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47th Annual Scientific Meeting of the European  
Society for Clinical Investigation



Albufeira, Portugal  
**17–20 April 2013**

ABSTRACT BOOK

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# European Journal of Clinical Investigation

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**Materials and methods:** The *Eriocephalus africanus* leaves extract was prepared with an aqueous ethanolic solution (80%, v:v) and its total phenolic content was estimated by the Folin-Ciocalteu method. The antioxidant abilities of the ethanolic extract was evaluated through the *in vitro* measurement of its DPPH radical scavenging potential, its reducing power and of its lipid peroxidation inhibition capacity, as evaluated by thiobarbituric acid-reactive substances. Identification of the main compounds in the extract was accomplished by ESI-MS and MS<sup>n</sup> analysis, upon fractionation by reversed-phase HPLC.

**Results:** The total amount of phenolic compounds accounted for  $232.8 \pm 20.1 \mu\text{g g}^{-1}$  of the *Eriocephalus africanus* ethanolic extract. The extract exhibited high antioxidant capacity, with EC<sub>50</sub> values of  $9.1 \pm 1.2 \mu\text{g mL}^{-1}$ ,  $0.045 \pm 0.004 \text{ mg mL}^{-1}$  and  $0.74 \pm 0.04 \text{ mg mL}^{-1}$  for the DPPH, reducing power and lipid peroxidation assays, respectively. Data also allowed to conclude that the *Eriocephalus africanus* ethanolic extract contained a mixture of compounds which included the polyalcohol quinic acid, cyclopentyl-derivatives fatty acids and several phenolic compounds. From the latter, one should highlight the presence of caffeic acid derivatives, and flavonoids e.g. eriodictyol-O-glucuronide and apigenin-O-glucuronide.

**Conclusions:** The present results suggest that *Eriocephalus africanus* can be used as a potential source of antioxidant compounds.

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### 3.20

#### Antioxidant activities of five lamiaceae plants

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**Background:** In the last decades, oxidative stress has been recognized as a key process in the physiopathology of several diseases. Consequently, the search for new antioxidant compounds, as well as new antioxidant sources, has increased exponentially. The Lamiaceae family encloses many plant species which are potential sources of antioxidant compounds. The present study evaluates the antioxidant activity of phenolic enriched extracts of *Laminium album*, *Leonurus cardiaca*, *Lavandula dentata*, *Mentha aquatica* and *Thymus citriodorus*.

**Materials and methods:** The antioxidant activity of the hydroethanolic plant extracts was estimated by the *in vitro* measurement of their 2,2-diphenyl-1-picrylhydrazyl radical (DPPH) scavenging potential and reducing power assays. Additionally, the protective effects of the extracts against the potassium dichromate (DK)-induced generation of reactive oxygen species (ROS) in human hepatoblastoma HepG2 cells were measured by flow cytometry, after a 48 h treatment period.

**Results:** The two chemical assays indicated that the extracts possess high antioxidant activity with the order of potency *M. aquatica* > *L. album* > *L. dentata* > *T. citriodorus* > *L. cardiaca*. EC<sub>50</sub> values ranged from 8.1 to 18.3  $\mu\text{g mL}^{-1}$ , and from 51.9 to 94.7  $\mu\text{g mL}^{-1}$  for DPPH scavenging and reducing power assays, respectively. Moreover, with the exception of *L. cardiaca*, at 50  $\mu\text{g mL}^{-1}$ , all the extracts induced an effective protection against the DK-induced generation of ROS in HepG2 cells. This

protection was approximately 20% and 30%, for DK exposure at 5 and 25  $\mu\text{M}$ , respectively.

**Conclusions:** The present data suggest that the herein studied plants can be applied as antioxidant agents.

**Acknowledgements:** FCT (project PEst-OE/AGR/UI0681/2011) and PROTEC (PhD grant SFRH/PROTEC/49600/2009), Portugal. MCI (Grant SAF2010-15517), ISCIII, FIS (Grant P111/00337) and JCL (Grants SA023A11-2, SA070A11-2 and Biomedicina-2011), Spain.

### 3.21

#### Portuguese propolis enriched phenolic extract: reactive oxygen scavenging and cytoprotective activities

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**Background:** Propolis, a resinous natural product produced by honeybees, is claimed to have a wide range of beneficial activities for human health which have been attributed to its phenolics. In general, phenolics account for approximately half of propolis weight, although its content and composition can greatly vary with propolis geographical origin. This study aims determining the antioxidant and cytoprotective properties of Northeast Portuguese propolis.

**Materials and methods:** The propolis hydroethanolic purified extract (PPE) was obtained by extraction at 70 °C/1 h and recovery onto SPE C<sub>18</sub> cartridges. Total phenolic content and identification of the main phenolics in the PPE were assessed by the Folin Ciocalteu method and by HPLC-DAD analysis, respectively. The reactive oxygen species (ROS) scavenging and cytoprotective properties of PPE were evaluated in dichromate potassium-stimulated (DK) HepG2 cells model. ROS scavenging ability was measured by flow cytometry, after DK incubation for 48 h and cytoprotective activity was estimated by the MTT assay, after DK exposure for 6 or 72 h.

**Results:** The total amount of phenolics in the PPE accounted for  $375.4 \pm 5.8 \text{ mg GAE per gram of extract}$  and this was enriched in chrysin, pinocembrin and pinobanksin-3-O-acetate. Bioactivity assays showed that the PPE decreased the rate of ROS production about 50% and exerted an effective protection against the reduction of cell viability of 9% and 22%, for HepG2 cells exposed to DK for 6 and 72 h, respectively.

**Conclusions:** Overall the results emphasize important activities of PPE that can be related to the high content of phenolic compounds.

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