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Monofloral honeys must have corresponding organoleptic and physicochemical properties as well as a specific pollen profile. With the analysis parameters currently defined in the Codex Alimentarius, it is not possible to prove falsifications by adding a pollen-free or a honey low in phenolic content. Alternative methods are required. In recent years, secondary plant compounds of a honey have gained importance (Oelschlägel; Speer). While specific markers such as free flavonoids could already be postulated for phenolic-rich monofloral honeys like manuka, chestnut and cornflower honey, these are largely absent for honeys with low phenolic content, such as acacia.

Based on promising studies by Tomás-Barberán and later by Truchado, the analysis of flavonoid glycosides, even though they occur in smaller quantities than the free flavonoids, is promising for the authentication of monofloral honeys. Nonetheless, the so far published data are difficult to compare as different methods were used.

A routine method for the detection of flavonoid glycosides is presented, consisting of an automated solid phase extraction (Rapid Trace®, Zymark) followed by HPLC-PDA-MS/MS analysis. Flavonoids with O-glycosidically bound sugar components were identified. The monosaccharides were β -D glucose, β -D-galactose and α -L-rhamnose, which were linked to the flavonoids at the positions 3, 7 and 4'. A total of 20 known flavonoid glycosides could be detected in different honeys by using a single method. By applying the discrimination analysis, numerous monofloral honeys could be assigned to individual clusters due to their glycoside patterns and thus clearly distinguished from each other.

Literature:

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Speer, K. et al. (2021) Cornflower honey as a model for authentication of unifloral honey. J. Agric. Food Chem. 69, 11406–11416

Tomás-Barberán, F. et al. (2001) HPLC flavonoid profiles as markers for the botanical origin of European unifloral honeys. J. Sci. Food Agric. 81 (5), 485–496

Truchado, P. et al (2015) Determination of interglycosidic linkages in O-glycosyl flavones by high-performance liquid chromatography. Australia. Rapid Commun. Mass Spectrom. 29 (10), 948–954