

Characterization of eucalyptus and citrus monofloral honey in São Paulo State by Thermoanalysis

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This work presents the optimization and development of analytical methodologies for evaluation of glass transition temperature (T_g) by DSC and for moisture and ash content determinations by TG/DTG of honey samples. Beyond this, a study of variability in these physicochemical parameters determined by conventional methods was realized for eucalyptus and citrus monofloral honeys of some regions of São Paulo State.

For the thermogravimetric evaluation of honey samples, initially a study of thermal behavior of standard of carbohydrates was carried out by TG/DTG, DSC and DTA. The results obtained allowed to distinguish the decomposition steps corresponding to the sugars in relation to other components present in honey. The variabilities in average moisture and ash contents of eucalyptus and citrus monofloral honeys were investigated by a hierarchical design and by an analysis of variance (ANOVA). These physicochemical parameters are significantly different at the 95% confidence level.

For the development and optimization of analytical methodologies for moisture and ash contents in honey by TG/

DTG conventional methods, experimental designs and a F-test for the comparison between variances were utilized. The results suggest that to get average moisture and ash contents in honey by TG/DTG similar to those found by conventional methods an alumine crucible (150 μ L), heating rates of 5°C/min and microfiber glass paper should be used. Besides this, the comparison between the thermogravimetric method and the conventional ones for these determinations suggest that there are no significant differences between the methods investigated.

For eucalyptus and citrus monofloral honeys average glass transition temperatures of -47 and -55°C, respectively, were determined suggesting a significant difference in this physical property for these honey types. Besides this, a significant negative linear correlation at 95% confidence level ($r = -0.916$) was verified between the moisture contents and glass transition temperatures of these honey types. So, it may be said that the physicochemical parameters, moisture and ash, obtained by conventional and thermogravimetric methods and the glass transition temperature determined by DSC can be utilized for the characterization of the floral origin of these types of honey.

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e-mail: mlfelsner@yahoo.com.br