EFECTS OF THE SAZONALITY AND METHOD OF COLLECTION ON THE PRODUCTION OF PROPOLIS ESSENTIAL OIL

EFEITO DA SAZONALIDADE E MÉTODO DE COLETA NA PRODUÇÃO DE ÓLEO ESSENCIAL DE PRÓPOLIS

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Studies on essential oils of Brazilian propolis indicated the existence of significant differences in their qualitative composition. These differences may be influenced by the seasons and the production method. This work aims to evaluate the composition of essential oil from propolis produced in different seasons and collection method (shim, smart propolis collector and plastic screen) on propolis collected by bees *Apis mellifera*. Fifteen hives of africanized bees *Apis mellifera*, housed in standard Langstroth hives, were randomly distributed and managed for the exclusively production of propolis. Before the beginning of the experiment, the nests were standardized as to the number of frames and creates. Five bee hives were randomly selected for each method of propolis production in the following treatments: T1- smart propolis collector (SPC); T2- plastic screen and T3- shim. The propolis were collected monthly in each treatment, and were cleaned, mixed and stored until the moment of the analysis of extraction of essential oil. Essential oil extraction was performed by hydrodistillation using Clevenger apparatus in a period of six hours. The oil extracted was split into aliquots and stored at 4-6°C, and was subjected to chemical analysis by means of mass spectrometer coupled to a gas chromatograph (GC-MS), SHIMAZU brand, model QP5050A. The identifications of substances were made based on the interpretation of mass spectra, with the aid of the NIST library, by calculated values of retention Index and data from the literature. Thirteen volatile compounds were identified in the propolis samples studied. All samples of essential oils presented alcohols, aldehydes and ketones, sesquiterpenics hydrocarbons, aliphatic hydrocarbons and benzyl benzoate, which were dependent on the season and method of collecting used. 2,3 butanodial compounds, 1,3 Butanediol were observed in all samples of essential oils analyzed, regardless of the season and method of harvest. The nerolidol and espathulenol compounds were also identified in almost all samples with the exception of the spring sample using the technique of SPC. The decanal was found only in the summer season using the technique of SPC and autumn using shim technique. Sesquiterpenics hydrocarbons – copaene, cadineno and E-caryophyllene - were found. It was observed the presence of the compounds nonadecane and tricosano in all essential oil samples analyzed, regardless of the season and method of harvest. Benzyl benzoate was found in greater concentration in the season of the summer with the collector shim. The results in this current study suggest that depending on the time of year the bees could collect the resin of different plant sources, which would explain the differences. Propolis samples presented variations in the composition of its volatile fraction, which suffered interference of the season and method of collecting.

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