

Editorial



Food Chemistry links Chemistry with Biology and Medicine

In October 2005, the Chair of Food Chemistry celebrated its 25th anniversary with an International Symposium. A number of important contributions are collected in this Special Issue.

At the University of Würzburg (founded in 1582), the subject Chemistry was established in 1749 as a section of Medicine, since chemical research at that time was devoted to Pharmaceutical Sciences. Food Chemistry was first mentioned in 1884 when Ludwig Medicus, Professor of Applied Chemistry, was appointed as director at the 'Königliche Untersuchungsanstalt für Nahrungsmittel und Genussmittel'. Food Chemistry continued to be part of the Pharmaceutical Sciences until C.H. Brieskorn, Professor of Pharmacy, managed in 1980 to integrate Food Chemistry as an independent Chair into the Faculty of Chemistry and Pharmacy whose dean at that time was S. Hünig, Professor of Organic Chemistry.

In spite of its specific features, the scientific development at the Department of Food Chemistry at the University of Würzburg reflects the most important characteristics of the general evolution of this branch worldwide. Whereas initial research activities were almost exclusively devoted to flavour research comprising 'Analytical Development', 'Biogenesis', and 'Biotechnology', the focus shifted more and more towards studies of food-relevant enzymes, as well as the problems arising from the selective production of chemicals by enzymatic and microbiological biocatalysis. For the first time, biocatalytical research performed in close cooperation with the Department of Organic Chemistry opened the way for the successful application of selected oxidoreductases. For this development, the long-lasting experience in the area of chiral analysis provided an excellent fundament. In recent years, the research interest has been increasingly directed towards problems of the physiological functionality of food constituents arising from plant secondary metabolism, *i. e.* in particular polyphenols. In this area, the strong connections to the Würzburg Medical Hospital and the experiences already gained many years

ago in LC-MS/MS analysis provide a solid basis for the present and future activities.

The development of Food Chemistry as a link to Chemistry, Biology and Medicine is nicely reflected in the contributions provided by the Symposium's participants in this Special Issue. A deep knowledge of highly sophisticated analyses is and will remain the force behind Food Chemistry, so that its optimal application in different areas can be assured in, for instance, more traditional chemically oriented fields as well as biological and medicinal areas. Providing a comprehensive overview of flavour research, the paper by Krammer *et al.* illustrates 'key' examples for the evolution of product-oriented flavour research and future trends in this field. Instrumental-analytical techniques and, in particular, LC-coupled methods are the fundament for identifying new taste-modifying components, as shown by De Rijke *et al.* LC-MS/MS also provides a potential to rapidly screen for a wide variety of metabolic disorders, as shown by Lukacs and Santer, and the technique is also a requirement to detect DNA-bound advanced glycation end products (DNA-AGEs), as outlined by Schneider *et al.* In a number of in-vitro studies, contributed by Thielen *et al.* (genotoxicity of glycidamide), Knecht and Humpf (cytotoxic and antimitotic effects of *Monascus* metabolites), Schaefer *et al.* (antioxidative effectiveness of phenolic apple juice extracts), Fritz *et al.* (biological activities of malvidine), Pfeiffer *et al.* (estradiol glucuronidation), Knerr *et al.* (TCDD induced cytochrome P450s), as well as Wagner and Lehmann (gene expression by estrogens), the trend in biofunctionality studies is clearly demonstrated. The chemical reactivity of bioactive compounds (Stintzing *et al.*) as well as their preparative supply (Stürtz *et al.*) are also reported. First data on the availability of polyphenols from apple and blueberry in the colon are provided by Kahle *et al.* Data reported on the occurrence of ergot alkaloids (Bürk *et al.*) and *Fusarium* mycotoxins (Engelhardt *et al.*) in cereals are discussed and evaluated with respect to potential health implications for consumers. Finally, Lazarus covers wide range integrating medicine in his lucid article on the differential role of prostaglandin receptors in regulating fever.

All the participants are thanked for their outstanding contributions that reflect the state-of-the art in the field. My cordial thanks go especially to my former co-workers who came from all over the world and helped to create a very friendly atmosphere during the Symposium.

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