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Effect of honeybush (*Cyclopia intermedia*) extracts on the oxidative stability and antioxidant activity of olive oil

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Producers are looking for a possibility to create products not only acceptable by sensory properties, but also rich in biological active substances. *Cyclopia intermedia* (honeybush) extracts have been used as an alternative to the use of synthetic antioxidants in order to preserve oils from oxidative degradation. Additionally, these extracts add special flavors and aromas to the food. Thus, the objective of this study was to evaluate the effect of ethanol, methanol and aqueous extracts of honeybush in the oxidative stability of olive oil. Total Phenolic Content (TPC), Trolox Equivalent Antioxidant Capacity (TEAC) in scavenging 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) (ABTS) and Oxygen Radical Absorbance Capacity (ORAC) activities of extracts and solid plant materials were determined. Consecutive extractions with increasing polarity solvents enabled to isolate different amounts of antioxidants. Generally, in case of extracts higher antioxidant capacity values were obtained with acetone. The antioxidant activity showed that highest amount of phenolic compounds (48.50 mg/g) was found in ethanol extract, while the concentration of these compounds in aqueous and methanol extracts was lower (11.32 and 43.8 mg/g respectively). The extracts inhibited oxidation of rape seed oil and its emulsion at 120°C as measured by the oxipres methods. The application of the extracts in the oil showed that all extracts can reduce the formation of oxidation products, but acetone extract was better. The major phytochemicals, namely hesperetin, hesperidin and mangiferin were quantified in *Cyclopia intermedia* extracts by Ultra-Performance Liquid Chromatography Coupled to Electrospray Ionization Quadropole Time of Fight Mass Spectrometry (UPLC-ESI-Q-TOF-MS). The results obtained that extracts are therefore potential sources of natural antioxidants and they would be well accepted by consumers if applied by the food industry to replace synthetic antioxidants.

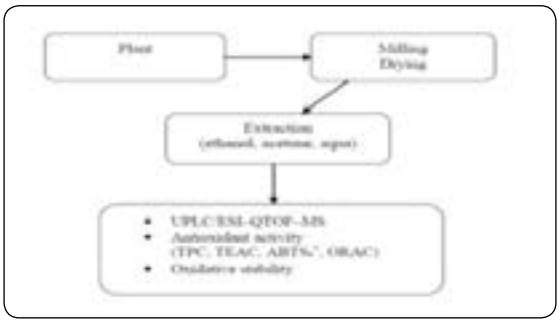

Figure 1. The design of the study

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2. Liutkevičius A, Speičienė V, Alenčikienė G, Mieželiene A, Narkevičius R, Kaminskas A, Abaravičius J A, Vitkus D, Jablonskienė V and Sekmokienė D (2016) Fermented buttermilk-based beverage: impact on young volunteers' health. Czech Journal of Food Sciences (CJFS) 34: 143-148.
3. Šlapkauskaitė J, Sekmokienė D, Kabašinskienė A, Bartkienė E, Juodeikienė G and Šarkinas A (2016) Influence of lactic acid bacteria–fermented *Helianthus tuberosus L.* and *Lupinus luteus* on quality of milk products. CyTa- Journal of Food 14: 482-488.

4. Kabašinskienė A, Liutkevičius A, Sekmokienė D, Zaborskienė G and Šlapkauskaitė J (2015) Evaluation of the physicochemical parameters of functional whey beverages. Food Technology and Biotechnology 53:110-115.
5. Kaminskas A, Abaravičius J A, Liutkevičius A, Jablonskienė V, Valiūnienė J, Bagdonaitė, Andrikonyte V and Sekmokienė D Quality of youghurt enriched by inulin and its influence on human metabolic syndrome. Veterinarija ir Zootechnika 64:23-28.

Biography

Dalia Sekmokiene is a Full Professor in Lithuanian University of Health Sciences, Department of Food Safety and Quality. During her career she was involved in different scientific projects regarding functional food investigations and EU funded projects milk production and processing at small dairy farms.

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