

Since 2014 QSI utilizes NMR spectroscopy to evaluate the authenticity of honey (with the Honey-Profiling™) and since 2017 also of agave syrup. NMR is a particularly powerful screening tool, since almost every organic substance with its own typical signal can be seen within a single spectrum. This “un-targeted” approach results in a specific fingerprint for any sample that enables us to recognize any deviation compared to a predefined database, even if the responsible substances have yet to be identified. The great advantage of our approach compared to conventional methods is the capability of detecting multiple types of adulteration at once.

Recently, we informed you in detail about our endeavor to improve and expand our databases which are the basis of our evaluation and how we make sure that each and every sample within our databases is authentic. With this newsletter we keep you informed about upcoming changes in regard to these databases that will further improve our ability to detect adulteration and determine and/or confirm the origin of samples.

Update Honey-Profiling™ (Bruker BioSpin GmbH) - Late Spring 2018 – Release 1.1 / 2.0

It is important to regularly improve and extend the honey database to include further botanical and geographical origins and to update the corresponding adulteration models which enables us to detect more specific forms of adulteration dependent on these origins. Deviations that might be in range for certain origins may provide indications for adulteration for others and therefore more precise models will aid immensely in the identification of even minute deviations. In late spring 2018 a major update will be released for the Honey-Profiling™ that will include the following improvements:

- Extension of existing models for origin verification and adulteration detection:
 - Ukraine - Sample count > 1400 (Release 1.0 = 365)
 - China - Sample count > 1100 (Release 1.0 = 185)
 - Argentina - Sample count > 1200 (Release 1.0 = 236)
- Implementation of two new models for origin verification and adulteration detection:
 - Spain - Sample count > 800 (Release 1.0 = 76)
 - France - Sample count > 2500 (Release 1.0 = 26)
- Improvement of general adulteration models and update of adulteration-markers (based on exemplary adulterated samples, same methodology as for Release 1.0)



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- QSI has been reviewing each sample visually with expert knowledge. Hence, evaluation will remain unchanged for samples previously evaluated as adulterated
- Late 2018 / Early 2019
 - Extension of whole database from currently nearly 4000 samples to >15000 samples.
 - Addition of new origin models
 - Update of all other origin models (Release 1.0 = 3 botanical and 9 geographical models)
 - Advanced adulteration detection depending on origin of sample

We will be validating the new and updated models during the next few weeks and start using them around late spring 2018. Of course, our experts will still thoroughly review each spectrum visually and deliver evaluations based on the latest knowledge, including our own research.

Update QSI Database for Agave Syrup - May 2018

Additionally, in May 2018 we will start using an extended and improved NMR database for the evaluation of agave syrup.

We will increase the amount of samples within our database from currently 200 to over 450 authentic samples and make it even more robust and accurate for future testing and adulteration detection. Working together with different suppliers we could make sure that the database is composed of agave syrup from different varieties (e.g. *Agave salmiana*, *Agave tequilana*) and regions (e.g. Zacatecas, Michoacán). We will keep expanding the database routinely in the future and note any changes on the corresponding analysis report.

Please feel free to contact us if you have any questions concerning testing and quality control of honey or agave syrup!

QSI News

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