



Determination of Phenolic Acids in Raw Propolis Using Near Infrared Spectroscopy

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Abstract

The objective of this study is the assessment of the viability of using Near-Infrared Spectroscopy (NIR) technology to determine the phenolic composition in propolis samples. The chemical composition and the floral origin of propolis are closely related, samples from different geographic and climatic areas varies greatly depending on the local flora and site of collection¹. The identification and quantification of the phenolic compounds is therefore of great interest as they may affect its biological activities and consequently its clinical properties. HPLC is the most frequently used technique for the characterisation of phenolic compounds². (NIR) is known for being a multiparametric, rapid, and non destructive technique. It has been used to determine the phenolic composition in different extracts³. The most determinant aspect of this methodology is that it could be developed and applied to any type of raw propolis of varying origins, grinding up the samples without destroying the propolis. The HPLC method was applied to the analysis of phenolic acids in 50 propolis extracts. It was possible to identify and quantify 6 phenolic acids: caffeic acid, p-coumaric acid, cinnamic acid, ferulic acid, Isoferulic acid and 3,4 dimethyl-caffeic acid (DMCA). The results show that we can use the NIR methodology to determine caffeic acid, cinnamic acid, ferulic acid, isoferulic acid and 3,4 dimethyl-caffeic acid (DMCA) with values comparable to those obtained by HPLC.

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