



THERMAL BEHAVIOR AND AGING KINETICS OF SOME ALGERIAN HONEYS

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Introduction & Objectives:

Today the beekeeper strives to obtain from his bees a quality product in sufficient quantity to meet consumer demand, despite the trend towards the weakening and mortality of bee colonies in the world. However, the honey extraction steps are complex and likely to alter it through human activities. And for technological reasons, honey can also be subjected to heat treatments for various purposes: reduction of viscosity and dissolution of large crystals which leads to its degradation. This is why it seems important to allow us to evaluate the effects of heating the three honeys, *Eucalyptus*, *Ziziphus* and *Euphorbia* on the main quality parameters HMF and the Browning index after having been characterized (physicochemistry and confirmation of botanical origin).

Methodology (Material and methods):

Three honey types (*Ziziphus*, *Euphorbia* and *Eucalyptus*) of two regions were analyzed to determine their quality and sensitivity to heat. Control analysis focused on Moisture, pH and Free Acidity, Electrical Conductivity, HMF, Specific Rotator Power, Browning Index and Pollen Analysis. The general quality is evaluated with reference to the International Honey Commission [4]. The isothermal treatment was conducted at 50, 60, 70, 80, 90 and 100°C, and the rate of HMF and Brown Index were determined.

Results and Discussion:

The pollen analysis allowed us to confirm the botanical origin of the honeys studied.

The physical-chemical analyzes of the honeys meet the recommended international standards. A significant increase in HMF and Brown Index was observed with prolongation of heat treatment time and temperature, found activation energies of the order of 13.777 and 21.073 kcal/mol, respectively, for *Ziziphus* honey which has better resistance to heat compared to other samples.

Conclusion:

At the end of this part on the heat treatment of honeys, it appears clearly that the temperatures of 50 and 60°C are good for the treatment in the case of the liquefaction of honeys because they do not cause significant changes in the physical-Chemicals quality of honey. On the other hand, treatments carried out beyond and up to 70°C (pasteurization) should take certain precautions knowing that we will inevitably lose the life of the product.

Keywords: Honey, HMF, Brown Index, Heating.

