

SENSORY ANALYSIS AND AFFECTIVE TESTS IN ASSESSMENT OF HONEY

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Introduction

To determine the botanical and geographical origin of honey, a lot of attention and effort has recently been paid to replace pollen analysis with other identification parameters using a combination of analytical techniques and statistical tools. Physicochemical parameters, volatile compounds, mineral and flavonoid profiles, DNA methodology, and biomarkers are some of the parameters investigated for this purpose (De Alda-Garcilope et al., 2012). Sensory evaluation allows distinguishing of the botanical origin of honey and identification and quantification of certain defects, and also plays an important role in investigation of consumer preferences or aversions (Piana et al., 2004). Consumers in many countries have positive preference for local origin of honey (Batt and Liu, 2010; Gyau et al., 2014; Cosmina et al., 2016; Šánová et al., 2016; Nabwire Juma et al., 2016; Kopala et al., 2019; Lymperi and Fragkaki, 2020; Oravecz et al. 2020), and some studies shows that they prefer to buy honey directly from the local producers (Árváné Ványi et al., 2009; Oravecz et al. 2020; Brščić et al., 2017; Kopala et al., 2019; Lymperi and Fragkaki, 2020). In this study, comparative sensory analyses in assessment of honey were used.

Materials and methods

Samples of different honey types (honeydew-H, acacia-A, linden-L, floral-F and sage-S), collected directly from the local producers (H-P, A-P, L-P, F-P, S-P) and also in retail chains (H-R, A-R, L-R, F-R, S-R) were sensory evaluated by consumers (N = 70) and expert sensory analysts (N = 5). Consumer preference for honey samples obtained directly from the local producers and honey samples purchased in retail chains was assessed by consumers (N = 70) by affective tests which included an acceptance test using a 9-point hedonic scale and paired preference test. The 9-point hedonic scale including 9 liking degrees (points) - from "dislike extremely" (1) to "like extremely" (9) was used in assessment of colour, appearance, odour, taste, and overall impression of the honey samples (Meilgaard et al., 2016). The preference test was used in assessment of preference of honey samples in pairs (honey collected directly from the local producers and honey collected in retail chains) (ISO 5495, 2005). Honey samples were also sensory evaluated by expert sensory analysts (N = 5), with scores from 1 to 5 for absence of defects, physical state and colour, and scores from 0 to 5 for sensory attributes of odour and taste (HPS, 2010).

Results and discussion

The results of the assessment of consumer preferences (N = 70) for honey samples obtained directly from the local producers and honey samples purchased in retail chains, assessed by the acceptance test using a 9-point hedonic scale (Figure 1), show that the highest liking degrees (points) were achieved by sage honey from the retail chain (S-R) for sensory attributes of colour and appearance and honeydew honey from the retail chain (H-R) for sensory attributes of odour, taste and overall impression. The lowest liking degrees (points) were achieved by floral honey obtained directly from the local producer (A-P) for the sensory attributes of colour, appearance, odour, taste and overall impression.

The results of the assessment of consumer preference (N = 70) for honey samples purchased directly from the local producers and honey samples purchased in retail chains, assessed by preference test (Figure 2), show that consumers in the case of honeydew honey, floral and sage honey prefer samples purchased in retail chains, while in the case of acacia and linden honey, consumers prefer honey purchased directly from the local producer. Sensory analysis of honey samples purchased directly from the local producers and honey samples purchased in retail chains, performed by expert sensory analysts (N = 5) (Figure 3), indicates that the highest score for absence of defects was achieved by honeydew honey purchased directly from the local producer (H-P), acacia honey from the retail chain (A-R) and linden honey obtained directly from the local producer (L-P). Honeydew honey purchased directly from the local producer (H-P) also has the highest scores for odour, taste and colour, and acacia honey from the retail chain (A-R) achieved the highest score for physical state. Sensory analysts gave the lowest scores for absence of defects and physical state to linden honey purchased from the retail chain (L-R), and for the colour to acacia honey from the retail chain (A-R). Sage honey from the retail chain and sage honey purchased directly from the local producer (S-R and S-P) were scored with the lowest scores in terms of odour and taste.

Conclusions

Sage honey and honeydew honey from the retail chains are more preferred over the same types of honey purchased directly from the local producers. Floral honey purchased directly from the local producer achieved the lowest liking degrees by consumers and is less preferred compared to floral honey purchased in retail chains. Unlike consumers, expert sensory analysts give the highest scores for most sensory attributes to honey samples purchased directly from the local producers, especially in the case of honeydew honey and linden honey. Among the honey samples purchased in retail chains, high scores were achieved only by acacia honey.

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