

PP77: Diversity in the composition of the Hungarian propolis - Evaluation of the polyphenolic components, total phenolic content and antioxidant activity of a large sample array from different regions of the country

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Propolis is a bee product that has been extensively used in alternative medicine and has recently gained interest on a global scale as an essential ingredient of healthy foods and cosmetics. Propolis is also considered to improve human health and to prevent diseases such as inflammation, heart disease, diabetes and even cancer. However, the claimed effects are anticipated to be correlated to its chemical composition. Since propolis is a natural product, its composition is consequently expected to be variable depending on the local flora alignment.

The present study reports about a comparative survey on the chemical composition and in vitro antioxidant activity of selected propolis samples collected in Hungary. The major constituents of ethanolic extracts of propolis were analysed by gas chromatography/mass spectrometry analysis. The total phenolic content of the extracts was determined via Folin-Ciocalteu assay. Radical scavenging properties were evaluated by means of 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay and a photochemiluminescence (PCL) assay specialized to superoxide radical anion. The major polyphenolic components were found to be caffeic acid (4.33-26.85 mg/g in raw propolis), p-coumaric acid (8.45-29.40 mg/g in raw propolis) and ferulic acid (8.22-26.09 mg/g in raw propolis). However, a variety of minor components were also detected (e.g.: cinnamic acid, emodin). The total polyphenol content of propolis ranged between 30.2 - 443.5 mg/g gallic acid equivalent. The scavenging activity (EC50) of ethanolic extracts against DPPH radical varied between 66.52 - 1190.9 EC50 mg/L. The radical scavenging capacity of propolis ranged between 337.1 – 13 698.7 mg TE/g.

As the quality of propolis depends on the combination of such effects as the season, vegetation and the area of collection, marked differences were found among the different products examined in terms of both composition and general characteristics.

Thus an extensive comparison was carried out regarding general parameters and specific polyphenolic components. The experimental data led to the finding that there is considerable variability in terms of the quality and the biological value of the distinctive propolis samples. These findings confirm the hypothesis of the study namely that versatile experimental results are required for proper, well-reasoned, balanced and standardised industrial applications.

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