

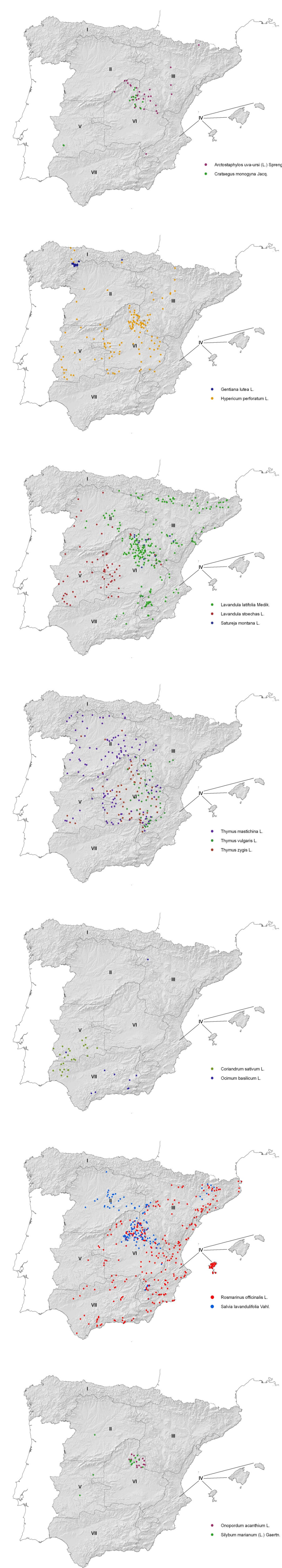
# Bioprospecting: genetic resources of medicinal and aromatic plants in Spain

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## OBJECTIVES

- Prospection of wild aromatic and medicinal populations from different regions and seed collecting for its conservation in gene banks.
- Collecting of plant material for its chemical characterization.
- Distribution maps elaboration of the chemotypes from the wild species studied according to their richness in active compounds.
- Initiate breeding actions from the wild aromatic and medicinal populations according to their morphologic and chemical characteristics.
- Providing an incentive for biodiversity conservation by adding value to natural resources as biochemical resources.



Species	Samples collected	Studies performed
<i>Arctostaphylos uva-ursi</i> (L.) Spreng	34	C
<i>Coriandrum sativum</i> L.	34	C
<i>Crataegus monogyna</i> Jacq.	15	A C
<i>Gentiana lutea</i> L.	44	A B C
<i>Hypericum perforatum</i> L.	145	A B C
<i>Lavandula latifolia</i> Medik	281	A B C
<i>Lavandula stoechas</i> L.	76	B C
<i>Ocimum basilicum</i> L.	11	C
<i>Onopordum acanthium</i> L.	14	A C
<i>Rosmarinus officinalis</i> L.	354	A C
<i>Salvia lavandulifolia</i> Vahl.	151	A C
<i>Satureja montana</i> L.	23	C
<i>Silybum marianum</i> (L.) Gaertn.	13	A C
<i>Thymus mastichina</i> L.	132	A B C
<i>Thymus vulgaris</i> L.	75	A B C
<i>Thymus zygis</i> L.	72	A B C

A Chemical characterization, B Germination studies, C Seed conservation



## RESULTS OF CHEMICAL CHARACTERIZATION

**Common hawthorn:** Its metanolic extract was rich in flavonoids, which content was greater than 120 mg/kg; kanferol, isovitexina, quercitrina and apigenina were the principals. The content in fenolic acids ranged between 3,97 and 16,97 mg/kg being ursolic and isovainillic acids the more importants.

**Great yellow gentian:** six populations with more of 30ppm of gentiopricosido and other 6 populations with more of 2ppm of amarogentina have been found.

**St. John's wort:** five populations with more than 10.000ppm of hipericin have been found.

**Spike lavender:** eleven populations with more than 7% of essential oil yield have been harvested. All the samples collected were very rich in camphor and linalol, overcoming the maximum values of ISO 4719.

**Rosemary:** seven populations have been selected with a yield of essential oil superior to 3% and proportions of 1,8-cineol between 4 and 31%. In the extract the rosmarinic acid ranged between 1 and 71mg/kg.

**Spanish sage:** four populations have been collected with yield in essential oil superior to 2.5%. The concentration of the antioxidants in the extract, carnosol and carnosic acid, ranged between 0.1 and 15 mg/kg and 0.1 and 8 mg/kg respectively.

**Cotton thistle:** content of the majority components in the metabolic extract, apigenina, kanferol and luteolina varies between: 5.6-98.5, 8.7-78.0 and 0.3-36.5 ppm respectively. The rest of the identified components: miricetina, hesperidina, xantona, apigenina-7-glucosido and arbutina are present in smaller concentration.

**Spanish marjoram:** nine populations have been found with a yield in essential oil superior to 3% and five populations with more than 50% content in 1,8-cineol. Se han encontrado los quimiotipos 1,8-cineol >70% y linalol >50%. Also, its have been found quimiotipos 1,8-cineol >70% and linalol >50%.

**Common thyme:** nine populations have been found with a yield in essential oil superior to 3 % and five populations with more than 50% content in 1,8-cineol.

**Moroccan wild thyme:** Three populations have been collected with a yield superior to 1,5%, and four populations with a content in tymol >50%. Also, it has been found quimiotipos carvacrol, 1,8-cineol and linalol.

## RESULTS OF CONSERVATION

### Genebank standards (FAO/IPGRI)

**Seed drying procedures:** drying using a desiccant (silica gel): storage in sealed moisture-proof containers with desiccant. Very low moisture contents (around 3%).

**Germination:** seed viability >85%.

**Seed containers:** it is important to assure that the seeds do not re-absorb moisture during the conservation, especially if they are kept in cold chambers, using moisture-proof containers.

### Storage:

**Base collection:** preferred -18°C and no reusable containers. Not for distribution.

**Active collection:** 0° C and reusable containers. Available for multiplication and distribution.

Species	Conditions	Period	Germination % SE
Great yellow gentian	15°C, Cs & GA <sub>3</sub>	60 days	63
St. John's wort	15/25°C, 16h P W & D	50 days	95 2.18
Spanish lavender	15°C, 16h P W&D	30 days	92 3.16
Spanish marjoram	15°C, 16h P W&D	30 days	99 0.86
Common thyme	15°C, 16h P W&D	30 days	98 1.73
Moroccan wild thyme	15°C, 16h P W&D	30 days	95 0.87