Ethnomedical and ethnoveterinary use of Plantago sempervirens Crantz. A comparative study in Spain and the South of France

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Abstract

The plant *Plantago sempervirens* Crantz is very present in the East of the Iberian Peninsula, as well as in the Mediterranean regions of France (Languedoc, Provence and North Corsica). It is a plant that is hardly mentioned in the classical botanical literature and we hardly have any references to its ethno-veterinary uses. However, popular tradition points to important anti-inflammatory uses, as well as for healing wounds, among other uses. To find out whether the lack of information was due to a lack of use or rather a gap in the research on the plant, semi-structured interviews were conducted in both France and Spain, as well as an exhaustive bibliographic review done. Intense field work has been carried out both in France and Spain, conducting semi-structured interviews with informants, mainly elderly people, to learn about the ethnomedicinal and ethnoveterinary uses of the plant, in the absence of solid bibliographical references. Main uses were associated with the healing of inflammations and wounds as well as a disinfectant for animals. There is a strong contrast between the important presence in the oral tradition in Spain and the local one in France, which allows us to propose an export of popular knowledge beyond the Pyrenees. The above-mentioned uses have ceased in the vast majority of cases.

Introduction

The objective of the research is to know the popular uses of *Plantago sempervirens* Crantz in two territories of the Mediterranean. This plant, of the Plantaginaceae family, is distributed along the northern coast of the Western Mediterranean, from Spain to Italy, with a smaller presence in the South West of the Balkan peninsula. The phytochemical components of the plant have been studied in the Italian region of Abruzzo (Venditti et al., 2012), as well as in Romania (Farcas 2019). The plant has also been identified in Bulgaria (Stoyanov, 2011). In Spain, following Benedí et al. (2009, 36), we can find it in 32 provinces, mainly in its eastern, Mediterranean side and Duero valley (see Fig. 1). It grows in dry and stony soils, generally in sunny places and from sea level up to 1600 m.

In France the area of distribution of *Plantago sempervirens* Crantz[1] is principally around the Mediterranean (Provence, southern Alps, Languedoc, rare in Corsica). The large distribution of the plant contrasts with its limited use geographically and the large range of therapeutic attributes, both medicinal and veterinary.

Traditional knowledge and ancestral uses of *Plantago sempervirens* Crantz have today practically disappeared in France. The plant had nevertheless been seen as a panacea up until the 1970s in western haute-Provence (Lieutaghi, 2009). In the abscence of records in scientific literature, it is the ethnobotanical studies, undertaken since the 1960s, which have allowed the associated with uses *Plantago sempervirens* Crantz to be brought to light (Lieutaghi, 1966, 1984, 1986).

In Spain, the ethnobotanical uses of this plant for people and animals have been little studied, in spite of the wide diffusion of the plant and of a traditional use that we can consider as important. Gonçalves and Romano (2016), collating the previous literature, indicate that "for centuries, *Plantago* species have been used in folk medicine because of their diverse properties", although it points out that the *sempervirens* variety has not been sufficiently studied. Along the same lines Farcas *et al*. (2019) states “Plantago species

have long been used as traditional herbal remedies for many diseases related to inflammatory conditions of the skin, respiratory and digestive tract, or even malignancy".

We can wonder on the one hand at the lack of written material regarding the use of the plant and also regarding the origins of the transmission of knowledge related to *Plantago sempervirens* Crantz between Spain and the western haute-Provence.

[1] the plant name has been checked with http://www.theplantlist.org on August 21st 2020

Materials & Method

This study is the result of document based research and ethnobotanical surveys undertaken in Spain and France. For the documentary search, the main bibliographic sources on ethnobotany were consulted, as well as local and regional publications, until the published bibliographic references were exhaustively completed. We searched for references in English, French and Spanish in different databases, including Google Scholar, Academia.edu and Web of Science. The search terms were plant name, ethnoveterinary, ethnobotany or ethnomedicine. The field work has focused on interviews with livestock farmers and other nearby actors related to ethnoveterinary and ethnomedical uses of the plant in the main areas of prevalence of the plant. The plant being studied *Plantago sempervirens* Crantz corresponds to voucher specimen MNHN-P-P00044424 deposited at the French National Museum of Natural History.

Study area

In Spain the study includes the regions of Valencia (provinces of Alicante and Castellón), Aragón (Teruel), Castilla-la-Mancha (Cuenca) and also Catalonia (Tarragona). These are mountainous and mediterranean territories, with a strong cattle tradition, where transhumance occurs.

The study area in France is the western haute-Provence. This territory, between the Apt and Forcalquier basins, is the only one where use of the *Plantago sempervirens* Crantz has been recorded in France (other than locally in Corsica and the Alpes-Maritimes department).

Analysis of written sources

The literature available for Spain is scarce (Mulet Pascual, 1991; Peris *et al*. 2001; Fajardo et al., 2007; Laguna et al., 2017; Pardo de Santayana, 2018). The authors refer mainly to uses in traditional medicine, offering very little data on their veterinary uses, which only appear in two of the references.

As in the Iberian peninsula, we find no mention of *Plantago sempervirens* Crantz in many ancient or modern ethnobotanical publications, either scientific publications or popular recipes. The plant is cited as early as in the 16th Century (Dalechamps & des Moulins, 1653) for its soothing-laxative seeds, which can therefore be entered among the "psyllium" along with Plantago afra (the original "psyllium" strictly speaking and of Plantago arenaria. This practice has never been recorded in haute-Provence.

In Provence a large ethnobotanical study was started back in the 1960s, initiated by Pierre Lieutaghi and further developed by the association Etudes Populaires et Initiatives (EPI) and other organisations (Lieutaghi, 2009; Amir, 1995). Studies into provencal ethnopharmacopoeia, undertaken as part of theses on pharmacy and pharmacology, also enabled records and transcripts to be made regarding the understanding of P*lantago sempervirens* Crantz (Bremont, 1989; Boyer, 2008).

A further study was undertaken in 2018 at the Ethnopôle de Salagon as parts of a call for projects organised by the Ministry of Culture for the creation of a fact sheet on intangible cultural heritage (Parard, 2018), associated with surveys (semi-structured interviews).

Etnobotanical Fieldwork

Since we believed that it was more of a gap in research than an absence of use, we have conducted semi-structured interviews with cattle ranchers and shepherds in the main mountain areas, as they have a strong livestock tradition, with the aim of verifying the possible ethnoveterinary use of the plant. The field work was carried out mainly in 2019. We found many people who did not know the plant and certainly did not use it. Most of the positive responses have been from elderly people who talked about the past or even practices they remembered from their parents, such as our informant 9, who was 66 years old and only remembered his father's use of the plant when he was young. Very few of the people interviewed report continuing to use the plant. The age of our informants is between 50 and 85.

We have been able to conduct 22 positive interviews, between February 2018 and October 2019, in 16 villages in 5 Spanish provinces, all of them located in the Spanish Mediterranean area, where the plant is prevalent **(**Table 3**).**

A paralel study was undertaken in France (principally in the Alpes-de- haute-Provence department), associated with interviews with livestock farmers, shepherds, plant collectors, active or retired, in 2018 and 2019. Only 5 people declared that they used the plant. Amongst them only one person had witnessed traditional medicinal and veterinary use. The other informants had learnt of and used the plant thanks to the publications and botanical courses by Pierre Lieutaghi and had revived the practices. This survey is also based on the results of ethnobotanical practice.

The information in Tables 1 and 2 is the result of interviews undertaken in 2018 and 2019. The age of the French informants at the time of the survey was between 45 and 90 years.

Data analysis

At the present time most of the informants who used the plant have died. The interviews undertaken in 2018 and 2019 describe a use from the past principally medicinal. The ancient veterinary practises related to the plant seem to have died out but appear through the statements. It is important to underline at this point that the work undertaken by ethnobotanists in the 1970s and 1980s allowed the memory of the use of the plant by various populations to be recorded. It also led to a revival of the medicinal and veterinary use of the plant (use with a vegetable/herbal based remedy and for different conditions) (I25, I26, I27).

When in the 1970-80s in haute-Provence, the interviewer was asked about the 'real name' of 'badasson', he was taken for a joker when he said it was related to broadleaf Plantago although scientific pharmacological commentary can relate the uses of *Plantago sempervirens* Crantz to those of common Plantago.

In haute-Provence, *Plantago sempervirens* Crantz is likened to “badasses”, a generic name for several sub-shrubs from areas of pasture : *Thymus vulgaris* L., lavander *Lavandula latifolia* Medik. and *Lavandula angustifolia* Mill., and particularly “badasse blanche” *Dorycnium pentaphyllum* Scop., a plant that is much appreciated by goats. We find a relationship in the analog denomination in the Iberian part of Catalonia where *Plantago sempervirens* Crantz, “botgeta gangrenosa” belongs to the same category as “botgeta blanca”, *Dorycnium pentaphyllum* Scop.

Plantago sempervirens Crantz, is a very bitter tasting plant refused by the flocks and so indirectly allowed to flourish, which belongs to the group of vegetation in pasture grassland. Often encountered by pastoral societies, it even better integrates their classifications as other uses are added. It is therefore possible that these were originally related to veterinary uses, which are very well represented in the Iberian peninsula.

Both in the bibliography consulted and in the interviews carried out in our fieldwork, we have been able to observe an important diversity in the popular names of this plant, as *apagafocs, bojeta, botgeta cangrenosa, gangrenera, gangrenosa* or *zaragotana*, to name just a few. Villages barely five kilometres apart referred to it quite differently. Marhold (2011) collects 75 different popular names in Spain for the plant. This significant diversity in nomenclature is a clear indication of the long-standing use and important knowledge of the plant throughout Spain, in stark contrast to French surveys.

If the uses of *Plantago sempervirens* Crantz where largely diffused in French haute-Provence in the 1970-80s, it included very few 'popular' names – the most notable along with “badasson” being “herbe brune”, in the Apt basin, and they do not relate to usage, whereas in the Iberian peninsula, where there are numerous local names, some of these describe their use. When there are many vernacular descriptions of a plant, this is a clear indicator that it has been often seen, and, generally, that it has been recorded socially in material or symbolic ways.

This large diversity of names, especially over a large area, suggests that the Iberian peninsula is the 'region of diversification' of knowledge of the plant, as one says of the various types of cultivated vegetable plants. In France, where popular knowledge of *Plantago sempervirens* Crantz are a long way from encompassing the entire species (in haut-Languedoc, where it is much more common than in haute-Provence, it remains without name neither with use), it was originally thought that the uses came from Italian origins, due to a large migratory movement between the Piedmont and the French frontier provinces during the 19th century. However, apart from a vague veterinary mention in Cap Corse (Corsica), the plant does not appear in ethnobotanical studies in the Italo-tyrrhenian area.

Results

Ethnomedical uses

The various authors record a multitude of remedies for which this plant is used, pointing out not only its multiple properties, but also the extensive and deep knowledge of its ethnobotany, as well as the wide geographical diffusion. Thus, Laguna et al. (2017) points out that with cooking water "it was used to cure diarrhoea and to combat constipation".

Peris, Stubing and Romo (2017) indicate that mucilage (of the seeds; not in popular use) has demulcent properties and is a mechanical laxative. Likewise, skin baths, with a 3% infusion, are prepared "for washing infected wounds and gangrene".

Pardo de Santayana (2018) presents it as a remedy against foot pain, applying by soaking as well as by rubbing against rheumatism and joint pains, in combination with other plants. However, Mulet Pascual (1991) and Fajardo et al. (2007) provide much more information. The first focuses its field work in the Spanish province of Castellón and points out that the plant is used as anti-gangreneous, hypocholesterolemic, antispasmodic, detoxifying, vulnerary, hepatoprotective, antidote, anti-inflammatory, antiodontalgic, for stomach, astringent, hypotensor, antiseptic and demulcent in different places of the province (Mulet Pascual 1991).

The study by Fajardo (*et al*. 2007) focuses its work on the mountain range of Spanish Cuenca, identifying different uses. In cooking, against mouth sores or discomfort in the gums, but also against pains, to cure the ulcerated eye or as a disinfectant. As an infusion against bleeding ulcers, gut pains, for bile and also as a blood purifier. Finally, by rubbing after cooking against rheumatism and pains in the joints, in combination with other plants. On the other hand, Farcas *et al*. (2019) indicates that "*Plantago sempervirens* Crantz would be a suitable natural remedy in inflammatory-associated pathologies".

To confirm ethnobotanical uses, and although we have focused our field interviews on ethnoveterinary uses, we have obtained 13 references from our informants (see Table 1). Most of them confirm the vulnerary use after infusion of the plant (I6, I7, I8, I15, I17 and I21) which underlines the disinfectant and anti-inflammatory properties mentioned above. We also observe its use as a poultice (I1 and I22) for the same purpose, as well as in maceration (I20).

We found other results of interest, such as its use in infusion as a remedy for sore throat (I4), against colon cancer, by infusion for 9 days (I2), applying a custom of possible religious origin to adapt temporarily to the novenas (religious tradition of making a petition for nine days). Our informant 8 refers to its use to disinfect blood, as well as against urinary infections and haemorrhoids while we also find its use in infusion (I16) for blood spikes and subsequent headaches, as well as against scabies. We also note its use as a fly repellent, as well as in an infusion against heartburn and swollen gut (I21).

In France the first recorded mention regarding the popular use of the plant “badasson”, *Plantago sempervirens* Crantz concerned a treatment at the start of a foot grangrene in Saint-Etienne-les-Orgues, (Alpes-de-haute-Provence department), a bath in a boiled solution (Lieutaghi 2009). A decade later the recording of 61 properties and prescriptions, in human medecine, suggested *Plantago sempervirens* Crantz as primarily an external remedy, for most of the prescriptions using common plants : dermatology, inflammations, old wounds, ulcers (Lieutaghi, 2009).

The principal uses, highlighted by the interviews are mainly vulnerary, and in particular anti-inflammatory and scar healing (I23, I24, I25, I26). The plant was also used as a diuretic, and for digestive and antispasmodic problems. It was prepared as decoction (upper parts) administered by localised bathing, washing, compresses or poultices for external problems, and by mouth for internal problems (Lieutaghi, 2009).

French new-rural people have reappropriated the use of the plant principally for dermatological (psoriasis, eczema, dry skin) (I26, I27) or veterinary (healing of wounds) with balms from infusions (I25, I26, I27). So we find a gatherer of plants, who picks the “badasson” and creates balms which they sell on the market at Forcalquier, thereby renewing the ancient activity of collection and sale of “badasson” as it existed in the past (I25, I26).

Table 1
Ethnomedical use of *Plantago sempervirens* Crantz

Informants	Year	Country	Localities	Used part of the plant	Indication or properties	Preparation
I 1, I 6, I 7, I 8, I 15, I 17, I 20, I 21, I 22	2019	Spain	Allepuz, Ludiente, Mosqueruela Puertomingalvo	Not available	Vulnerary to heal inflammation and wounds	infusion
I 4	2019	Spain	Puertomingalvo	Not available	against sore throat	Not available
I 2	2019	Spain	Fortanete	Not available	Against Cancer	Not available
I 8	2019	Spain	Vilafranca	Not available	To disinfect blood, as well as against urinary infections and haemorrhoids	Not available
I 16	2019	Spain	Puertomingalvo	Not available	for blood spikes and subsequent headaches, as well as against scabies	Not available
I 21	2019	Spain	Ludiente	Not available	against heartburn and swollen gut	infusion
I26, I25	2018	France	Mane, Saint-Michel-l'Observatoire	Upper parts	anti-inflammatory (skin irritations, pimples,)	Local baths of infusion
I25	2018	France	Mane	Upper parts	Thorn pricks, Panaritium	Compresses or local baths of decoction (external treatment) with infusion taken orally
I25	2018	France	Mane,	Upper parts	Frostbite, Eczema, Warts, Corns	Local baths or lotions of decoction
I25, I28, I29	2018	France	Mane, Castellane, Trescéloux (Hautes- Alpes)	Upper parts	Healing Psoriasis, Pruritus	Compresses of decoction, Balm (oil maceration)

Ethnoveterinary uses

As mentioned above, bibliographical references to the ethnoveterinary uses of the plant are very scarce in the case of Spain. Mulet Pascual (1991) points out its use as a forage plant, as well as to heal wounds, contusions or poisonous bites, applying skin baths with the decoction of the plant. Fajardo et al. (2007, 416 and 417) indicate that with the boiling of the plant the wounds in domestic animals were disinfected and the scuff marks in the cavalries were washed. It is this lack of information that has encouraged us to concentrate the survey on possible ethnoveterinary uses of the plant, in order to fill the hypothetical gap in research. As a positive outcome, we got 15 references of interest from the 22 interviews (see Table 2).

Results are very indicative, since they underline the principal and widespread use of the plant as a disinfectant for wounds of various kinds and confirm the uses indicated in the bibliography. Most of the applications are by infusion of the plant. This is what our informants 1, 2, 3, 9, 10, 12, 13, 17, 18, 21 and 22 point out. The informants specify the practical applications, referring to open wounds, infections of sheep by dog bites, and also wounds on the legs of sheep as well. We also recorded the use of maceration of the plant in oil or poultices after boiling it, also for the same use.

However, we also find other ethnoveterinary uses, since in addition to its use as a forage plant (I5), it is also used in infusion against diarrhoea (I1), as a laxative (I5), as an anti-inflammatory (I10 and I21), to repair the matrix that leaves the sheep's births, applying infusion (I13), as well as for the cramping of mules (I19).

In popular veterinary medicine in French haute-Provence, the plant was mostly used as a vulnerary, to heal wounds (I 23 ; Lieutaghi, 2009 ; Amir, 1995). It was used as a compress or as treatment of mastidis or external wounds in sheep, doing a bathing with decoction of the plant, but also to treat foot problems (I23, Lieutaghi 2009). External dermatological conditions, insect bites and snake bites were treated by compresses or by washing in the decoction, for dogs, mules and sheep (Lieutaghi, 2009; Amir, 1995).

Oral treatment of a decoction of *Plantago sempervirens* Crantz also treated cholic in horses (Amir 1995) and finally, in another veterinary use, the plant was still being used in the 2000s by shepherds and hunters in the area of Cadenet (Vaucluse department), as a preventative of leishmaniasis in dogs by regular oral administration of a decoction of the plant (Boyer 2008).

Table 2
Ethnoveterinary use of *Plantago sempervirens* Crantz

Informants	Year	Country	Localities	Used part of the plant	Indication or properties	Preparation	Animal
I 1	2019	Spain	Mosqueruela	Not available	Against diarrhoea	Not available	Not available
I 3, I 6, I 9, I 10, I 12, I 14, I 15, I 17, I 18, I 21, I 22, I 23, I 24	2019	Spain	Allepuz, Barracas, Gúdar, Linares de Mora, Ludiente, Mosqueruela, Puertomingalvo, Ulldecona, Vilafranca	Entire plant	against wounds	Oil maceration, Oil maceration during 40 days Infusion	Dogs, Goats, Horses, Sheep
I 5	2019	Spain	Balones	Not available	laxative	Not available	Not available
I 12	2019	Spain	Barracas	Not available	Against Inflammation of the truss or against dog bite infections	Infusion during several days	Sheep
I 10, I 21, I 23, I 24	2019	Spain	Gúdar, Linares de Mora, Ludiente, Vilafranca	Not available	Anti-inflammatory	Infusion	Sheep, Goats
I 13	2019	Spain	Tramacastiel	Not available	to repair the matrix that is left by the sheep's births	Infusion	Sheep
I 19	2019	Spain	Benassal	Not available	for the cramping of mules	Not available	Mules
I25	2018	France	Mane	Upper parts	Foot and hoof problems (footrot, panaritium)	Local washing with decoction (sometimes compresses of décoction)	Sheep

Infor-mants	Year	Country	Localities	Used part of the plant	Indication or properties	Preparation	Animal
I 25	2018	France	Mane	Upper parts	Wounds, Bites, inflammations	Lotions or compresses of decoction	Sheep, Goats
I27	2018	France	Limans	Upper parts	Wounds	Balm (made with lard)	Horses
I28			Castellane			Balm (made with oil maceration)	Dogs

Table 3
Locality of informants Alicante (A), Castellón (CS), Cuenca (CU), Tarragona (T), Teruel (TE), France (FR)

Informant	Locality and province
1	Mosqueruela (TE)
2	Fortanete (TE)
3	Allepuz (TE)
4	Vistabella (CS)
5	Balones (A)
6	Allepuz (TE)
7	Culla (CS)
8	Tejadillos (CU)
9	Linares de Mora (TE)
10	Linares de Mora (TE)
11	Jérica (CS)
12	Barracas (CS)
13	Tramacastiel (TE)
14	Ulldecona (T)
15	Mosqueruela (TE)
16	Puertomingalvo (TE)
17	Puertomingalvo (TE)
18	Vilafranca (CS)
19	Benassal (CS)
20	Fortanete (TE)
21	Ludiente (CS)
22	Allepuz (TE)
23	Gúdar (TE)
24	Vilafranca (CS)
25	Mane (FR)
26	Saint-Michel-L'Observatoire (FR)

Informant	Locality and province
1	Mosqueruela (TE)
2	Fortanete (TE)
27	Limans (FR)
28	Castellane (FR)
29	Trescléoux (FR)

Discussion

In the current state of knowledge of “badasson”, it is necessary to check again about origins: the origin of the use in haute-Provence would not be in the East of the Alps but in the South of the Pyrenees, and at the same time return to the information provided by Olivier Madon (1999): in the Ventoux region (Malaucene), a horse-trader known by the name of Baieti had passed on veterinary recipes, including a remedy for thyroid problems in horses based on “badasson”. The plant retained the name “èrba-a-Baièti”.

Horse traders were often gypsies; they pased on remedies at markets. The frequency of references to gangrene from Spanish sources could be in relation to the problem amongst sheep and goats: gangrenous mastitis, birth complications, infection of wounds and bites. It is one of the possible sources of its diffusion in France. However, that is not sufficient to explain the exceptional importance of P*lantago sempervirens* Crantz in the treatment of human illness in haute-Provence.

The fact that *Plantago sempervirens* Crantz is not recognised by informants as a Plantago and yet is associated with most of the medicinal indications of broadleaf Plantago by the same informants, prompts reflection on the process of construction of folk medicinal knowledge. In the field of external uses, the most observable and understandable, it seems to proceed by "neighbourhood effect": a recognised efficacy on an ailment as serious as gangrene encourages trials on more common pathologies, such as sluggish wounds and dermatosis. The transition from veterinary medicine to human medicine is attested in Haute Provence (Vaucluse) for *Dorycnium hirsutum* L., another "badasse". As for the French internal uses of *Plantago sempervirens* Crantz, such as that for "heartburn"(Lieutaghi, 2009), they may also derive from the French tradition of the use of the plant in the Mediterranean. they can also be derived from the observation of external results on ulcers.

The analogy between the uses of *Plantago sempervirens* Crantz and those of common Plantago does not come from a written influence, but from popular observation and deduction independent from the link between plants.

Among the elements of research to be pursued, there remains the search for possible ancient written traces on the plant and its uses. The description of *Plantago sempervirens* Crantz in vernacular botany could also be clarified, as well as the transmission of knowledge related to the plant, or the interference between

veterinary medicine and human medicine. However, the accelerated loss of knowledge in European rural societies makes such research difficult. An ethnopharmacological approach would also be very useful for determining the phytochemistry of the plant and making comparisons with those of other Plantago species.

Conclusions

The field work, mainly carried out with older people in rural areas, has allowed us to confirm, together with the publications referred to, a fairly widespread use of the plant in popular tradition. This tradition is currently in disuse, due to the strong influence of modern medicine and veterinary medicine, to the extent that only the elderly refer to a use in the past.

The interviews have allowed to collect an important number of uses, proof of its multiple properties, but also of the extensive and deep knowledge of its ethnobotany, as well as the wide geographical diffusion. Most of them confirm the vulnerary use after infusion of the plant. The results are very interesting, since they underline the principal and widespread use of the plant in dermatological uses. As a disinfectant for wounds of various kinds, but also as anti inflammatory, for old wounds and ulcers, confirming the uses indicated in the bibliography.

The very popular name of the plant, gangrenera or gangrene plant, refers to its ethnomedical use as a disinfectant and to cure open wounds, even more serious infections such as gangrene. However, the interviews allow us to confirm the strong presence of the plant in the popular ethnoveterinary tradition in Spain, although already extinct, in contrast to its reduced presence in the French ethno-veterinary tradition. In Spain, the plant was a common and well-known resource against wounds, bites and infections in animals, but also as an anti-inflammatory.

As we have seen in the field work, it is striking to note the many and varied names for this plant. This significant diversity in nomenclature is a clear indication of the long-standing use and important knowledge of the plant throughout Spain, in stark contrast to French surveys. This suggests an introduction of its uses in France through the influence of transhumant breeders or traders from Spain.

Declarations

Ethical Approval

Not applicable

Competing interests

All authors have declared no conflict of interest.

Authors' contributions

Each author has contributed equally to the research, carrying out the field work in their area of influence, and contributing to the final draft.

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References

1. Amir, M. (1995). *Enquêtes ethnobotaniques en Luberon* (1994-1995). Parc naturel régional du Luberon
2. Benedí, C., Rico,J., Güemes,J., Herrero,A. (2009). *Flora Ibérica. Plantas vasculares de la Península Ibérica e islas Baleares*. Vol. 13. Plantaginaceae-Scrophulariaceae. Real Jardín Botánico.
3. Boyer, L. (2008). *Contribution à l'étude chimique et pharmacologique de Plantago cynops* L. *et Chionanthus virginicus* L.. PhD thesis in molecular chemistry and bioactive molecules. Université d'Aix-Marseille II.
4. Brémond, P. (1989). *Contribution à l'étude de la pharmacopée traditionnelle dans la région de Banon*. PhD thesis in Pharmacy. Université d'Aix-Marseille.
5. Carraze-Rieu, C. (1986). *Contribution à l'étude de la pharmacopée traditionnelle de la région de Pourcieux*. PhD thesis in Pharmacy. Université d'Aix-Marseille.
6. Daléchamps, J., Des Moulins, J. (1653). *Histoire générale des plantes : contenant XVIII livres également réparties en deux tomes*. Lyon.
7. Fajardo, J., et al. (2007). *Etnobotánica en la Serranía de Cuenca. Las plantas y el hombre*. Diputación de Cuenca.
8. Farcaș, AD., Moț AC., Pârvu AE., et al. (2019). In Vivo Pharmacological and Anti-inflammatory Evaluation of Xerophyte *Plantago sempervirens* Crantz. *Oxid Med Cell Longev.*, 2;2019:5049643. doi: 10.1155/2019/5049643. PMID: 31281580; PMCID: PMC6589197.
9. Gonçalves, S., Romano, A., 2016. "The medicinal potential of plants from the genus Plantago (Plantaginaceae)". *Industrial Crops and Products,* 83. 213-226.
10. Laguna, E., Serena,V., García Martí,X., Ferrer-Gallego, P.P., 2017. Apuntes etnobotánicos de la comarca Hoya de Buñol-Chiva. Asistencia y Comunicación Oral. 59-72
11. Lieutaghi, P. (1966). *Le Livre des bonnes herbes*. Arles. Actes Sud, 3rd ed. Revised in 1996.
12. Lieutaghi, P. (1986). *L'Herbe qui renouvelle. Un aspect de la médecine traditionnelle en haute Provence*. Paris. Maison des sciences de l'homme (coll. Ethnologie de la France)
13. Lieutaghi, P. (1986). *Les Simples entre nature et société*. Association EPI.
14. Lieutaghi, P. (1991). *La Plante compagne. Pratique et imaginaire de la plante sauvage en Europe occidentale*. Actes Sud, rééd. 1998.
15. Lieutaghi, P. (2009). *Badasson & Cie. Tradition médicinale et autres usages des plantes en haute Provence*. Actes Sud.

16. Lieutaghi, P., Dore, D. (1984). Research report 1982-1983. Les plantes dépuratives de la pharmacopée populaire haut-provencale. Association EPI/CIREV
17. Madon, O. (1999). *La Flore du Ventoux : des plantes et des hommes.*Barthélémy.
18. Marhold,K. (2011). Plantago, in Euro+MedPlantbase: the information resource for Euro-Mediterranean plant diversity. Accessed on January 25, 2020 from
19. http://ww2.bgbm.org/euroPlusMed/PTaxonDetail.asp?UUID=DFA322F0-28AB-460A-A3AD-FCFC2FABE5C4
20. Mulet Pascual, L., 1991. *Estudio Etnobotánico de la provincia de Castellón*. CS. Diputación de Castellón.
21. Parard, P. (2018). Les emplois médicinaux du plantain badasson en Haute Provence occidentale. Ministère de la Culture, Ethnopôle de Salagon. Retrieved January 25, 2020 from
22. http://www.culture.gouv.fr/Media/Medias-creation-rapide/Les-emplois-medicinaux-du-plantain-badasson-en-Haute-Provence-occidentale.pdf Accessed on March 24, 2020
23. Pardo de Santayana, M. (2018). *Inventario Español de los conocimientos tradicionales relativos a la Biodiversidad*. 2ª phase. Vol. 3.
24. Peris, J.B.,Stübing,G., Romo,A. (2001). P*lantas medicinales de la Península Ibérica e Islas Baleares*. Jaguar.
25. Stoyanov, S., Vassilev, K. (2011). *Plantago sempervirens* Crantz (Plantaginaceae): a dwarf shrub new for the Bulgarian flora. *Phytologia Balcanica*, 17.1, 45-51.
26. Venditti, A., Serrilli, AM., Di Cecco, M., Ciaschetti, G., Andrisano, T., Bianco, A. (2012). Phytochemical analysis of *Plantago sempervirens* Crantz from Majella. *National Park. Natural Product Research.* Nov 26(21), 2035-9. doi: 10.1080/14786419.2011.633520. Epub 2011 Nov 14. PMID: 22081901

Figures

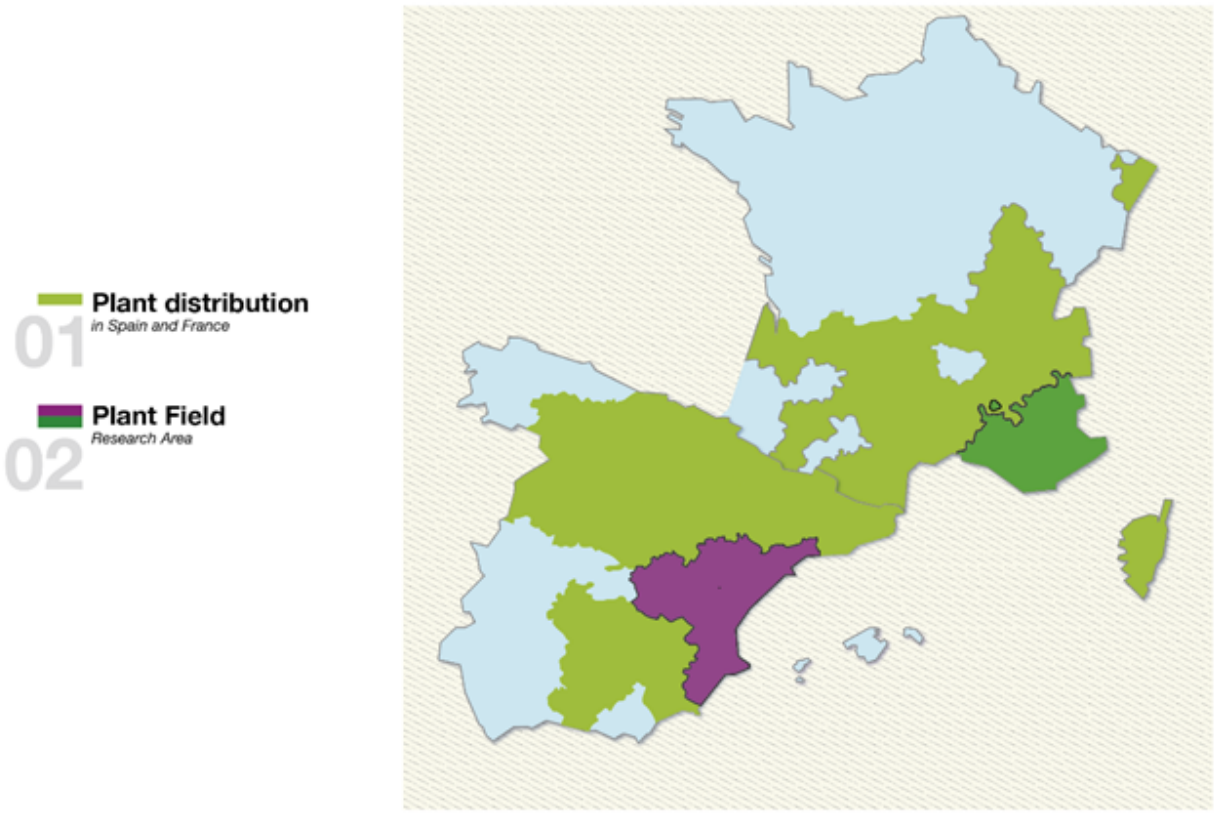

Figure 1

Plantago sempervirens Crantz distribution map in Spain and France