ANTIOXIDANT PROPERTIES OF SPANISH SAGE (*Salvia lavandulifolia Vahl.*)

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INTRODUCTION

Salvia lavandulifolia is a small perennial shrub belonging to the *lamiaceae* family and growing in the West Mediterranean area[1]. In folk and phytotherapy medicine is used for its antibacterial activity[2], hypoglycemic property and as appetite stimulant[3].

It is also a plant species rich in antioxidants and phenolic constituents[4]; however the amount of antioxidant can be variable between individual plants or between populations[5]. Once the antioxidant content is known, populations or individual plants can be selected by their antioxidant richness.

With the aim of characterize the populations and to know their potential as antioxidant, the total phenol content, DPPH, FRAP and the amount of the main polyphenols of seven populations of *Salvia lavandulifolia Vahl* were measured.

MATERIAL AND METHODS

Between 6 and 19 individuals plants of seven population of *S. lavandulifolia* were collected during the summer of 2011 in blossom phase from an assay established in Valladolid (Spain). The assay was establish with wild populations of different regions from Spain.

The total phenols content and the antioxidant activity were measured through colorimetric methodology:

- Folin-cicalteou method.
- Free radical scavenging activity (DPPH method)
- Ferric Reducing Antioxidant Power (FRAP)

Polyphenols content were quantified by reverse-phase high-performance liquid chromatography. The analysis was carried out with a Water (Milford, MA) HPLC equipped with a quaternary pump, a photo array detector and an autoinjector.

The identification of the polyphenols was done comparing the retention time and the UV-sprectra obtained by diode array detector. The quantification was done by comparison with an external standard.

Locality	Province	N° of indivudual plants	Original cordinates		Original altitude
Aliaguilla	Cuenca	6	394446N	0012110W	1090
Tendilla	Guadalajara	6	403231N	0025703W	858
Moratalla	Murcia	12	381135N	0021122W	1165
Tuixent	Lérida	16	421437N	0013151E	1031
Guixers	Lérida	17	420903N	0014155E	1388
La Sentiu de Sió	Lérida	19	414824N	0005247E	248
Letur	Albacete	8	381427N	0021012W	1185

Table I: Collection data of the *Salvia lavandulifolia* populations.

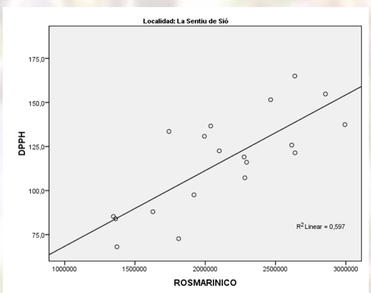
RESULTS AND DISCUSSION

Rosmarinic acid and luteolin-7-o-glucoside were the main polyphenols found in Spanish sage. Other polyphenols detected where caffeic acid, chlorogenic acid and lueolin.

There was a significant correlation between the colorimetric methods and the rosmarinic acid content:

DPPH: ,335** (P<0.002)
Total phenols: ,724** (P<0.000)
FRAP: ,575** (P<0.000)

Figure I: Correlation between rosmarinic acid content and DPPH for the population "La sentiu de Sio".

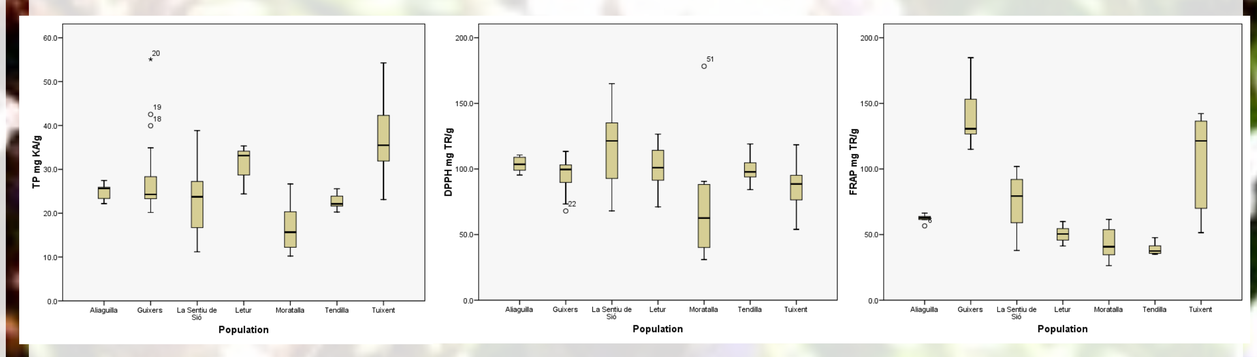


The highest amount of rosmarinic acid was presented by Guixers and La Sentiu de Sio with a content of 20.9±2.5 and 20.2±5.0mg/g DW, respectivly. The biggest amount of luteolin-7-o-glucoside was also found in Guixers with a content of 10.1±1.1 mg/g of luteolin acid equivalent DW.

Gixers and Letur presented the highest amount of Clhorogenic acid (0.7±0.3 and 0.6±0.2 mg/g DW, respectively). The highst amount of Caffeic acid was presented by Guixers and Tuixient (0.5±0.3 and 0.6±0.3 mg/g DW, respectively) and the highest amount of luteolin was found in Letur and Guixers (0.002±0.001 and 0.205±0.118 mg/g DW, respectively) and it was absent in Moratalla and Tendilla.

All populations present characteristic phenolic profiles. Tuixient is the population with the highest content of total phenols with a content of 36,7 mg KA/g DW, while La Sentiu de Sio presented the highest antioxidant activity (116,7 mg TR/g DW). The highest Ferric reducing antioxidant power was found in Guixers with 138,2 mg TR/g DW

Figure II: Boxplot graphs of the DPPH, total phenols and FRAP of the seven populations of *Salvia lavandulifolia*.



CONCLUSIONS

The study showed a big variability in polyphenols content and antioxidants present in Spanish sage, then this plant species could be used for breeding of highly antioxidative populations or individual plants. Guixers showed the highest amount of polyphenols and could be selected by their antioxidant properties.

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