

STABLE ISOTOPES AS PERFECT TOOLS FOR QUANTITATION AND TRACING IN FOOD SCIENCE

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Venue: Seminar Room, S14-06-20
Host: Dr. Huang Dejian

Abstract

Food components containing stable isotopes (so-called isotopologues) differ in their molecular mass but (essentially) not in their chemical and physical properties. Thus they undergo the same paths in chemical, physical and biochemical processes and can be differentiated by mass spectrometry. These properties make them perfect tools for following analytical procedures, biosynthesis in organisms and physiological pathways in humans. The most commonly used stable isotopes are deuterium, ^{13}C and ^{15}N .

In food analysis, stable isotopes are applied in Stable Isotope Dilution Analysis (SIDA), which is one of the most accurate procedures up to date. SIDA is the golden standard in mycotoxin analysis and the number of other applications in food analysis is currently increasing. Assays for *Alternaria* and *Fusarium* mycotoxins along with vitamins such as the folate group will be presented. In all these cases, broad validation studies proved the superiority of SIDAs, but still existing weak points may not be concealed.

In case of folates, stable isotopes can also be used as tracers for assessing the bioavailability of these micronutrients. In a combination of differently labeled folates, a double label isotope study was developed, in which deuterium and ^{13}C -labels were used to differentiate oral doses of folates from analytical internal standards. In comparison with traditional short-term assays using the area-under-the curve approach of naturally occurring folates, new recommendations for the intake of folates were deduced.

About the speaker



Prof. Michael Rychlik is the Head of the Chair of Analytical Food Chemistry at the Technische Universität München, Germany (TUM). He graduated in food chemistry at the University of Kaiserslautern in 1988. His PhD studies on the flavor of bread were completed in 1996 and he was appointed full professor at the TUM in 2010. His group has been working for 15 years in the field of developing analytical methods for bioactive food components, in particular for vitamins, mycotoxins, odorants and lipids. For these compounds, he developed stable isotope dilution assays (SIDAs) that reveal superior accuracy. Moreover, his research is focused on the application of these methods to recent areas in food chemistry, technology, toxicology and nutrition.

All are welcome. Free Admission!