

***APPLICABILITY OF RAPID MEASUREMENT TECHNIQUES TO DETECT
MINIMAL HEAT TREATMENT OF HONEY***

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Abstract

Honey has been widely used since the ancient times. Recently due to its high nutritional value and price it has become the target of adulteration. Heating honey is a common practice of some beekeepers and distributors to eliminate unwanted crystals. However, during heating chemical composition of honey changes. Natural antioxidants and enzymes are reportedly decreased, while undesired compounds like hidroxyethyl-furfural (HMF) are formed.

In our research, the effect of heat treatment was studied on different chemical, physical and sensory properties of linden, acacia, sunflower, and multiflora honeys. Three temperature levels: 40°C, 50°C, 60°C, and three time periods: 30, 60, 120 minutes, were applied for the heat treatment. For tracking the changes, HMF, antioxidant power, colour measurement (CIE L*a*b*), near infrared spectroscopy (NIRS) and electronic tongue (ET) methods were used.

Results showed that both duration and temperature level had significant effect on measured parameters. For color (L*, a*), significant differences were found between control and heated honeys. NIRS and ET measurements were more sensitive to the changes. Principal Component Analysis (PCA) and Discriminant Analysis (DA) showed separation of heated honeys from the control, except acacia honeys.

The rapid methods applied proved to be efficient tools in heat treatment investigation of honeys.