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## COMPARISON OF SENSORY AND INSTRUMENTAL METHODS IN DETERMINATION OF HONEY COLOR

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Honey color is the first quality attribute evaluated by consumers and an important sensory characteristic in the beekeeping market. Also, it is one of parameters which can indicate botanic origin and the quality of honey. In order to determine honey color several instrumental and sensory methods can be used. Furthermore, finding connection between data obtained by these two methodologies could help in understanding and interpretation of instrumentally obtained data about key sensory characteristic of products.

In this paper, comparison of two used methodologies for honey color determination is presented. Honey samples (n = 57) were collected on the mountain Rtanj during two seasons 2018/2019. Analysis of the samples included sensory analysis, performed with trained sensory panelists (n = 10, six female and four male) and instrumental analysis, performed by using a colorimeter Konica Minolta CR400 (Konica Minolta Co., Osaka, Japan). In the sensory analysis, the color was directly estimated visually by using the Pfund diagram, which represent relative lightness/darkness of amber on a scale in millimeters. In the instrumental analysis, measured color was expressed in terms of L\* (brightness/darkness), a\* (redness/greenness), b\* (yellowness/blueness), C\* (chroma/saturation) and h (hue angle) according to CIELab system of colors. In order to compare data obtained by these two methodologies, instrumentally measured data were converted into Pfund scale as well, by using equation  $mmPfund = -0.631L^* + 0.840C^* - 1.026h + 155.89$ . The measurements were performed in triplicate. Statistical analysis of the instrumentally obtained data was performed by using XLSTAT software and analysis of variance (ANOVA) at the level of  $p < 0.05$ . Tukey's HSD test followed ANOVA in order to investigate significance of difference between samples.

Results obtained from the trained sensory panel showed that honey color ranges from "water white" to "amber", while instrumental data ranges from "light amber" to "dark amber". Most of the results obtained from sensory analysis were found in extra light amber area (59.6%), followed by light amber (19.3%), white (15.8%), water white (3.5%) and amber (1.8%). In the case of instrumental analysis, highest number of samples were light amber (50.9%), followed by amber (43.8%) and dark amber (5.3%). According to the obtained results we can assume that the sensory analysis was more selective since the samples were classified in more color areas. Further analysis must be performed in order to better understand correlation between these two approaches.

**Keywords:** honey, color, instrumental method, sensory evaluation

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