

# 11º Encontro de Química dos Alimentos

Qualidade dos alimentos:  
novos desafios

Resumos

Bragança, 2012  
16-19 Setembro



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# **11º Encontro de Química dos Alimentos**

**Qualidade dos Alimentos: novos desafios**

## **Livro de Resumos**

**Sociedade Portuguesa de Química**

**Divisão de Química Alimentar**

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**Título**

**11º Encontro de Química dos Alimentos**

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**Edição**

Instituto Politécnico de Bragança

**Impressão**

Artegráfica Brigantina, Bragança

**Design da capa**

Atilano Suarez – Serviços de Imagem, Instituto Politécnico de Bragança

**Tiragem**

285 exemplares

**ISBN**

978-972-745-132-6

**Depósito Legal:**

347902/12

**Setembro de 2012**

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Esta publicação reúne os resumos das comunicações apresentadas no 11º Encontro de Química dos Alimentos. Todas as comunicações orais e em painel foram avaliadas pela Comissão Científica do Encontro.

## Antioxidant activities of plants enriched in rosmarinic acid

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Lamiaceae plants have been consumed by centuries due to their health benefits, however, the exact composition, as well as the mechanism of action underlying their bioactivities remain, in most cases, unclear [1]. The main aim of this study was to evaluate the *in vitro* antioxidant potential of *Lavandula dentata* and *Mentha aquatica* plant extracts.

For that, ethanolic extracts of the plants were prepared and their phenolic composition was determined through combined methods of HPLC-DAD and ESI-MS. Moreover, the antioxidant activity of the two plant extracts was assayed by two methods: i) by means of DPPH scavenging potential and ii) by evaluation of their protective effects against the generation of reactive oxygen species (ROS) induced by potassium dichromate in human hepatoblastoma HepG2 cells, measured by flow cytometry using dichlorofluorescein diacetate.

*M. aquatica* ethanolic extract was much enriched in phenolic compounds (total amount of  $261.8 \pm 21.8$  GAE mg/g of extract), compared to *L. dentata* ( $174.72 \pm 6.89$  GAE mg/g of extract). Both extracts contained rosmarinic acid ( $67.8 \pm 6.7$  and  $64.2 \pm 8.8$  mg/g of *L. dentata* and *M. aquatica*, respectively), but *M. aquatica* also contained significant amounts of other phenolics, including eriodictyol-7-O-rutinoside and luteolin-7-O-rutinoside. The concentrations of *L. dentata* and *M. aquatica* extracts able to decrease to 50% of DPPH absorbance (EC<sub>50</sub>) were  $11.6 \pm 1.1$  and  $9.5 \pm 2.0$  µg/mL, respectively. The exposure of HepG2 cells to the non-toxic concentration 50 µg/mL of *L. dentata* and *M. aquatica* extracts resulted in a decreased rate of ROS production under oxidative stress conditions. This protection was approximately 15% and 20%, induced by 5 and 25 µM of potassium dichromate, mostly in *L. dentata* extract. ROS production protection (of about 50%) was also observed in parallel assays performed with rosmarinic acid (50 µg/mL).

Attending that rosmarinic acid is a major phenolic component of *L. dentata* and *M. aquatica* ethanolic extracts, the present results suggest that this phenolic compound can be involved in the antioxidant properties of both plants.

### Acknowledgements:

The authors acknowledge the financial support provided by the FCT to CERNAS (project PEst-OE/AGR/UI0681/2011). Olívia R. Pereira was supported by a PhD grant (SFRH/PROTEC/49600/2009).

### References:

[1] K Triantaphyllou *et al*, Int J Food Sci Nutr, 2001, 52, 313-317