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HPLC- MS Flavonoid determination and antioxidant capacity of Brazilian dehydrated bee-pollen

A.A.M. De-Melo¹, M.L.M.F. Estevinho², M.M. Moreira³, C. Delerue-Matos³, L.B. Almeida-Muradian^{*1}

¹University of Sao Paulo, Brazil, ²Polytechnic Institute of Bragança, Portugal, ³Instituto Superior de Engenharia do Instituto Politécnico do Porto, Portugal

Bee-pollen, produced by *Apis mellifera* bees, is an important source of proteins, lipids, vitamins and minerals for the hive, being considered one of nature's most completely nourishing foods. Its composition may vary according to the geographical region and its quality is influenced by harvest method and processing conditions. Although it has good nutritional components, bee-pollen contains significant amounts of polyphenols with recognized health benefits, including antioxidant activity. The present study aimed to evaluate the flavonoid composition, using HPLC-MS technique; and the antioxidant activity, using two different methods (DPPH and ORAC), of eight dehydrated bee-pollen samples collected in different Brazilian apiaries. The sample with the highest antioxidant capacity using DPPH method was produced in Rio Grande do Sul State (110.85 μ mol TE/g) while the sample with the least antioxidant capacity was collected in Bahia State (9.97 μ mol TE/g). The same sample from Rio Grande do Sul State presented the highest antioxidant capacity using ORAC method (542.00 μ mol TE/g), while the lowest value was observed in a sample from Mato Grosso State (133.70 μ mol TE/g). The flavonoid analysis using HPLC-MS revealed the following variations: catechin (0.69 to 0.75 mg/100 g); naringenine (4.57 to 18.36 mg/100 g); rutin (3.36 to 46.80 mg/100 g); quercetin (1.86 to 67.91 mg/100 g) and kaempferol (5.50 to 44.97 mg/100 g). In the sample with the highest antioxidant capacity (Rio Grande do Sul State) was observed 40 peaks in the HPLC-MS, while the samples with the lowest antioxidant capacities the number of peaks were 25 (Mato Grosso State) and 22 (Bahia State); therefore, the variety of compounds may have influenced the antioxidant capacity of the samples.

Keywords: HPLC- MS, Flavonoid, Antioxidant, Bee-pollen