Planta Med 2015; 81 - PM_214
DOI: 10.1055/s-0035-1565591

Polyphenol content and free radical scavenging activity of bee pollen collected in Castelo Branco, Portugal

O Anjos [1,2], J Fernandes [1], MG Campos [3], P Russo-Almeida [4], A Gramza-Michałowska [5], J Skrety [5]

- [1]Instituto Politécnico de Castelo Branco, 6001 – 909, Castelo Branco, Portugal
- [2]Centro de Estudos Florestais, Instituto Superior de Agronomia, Universidade de Lisboa, Tapada da Ajuda, 1349 – 017 Lisboa, Portugal
- [3]Chemistry Center of Faculty of Sciences and Technology and Drug Discovery Group (Centre for Pharmaceutical Studies) Faculty of Pharmacy, University of Coimbra, Health Sciences Campus, Azinhaga de Santa Comba, 3000 – 548 Coimbra, Portugal
- [4]Universidade de Trás-os-Montes e Alto Douro, Laboratório Apícola da UTAD, Departamento de Zootecnia, 5000 – 801 Vila Real, Portugal
- [5]Department of Food Service and Catering, Faculty of Food Science and Nutrition, Poznan University of Life Sciences, Wojska Polskiego 31, 60 – 624 Poznan, Poland

- Congress Abstract

Bee pollen is a health food with nutritional and therapeutic properties. The aim of this work was to evaluate free radical scavenging activity (FRSA) in selected samples obtained from local beekeepers in Castelo Branco (Portugal). The identification of the floral origin was performed using acetolysis method.

Each sample of bee pollen (0.10 ± 0.01 g) was extracted with methanol, ethanol and water [1, 2] to evaluate which solution provided the best extract. All the experiments were analysed in quadruplicate. The total polyphenol content of bee pollen was analysed by spectrophotometry at 725nm using the Folin-Ciocalteu reagent with ferulic acid as a standard. FRSA was evaluated according to the $DPPH^{\cdot}$ and $ABTS^{\cdot+}$ methods.

In relation to the content of total polyphenols, the FRSA values varied considerably. Different floral species present species-specific activity [1] but these are dependent on the analytical method and the extraction solvent. On average, the highest polyphenol content was observed in methanol bee pollen extracts with the exception of the mixture B and the *Echium* sp. pollen (Table 1). For the total FRSA with DPPH and ABTS methods, ethanol pollen extracts show higher activity with the exception of *Trifolium* spp. where the aqueous extract gives the higher result (Table 1). Mixture B and C ethanolic extracts give the best FRSA values.

The ANOVA shows for the three methods that there are significant differences between solvent extracts and protocols, however the variation between the solvent extracts is similar in the different procedures.

Tab. 1: Polyphenol content and free radical scavenging activity of pollen extracts in different solvents

References:

[1] Campos MG, Webby RF, Markham K R, Mitchell KA, Cunha AP. Age-induced diminution of free radical scavenging capacity in bee-pollens and the contribution of constituent flavonoids. J Agric Food Chem 2003; 51: 742 – 745

[2] Pérez-Pérez EM, Vit P, Rivas E, Sciortino R, Sosa A, Tejada D, Rodríguez-Malaver AJ. Antioxidant activity of four color fractions of bee pollen from Mérida, Venezuela. Arch Latinoam Nutr 2012; 62: 375 – 380