co, E, M, P, T)	Distillate, tisane, aerosol	Internal	19
	Fumigation	External	
*Antihypertensive (Ce, M, P)	Distillate, tisane	Internal	6
*Antinauseous (E, M, T)	Distillate	Internal	3
*Antiodontalgic (Ce, Co, E, M, P)	Tisane, aerosol	Internal	16
	Collutorium, fumigation	External	
+Antiophidean (E)	Fumigation	External	1
*Antiotalgic (Ce, E, M, P)	Aerosol	Internal	15
	Fumigation	External	
Antiparotiditic (M)	Fumigation	External	1
+Antipelohemic (P)	Tisane	Internal	1
*+Antipneumonic in people (Ce, E, M) and in animals (P)	Distillate, decoction, aerosol	Internal	9
	Poultice	External	
*Antipyretic (Ce, Co, E, M, P)	Distillate, decoction, liniment, aerosol	Internal	14
Antirheumatic (Ce)	Decoction	Internal	1
*Antiseptic (Ce, Co, E, P)	Lotion, aerosol, bath	External	20
	Fumigation	Internal	
Antiseptic/resolutive (M)	Fumigation	External	1
*Antiseptic/vulnerary (T)	Fumigation	External	13
Antitoxic (P)	Aerosol	External	1
Antitussigene (E)	Infusion in milk, tisane	Internal	2
*Antityphic (M)	Distillate	Internal	3
*+Adipsic (M)	Distillate	Internal	11
Aromatic stimulant (P)	Liquor	Internal	1
*Bechic (Ce, Co, M, P, T)	Fumigation	External	10
	Tisane	Internal	
*Bronchopulmonary decongestant, bronchodilator (Ce, M, P)	Emulsion, decoction, distillate, aerosol	Internal	9
		External	
	Poultice		
*Buccopharyngeal antiseptic (Ce, Co, M, P, T)	Tisane, aerosol	Internal	7
	Collutorium	External	
Buccopharyngeal antiseptic/emollient (M)	Distillate	Internal	1
+Cardiotonic (M)	Distillate	Internal	1
Cicatrizing (E)	Fumigation	Internal	1
*Digestive (Ce, Co, M, P)	Distillate, tisane	Internal	6

Contd...

	*Digestive/antinauseous (M)	Distillate	Internal	8
	*Diuretic (Ce, E, P)	Tisane	Internal	5
	Emollient (P)	Aerosol	External	2
	*For conjunctivitis (E)	Bath, fumigation	External	8
	For mastitis in animals (E)	Fumigation	External	1
	For migraine (E)	Tisane	Internal	1
	For sprains (E)	Fumigation	External	1
	*Galactofugue (Ce, E, M, T)	Fumigation	External	4
	*Gastric antialgic/antacid (M, T)	Distillate, tisane	Internal	6
	Gastric antiulcerous (E)	Distillate	Internal	1
	Hematocathartic (P)	Tisane	Internal	2
	+Hepatoprotector, hepatic anti-inflammatory (Ce)	Tisane	Internal	2
	*Intestinal antiseptic (Ce, Co, P, T)	Aerosol, fumigation, distillate Tisane, distillate	External Internal	21
	*Intestinal anti-inflammatory and antiseptic (E, M)	Distillate, tisane Poultice	Internal External	28
	*Nasal decongestant (Ce, E)	Aerosol Fumigation	Internal External	4
	Mucolytic (Co)	Tisane	Internal	1
	*Ocular antiseptic (Ca, Ce, Co, E, M, P, T)	Ocular bath, collyrium, aerosol	External	44
	*Ocular antiseptic/antiecchymotic (M)	Fumigation, bath, collyrium	External	25
	*Pharyngeal antiseptic and anti-inflammatory (E, M)	Tisane, aerosol Fumigation	Internal External	7
	Postlabour coadjuvant in animals (Ca)	Decoction	External	1
	*Pulmonary decongestant (Ce, Co)	Tisane	Internal	5
	Purgative (Ce)	Tisane	Internal	1
	+Renal depurative (Ce)	Tisane	Internal	1
	*Resolutive (Co, E, M, P)	Fumigation, liniment, poultice	External	4
	Salutiferous (T)	Distillate	Internal	1
	Vasotonic (Ce)	Decoction	External	1
	*Vulnerary (E)	Fumigation	External	3
	*Vulnerary/hemostatic (Ce, Co, M)	Fumigation	External	18
Infructescence	Antialgic/antiecchymotic (M)	Juice	External	1
	+Antibrucellosic (M)	Juice	Internal	2
	*Anticatarrhal (P)	Tisane, syrup	Internal	52
	*Anticatarrhal/bronchopulmonary decongestant (M)	Juice, syrup	Internal	7
	Anticephalalgic (Ce)	Syrup	Internal	1
	+Anticoagulant (M)	Juice	Internal	1
	+Antiflatulent in animals (M)	Syrup	Internal	1

Contd...

	*Antihypertensive (Ce, P)	Tisane, wine	Internal	6
	Anti-inflammatory (Ce)	Wine	Internal	1
	Anti-inflammatory/antialgic/antiecchymotic (E)	Embrocation, lotion	External	2
	Anti-influenzal (Ce Co, M)	Juice	Internal	1
		Syrup		3
	Antiodontalgic (Ce)	Wine	External	1
	Antipneumonic (E)	Syrup	External	1
	Antipneumonic/diaphoretic (M)	Poultice, liniment	External	2
	Antiseptic (P)	Tisane	Internal	1
	Antitussigene (E)	Syrup	Internal	1
	Antityphic (Ce, M)	Syrup	Internal	2
		Poultice	External	
	Bechic (Ce, M)	Syrup, wine	Internal	2
	*Buccopharyngeal antiseptic (Ce, Co, P)	Tisane, syrup	Internal	6
		Decoction	External	
	*Carminative (E)	Syrup	Internal	3
	*Digestive (Ce, Co)	Decoction, syrup	Internal	4
	Diuretic (E)	Wine	Internal	1
	Emollient (M)	Juice	Internal	1
		Poultice	External	
	Gastric anti-inflammatory (E)	Syrup	Internal	1
	Hematocathartic (T)	Syrup	Internal	1
	+Hepatoprotector, hepatic anti-inflammatory (Ce)	Wine	Internal	1
	*Intestinal anti-inflammatory (E)	Wine, syrup	Internal	4
	*Intestinal antiseptic (Ce, P, T)	Syrup, decoction	Internal	24
		Liniment	External	
	*Intestinal antiseptic and anti-inflammatory (M)	Juice, syrup	Internal	7
	Laxative (Co, T)	Jam, syrup	Internal	2
	Ocular antiseptic (Ce)	Syrup	External	1
	Pharyngeal anti-inflammatory (E)	Jam, syrup	Internal	2
	*Pharyngeal antiseptic and anti-inflammatory/pulmonary decongestant (Ce, M)	Juice, syrup	Internal	8
	Postlabour coadjuvant (M)	Juice	Internal	1
	*Pulmonary decongestant (M, P, T)	Syrup, tisane	Internal	4
		Lotion	External	
	+Renal depurative (Ce)	Wine	Internal	1
	+Renal lithotriptic (E)	Wine	Internal	1
	Resolutive (Ca, M)	Juice, poultice	External	2
	+Salutiferous in animals (M)	Juice	Internal	1
	+Urinary antiseptic (E)	Wine	Internal	1
	+Urinary antiseptic in animals (Ce)	Wine	External	1
Leaf	Galactofugue in women and in animals (M)	Fumigation	External	1

Contd...

Root	Antiartrosic (Ce)	Tisane	Internal	1
	Digestive (Co)	Tisane	Internal	1
Root bark	Laxative (P)	Tisane	Internal	1
Young bud	Buccopharyngeal antiseptic (M)	Collutorium	External	1
Whole plant	Antihaemorrhoidal (P)	Lotion	External	1

Gastronomic uses of *Sambucus nigra* in Alt Empordà (E), Capcir (Ca), Cerdanya (Ce), Conflent (Co), high river Ter valley (T), Montseny (M) and Pallars (P).

Part used	Popular use or product elaborated	Preparation	Frequency of citation
Branch with leaf	Forage (P)	Direct use	1
Inflorescence	Aromatic wine (to give wine muscat flavour) (Co)	Macerating inflorescences in white wine	7
	Aperitif wine (Co)	Macerating inflorescences in wine, together with other plants	2
	Doughnut (E, M)	Passing the inflorescence in whipped eggs and in batter and frying it in olive oil	7
	Liquor ("ratafia") (E, M)	Alcohol maceration together with other plants	2
	Refreshing beverage (M)	Distillate of flowers diluted in water	1
	Salutiferous emulsion (T)	Distillate of flowers mixed with the yolk of an egg and sugar, taken with breakfast	1
	Sparkling wine (E)	Flower fermentation	1
Infructescence	Aromatic wine (to give wine a muscat flavour) (Co)	Macerating infructescences in white wine	1
	Jam (Ce, E, M, T)	Heating fruits in a pot, straining the juice, adding sugar, the juice of two lemons and the peel of one lemon and boiling three hours	10
	Non alcoholic beverage (E, T)	Fruit syrup diluted in water	10
	Refreshing beverage (E)	Fruit juice added to refreshing beverages to give them colour	2
		Fruit mixed with sugar and diluted with water	
	Sweet wine (E)	Fruits are pressed, fermented and boiled for a few seconds	1
	Wine (E)	Fruits are pressed and treated as grapes to produce wine	4
		Fruits are pressed, mixed with sugar, put in bottles and left during some days outside	
		Fruits are pressed, and left in maceration in wine for a week	

Other (non medicinal and non gastronomic) uses of and beliefs related to *Sambucus nigra* in Alt Empordà (E), Capcir (Ca), Cerdanya (Ce), Conflent (Co), high river Ter valley (T), Montseny (M) and Pallars (P).

Part used	Kind of use	Description of use	Frequency of citation
Branch	Agricultural (P)	Thick braches used as tutors for grape-vine cultivation	2
	Ludic (E, P)	An implement called "petadores" ('bangers') is prepared by putting out the medulla in order to use the hollow branch to impel bulls by blowing	
Inflorescence	Agricultural (melliferous) (P)	Flowers are visited by bees to elaborate a very appreciated honey	10
	Social (aromatizing) (Ce, E, P)	Flowers are put in wardrobes to perfume clothes	
		Flowers are used to perfume rooms where a sick or deceased person has been or rooms with bad smell	
Trunk, branch and leave	Agricultural (P)	Branches are used, mixed with other plants to obtain a sort of compost ("boïgons")	3
Whole plant	Social (ornamental) (Ca, Ce, Co, E, M, P, T)	Frequently planted as ornamental near rural houses	30
	Social (beliefs, symbolic use, folk literature, toponymy, anthroponymy) (Ca, Ce, Co, E, M, P, T)	Often considered to be associated with good health and look	
		Burnt to protect of climatic adversities	
		Its properties are stronger when collected in Saint John's night (June 23 to 24)	
		Named "bonarbre" (good tree)	
		The tree cannot be cut or burnt (if it is some troubles will occur to people or domestic animals)	
		It is punished (beaten) when problems occur in a family	
		Many places and some family names are derived from elder's Catalan name ("saüc", "sabuc" and variants)	

To summarize, elder is a plant that has not been extensively cultivated in the region studied and, in general, in Europe and the Mediterranean region, but a plant that has been intensively collected and used and that has been often cultivated near human locations and has horticultural varieties.

Renewal of elder's uses, as well as many other underutilised crop or non-crop plants, may come taking the occasion of the resurgence and reappraisal of traditional medicine and traditional cuisines, which incorporate many "natural" products (Csergo 1995, Durán 2001) and are based on local products

perceived as pertaining to a landscape, a popular knowledge and a style of life (Espeitx 2006), a fact that is very well synthesised with the French word "terroir" (from Latin "terra", ground, earth). We do not eat as in Middle Age, as Moulin (1995) affirmed, but we follow a tradition -for eating, using medicinal plants and, in general, for managing biodiversity- that ascends, to some extent, to the medieval epoch (see above, citations of Agustí 1617 and Faraudo 1943). As Assouly (2004) sagely asserted, there is no sense either in invocating the tradition and fearing the future or in denying the tradition and exalting the future. In an intermediate way, linking past and future, today's knowledge on underutilised plants, such as *S. nigra*, can be a source of further benefits for humankind.

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