

CARBOHYDRATE PROFILE IN HONEY WITH DIFFERENT PROVENANCES

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Honey is mainly composed of carbohydrates, comprising about 95% of its dry weight along with a great number of other minor components¹. Fructose and glucose are the main carbohydrates in honey, however many different oligosaccharides have been detected in the composition of honey¹. Different carbohydrates as well as their concentration in honey depend on the nectar collected by the bees from the flowers and the regional climatic conditions.

For this study 34 honey samples were used, 11 from Portugal, 12 from Morocco and 11 from Spain.

The aim of this study is to compare the sugar profile of honey produced in three different regions. All samples from Portugal and Morocco were directly purchased from beekeepers. Samples from Spain were acquired in a beekeeper products market.

The sugar content (trehalose, glucose, fructose, sucrose, melezitose, turanose and maltose) in honey samples were analysed using high performance anion-exchange chromatography pulsed amperometric detection (HPAEC-PAD) as described in Anjos et al ².

Table 1. Sugar content (g/100 g) of thirty-four analysed samples

	Morocco	Portugal	Spain
Fructose (F)	38.5±2.0a	36.5±1.8a	31.0±3.3b
Glucose (G)	26.0±2.6a	26.2±1.9a	20.3±1.6b
Sucrose	0.0±0.0a	0.7±0.2b	1.6±0.5c
Maltose	0.0±0.0a	1.6 ±0.3c	0.8±0.3b
Melezitose	2.0±0.3a,b	1.7±0.6a	3.1±2.1b
Trehalose	2.84±1.21b	0.01±0.03a	0.25±0.26a
Turanose	0.0±0.0a	2.4±0.2b	3.0±0.5c
F/G	1.4±0.2 a	1.5±0.1 a,b	1.6±0.1b

Fructose and glucose were the most predominant sugars in the samples (Table 1). The lowest fructose content was founded in the samples collected in Spain. The results show significant differences (scheffé test, $p < 0.05$) in sugar composition in honey samples from different regions (Table 1). However, the variability in each region is high.

Figure 1 represents the results of the samples from the principal component analysis of the sugar content for all samples. The sugar profile of a different region could be a parameter that separates the quality and identity of a specific honey. However, more results from different regions were needed in order to support this conclusion.

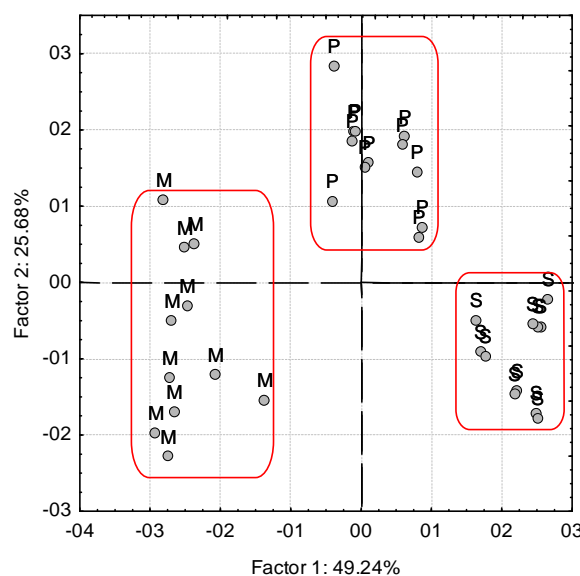


Figure 1 – Loadings of Principal component analysis (M-Marocco, P-Portugal, S-Spain).

References

1. S. Bogdanov, Book of Honey (Chapter 4), Bee Product Science, 2009.
2. O. Anjos, M.G. Campos, P.C. Ruiz, P. Antunes, Food Chemistry, 2015, 169, 218–223