



# 5<sup>th</sup> Apimedica & 4<sup>th</sup> Apiquality Forum of Apimondia

1-5 September 2014

Polat Renaissance Hotel - Erzurum, TURKEY

*Innovative Approaches in Apimedica & Apiquality*



**BİLDİRİ ÖZETLERİ  
ABSTRACTS**

## Determination of total phenolic and flavonoids pollen composition by FTIR-ATR Spectroscopy

Leticia M. Estevinho<sup>2</sup>, Ofélia Anjos<sup>1</sup>, António J. A. Santos<sup>2</sup>, Vanessa Paula<sup>3</sup>, Ana Paula Pereira<sup>3</sup>

<sup>1</sup> Instituto Politécnico de Castelo Branco - Portugal

<sup>2</sup> Instituto Superior de Agronomia - Portugal

<sup>3</sup> Instituto Politécnico de Bragança - Portugal

Bee pollen has a variable composition in proteins, lipids, sugars, fibers, minerals, amino acids, phenolic compounds and vitamins. The ability of FTIR-ATR spectroscopy for predicting total phenolic and flavonoids

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content was studied in bee pollen samples. The total phenolic content of the extracts was determined using the Folin-Ciocalteu method and results were expressed as mg of gallic acid per g of bee pollen (GAE). For flavonoids contents the aluminium chloride method was used and results were expressed as mg of quercetin equivalents per g of bee pollen (CAEs). FTIR-ATR spectra were acquired with a Bruker FTIR spectrometer (Alpha) using a diamond single reflection attenuated total reflectance (ATR) at a spectral resolution of 4 cm<sup>-1</sup> in the wave-length range from 4000 to 400 cm<sup>-1</sup>. Partial least squares regression (PLSR) model was developed for the total phenolic and flavonoids prediction using 100 different bee pollen samples with a variation range of 35.5- 17.6 mg GAE/g of pollen, 5.9-2.2 mg quercetin/g of pollen extract, respectively. Good correlation models of calibration were found for the analysed parameters with the next characteristics: 1) For total phenolic content: pre-processed spectra wave-length (2826-2490 + 2158+1823 cm<sup>-1</sup>) used second derivative pre-processing, root-mean-square error of estimation of 1.17 mg GAE/g of pollen, r<sup>2</sup> of 92.2 % and a RPD of 3.6; 2) For flavonoids: pre-processed spectra wave-length (2858-1470 + 777-430 cm<sup>-1</sup>) used vector normalization pre-processing; root-mean-square error of estimation of 0.418 mg quercetin/g of pollen, r<sup>2</sup> of 81.8 % and a RPD of 2.3.