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EFFECT OF DRYING ON THE PHENOLIC COMPOSITION AND ANTIOXIDANT ACTIVITY OF LEAVES OF THE THISTLE (*C. CARDUNCULUS* L.)

FERNANDO J. GONÇALVES^{1,2}, RUI BARBOSA¹, PAULO BARRACOSA¹, RAQUEL P. F. GUINÉ^{1,2}

¹ Dep. Indústrias Alimentares – Escola superior Agrária de Viseu, Viseu, Portugal.

² CI&DETS – Instituto Politécnico de Viseu, Viseu, Portugal.

goncalves7ster@gmail.com

In Portugal, the flowers of *Cynara cardunculus* L. are traditionally used for the production of cheese “Serra da Estrela”, because they are responsible for the phenomenon of the coagulation of milk (Valentao et al., 2002). The leaves may be used in diet as teas, soups, stews or salads. The phenolic compounds, such as phenolic acids and flavonoids, have been associated to their potential health benefits (Fратиanni et al., 2007; Lattanzio et al., 2009)

The objective of this work was to evaluate the effect of drying process on the phenolic composition and antioxidant activity of the leaves of three ecotypes of thistle (*C. Cardunculus* L.) from the region of Viseu, Portugal. For that, the leaves were analyzed after lyophilization and oven drying at two temperatures (50°C and 70°C). After each treatment two successive extractions with methanol and acetone solution (60% v/v) were carried out. The extracts obtained were then used to quantify the total phenols and the antioxidant activity (DPPH and FRAP assays).

The amount of phenolic compounds present in the sample lyophilized was 82.5 mg GAE/g dry mater, in the sample dried at 50°C was 22.1 mg GAE/g dry mater, and the sample dried at 70°C was 8.1 mg GAE/g dry mater. For both, DPPH and Frap assays, a similar behavior of antioxidant activity was observed. Regarding the DPPH assay, The lyophilized sample displayed the highest value (262.3 µmol TE/g dry matter) antioxidant capacity, followed by the sample dried at 50°C (94.2 µmol TE/g dry matter) and at 70°C (9.7 µmol TE/g dry matter). When quantified by the FRAP assay, the value of antioxidant activity for samples dried at 50 and 70°C was respectively 58% and 88% lower than the value obtained for lyophilized sample.

No significant difference was possible to observe between different ecotypes in relation to their phenolic and antioxidant composition. The oven drying processes significantly reduced the amount of phenolic compounds and antioxidant activity of thistle leaves, in particular for 70°C of temperature.

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Lattanzio, V., Kroon, P. A., Linsalata, V., Cardinali, A. (2009). Globe artichoke: A functional food and source of nutraceutical ingredients. *J. of Functional Foods*, 1, 131–144.

Valentao, P., Fernandes, E., Carvalho, F., Andrade, P.B., Seabra, R.M., Bastos, M.L. (2002) Antioxidatives properties of cardoon (*Cynara cardunculus* L.) infusion against superoxide radical, hydroxyl radical, and hypochlorous acid. *J. Agric. Food Chem.*, 50, 4989–4993.