INSTITUTO TECNOLÓGICO AGRARIO
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UVa PALENCIA

Antioxidant activity of *Lavandula latifolia*, *Salvia lavandulifolia* and *Thymus mastichina* collected in Spain

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INTRODUCTION

Most of antioxidants used by industry are synthetic; however, it might be highly desirable to find out natural compounds with antioxidant activity. Aromatic plants help to improve organoleptic qualities of food products and also contribute to their preservation. Owing to this, the antioxidant activity of some populations of *Lavandula latifolia (Ll)*, *Salvia lavandulifolia (Sl)* and *Thymus mastichina (Tm)* have been evaluated.

MATERIAL AND METHODS

Ten populations of *Tm* and 12 of each *Sl* and *Ll* have been collected at flowering stage during the summer of 2.009 around Castilla y León (the Central Region of Spain) (Table 1). The vegetal material was dried in dark and room temperature conditions before hydrodistillation. Dry plant material and dry residues after hydrodistillation were used for analysis. Total phenol content and antioxidant activity were determined. Two methods have been used to determine the antioxidant activity: 1) Free-radical scavenging (DPPH) (Oliveira et al. 2008), and 2) Reducing power assay (Berker et al 2007).

RESULTS AND DISCUSSION

The three species showed higher phenol content, scavenging effect and reducing power in the whole plant than in the hydrodistilled residue (Figures 1 to 3), showing that a considerable portion of antioxidants was retained in the remaining hydrodistillation-aqueus water and the essential oil.

Tm is the species with the higher essential oil yield, total phenol content, scavenging effect on DPPH and reducing power (Figures 1 to 3) when we refers to dry plant material. In the case of hydrodistilled dry material, there were no differences between *Tm* and *Sl*, both species had higher phenolic compounds content and antioxidant activity than *Ll*. Nevertheless, when comparing these results with the one reported by Bentes et al. (2009) from a Portuguese *T. mastichina* population, the Spanish samples seem to have lower antioxidant activity.

Results shown that there was high variability among samples, which means that it would be possible to select populations with a high antioxidant activity, in the three studied species. Although there have been variability among the populations and selection would be possible, *Tm* is postulated as the most interesting species from an antioxidant activity point of view.

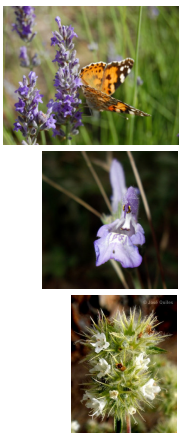

Figure 1. Total phenol content of dry plant material and dry residues after hydrodistillation from *Lavandula latifolia (Ll)*, *Salvia lavandulifolia (Sl)*, and *Thymus mastichina (Tm)* populations collected in Spain in 2.009.

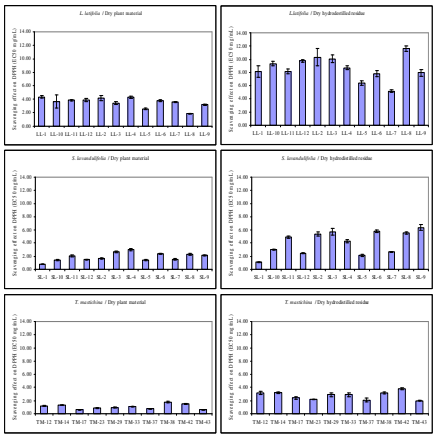

Figure 2. Scavenging effect on DPPH (EC_{50}) of dry plant material and dry residues after hydrodistillation from *Lavandula latifolia (Ll)*, *Salvia lavandulifolia (Sl)*, and *Thymus mastichina (Tm)* populations collected in Spain in 2.009. EC_{50} values of scavenging effect on DPPH represent the sample concentration that led to 50% inhibition. Thus, the higher EC_{50} values give us the lower antioxidant activity.

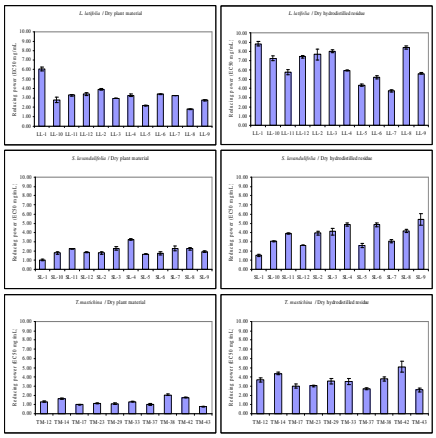

Figure 3. Reducing power (EC_{50}) of dry plant material and dry residues after hydrodistillation from *Lavandula latifolia (Ll)*, *Salvia lavandulifolia (Sl)*, and *Thymus mastichina (Tm)* populations collected in Spain in 2.009. EC_{50} values of reducing power correspond to the extract concentration that provide 0.5 of absorbance.

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