

Presentation 8

Adulteration Test of Honey using Spectroscopy based Metabolomics

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Abstract

Honey is susceptible to adulteration with cheaper sweetener. Adulteration of honey with sugars is the most crucial quality assurance concern to the honey industry. Adulterants considered are sugars (glucose, fructose and sucrose) and invert sugars (cane invert and beet invert). Although sensory evaluation is easy to use, subjective experience is often biased and low accurate. Using chemical test methods in laboratory may be accurate but quite time- and cost-consuming, and not all metabolites can be analyzed which produces bias result. Thus, it is necessary to develop a convenient and accurate way for honey analysis. Metabolomics is now being widely applied and considered as a robust tool in quality control (Verpoorte et al, 2009). The idea of metabolomics is the analysis of all metabolites in the sample. The advantage of this untargeted approach is consideration of all metabolites in the samples to avoid a bias interpretation of the result which are often found in the conventional (targeted) approach. The bottleneck of honey quality control is the variation of its quality depending on the locations where it is collected and type of honey. Up to date, there are no FTIR and NMR based metabolomics have been developed for Malaysian honey. Different type of honey from different locations in Malaysia will be collected. Fingerprinting and chemical profiling of honey will be performed using FTIR and NMR spectroscopy and the data will be statistically calculated using multivariate data analysis in order to produce a calibration model to be used in quality control. Chemical markers of honey will be identified using NMR and LC-MS.

The general objective of this study is to investigate the possibility of using spectroscopy based metabolomics to discriminate Malaysian honeys with an aim of fabricating a simpler and cheaper sensor for practical use.

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