



Identity of SMB (Specific Marker - bed, marker for beet sugar syrup) clarified

For years now, the analysis of marker substances has been very useful in the detection of honey adulteration. Already known markers, such as psicose, mannose or the rice syrup marker (SMR), are characterized by the fact that their natural occurrence is usually limited to syrups or a few botanical specialties. If such a marker is found in honey, it is an indication of the presence of sugar syrup.

The SMB can be detected in syrups made from sugar beets and is an established marker substance. So far, however, only the molecular mass and the fragments of the substance were known, but not its identity. For the detection of adulteration it is not necessary to know that, but it is desirable, since it is possible to draw conclusions about possible sources. In addition, the analysis is less abstract, which increases confidence in the method.

The identification of the substance has now been achieved within a cooperation between FoodQS GmbH in Langenzenn and QSI GmbH in Bremen using high-resolution mass spectrometry (LC-HRMS, Liquid Chromatography - High Resolution Mass Spectrometry). The joint investigation proved that the substance in question is 3-methoxytyramine. It is a water-soluble substance that occurs naturally in sugar beets and has already been detected by us in various beet sugar syrups. The previous assumption that the substance could be a marker for beet sugar has thus been proven.

However, an absolute quantification of the adulteration is still not possible because the content of 3-methoxytyramine differs from syrup to syrup. So far, only a relative quantification was carried out in the laboratories, i.e. the intensity of the signal in honey was compared with that of a laboratory specific standard. This standard was different from laboratory to laboratory, so the relative quantifications between the laboratories were not comparable. The substance is now known and commercially available as a certified reference standard. Thus the basis for a better comparability of the results is now given by the quantification of the 3-methoxytyramine between different laboratories. The concentrations determined so far were between 0.1-0.4 mg/kg with a limit of quantification of 0.005 mg/kg. However, it should be noted that absolute quantification of the adulteration is still not possible because the marker is present in different quantities in each syrup.