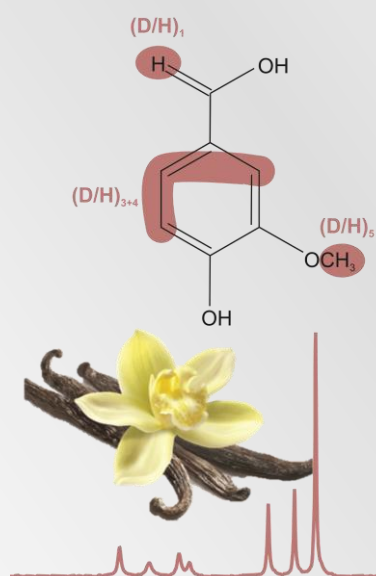


AUTHENTICATION OF VANILLIN USING ^2H SNIF-NMR METHOD



Vanillin is one of the most important and widely used flavours not just in the food industry but also in the fragrance and pharmaceutical industry. The global demand of vanillin is increasing and naturally extracted vanillin covers only small percentage of yearly produced amount of vanillin. Most of vanillin on the market is synthesised chemically. The price of natural vanillin is significantly higher than its synthetic alternative. This has led to many cases of fraud, mainly by adding unnatural vanilla to vanilla extract. Identification of the authentication of flavouring substances is therefore of great importance for the food industry. As a consequence, the analytical techniques required to differentiate between different vanillin sources are needed. With the SNIF-NMR method we can quantify the differences in isotopic content at each position of the molecule with great accuracy and thus determine the origin of vanillin.

TYPE OF COOPERATION

R&D cooperation and technology licensing opportunity

DEVELOPED BY

Slovenian NMR Centre

CONTACT

Knowledge Transfer Office
P: 00386 1 4760 529
E: knowledge.transfer@ki.si

MORE INFORMATION ABOUT THE INVENTION



Technology

Nuclear Magnetic Resonance (NMR) can be used to determine the source of aroma extraction based on the hydrogen isotopic ratios. The method is known as SNIF-NMR (site-specific natural isotope fractionation by NMR). This method allows characterization of all the main sources of commercial vanillin and detection of undeclared mixtures. It is based on the fact that the amounts of deuterium at various positions in the vanillin molecule are significantly different from one source to another. The proportions of isotopomers monodeuterated at each hydrogen position of the molecule are recorded, and the corresponding (D/H) ratios are determined by using a certified reference material.

Main advantages

- A specific natural isotopic fractionation can be measured for each position in the vanillin molecule
- A straight-forward method for identification of incorrectly declared food flavourings

Key words

Vanillin authentication, SNIF-NMR, Food quality