

TOPIC: Challenges in Flavours Analysis

Henryk JELEN



Address:

Poznań University of Life Sciences
Poznań
Poland

Present position:

Professor at the Faculty of Food Science and Nutrition
Poznań University of Life Sciences

BIOGRAPHY

Henryk Jeleń graduated from Agricultural University in Poznan, where he got his PhD (1996) and Habilitation (2001) in Food Science. After his post-doc at the University of Minnesota with prof. Chester Mirocha he came back to Poznan University of Life Sciences, where he is currently a professor at the Faculty of Food Science and Nutrition.

He focused in his research initially on the relation between formation of mycotoxins by fungi and emission of volatile compounds associated with this process. Currently his scientific interests are focused mainly on food flavors and off-flavors, he is also interested in volatiles of microbial origin. His field of interest includes also sample preparation, chromatographic methods and fast methods using electronic noses for assessment of food quality and flavor investigation. He has authored and coauthored over 70 scientific papers.

ABSTRACT

Challenges in Flavours Analysis

Henryk Jelen^{1*}

¹ Poznan University of Life Sciences, Poznan, Poland

* Corresponding author - E-mail: henrykj@up.poznan.pl; Phone: +48-61-8487273; Fax: +48-61-8487314

Flavour plays crucial role in consumers' acceptance of food. Compounds responsible for aroma of food products are present in a mixture of often hundreds and more volatiles, varying in their chemical character, concentration and odour thresholds. They usually interact with food matrix constituents, and technological processes and storage influence their profile and amounts. Moreover, analytical instruments have to compete with human nose in terms of detection limits of key food odorants.

Analysis of food flavor compounds combines several main areas: *i)* determination of key odorants and tastants, *ii)* real-time analysis of aroma compounds during mastication or tissue disruption, *iii)* use of volatile compounds profiles (usually with and aid of chemometric methods) to monitor changes in products and to determine their authenticity or traceability, *iv)* investigation of bound flavor compounds, that are released during flavor formation or can be released for flavor improvement.

In the lecture tools and techniques involved in the mentioned above analytical areas will be summarized with examples. Challenges in sampling for flavor compounds will be discussed. Special emphasis will be put on sensory-oriented determination of crucial key odorants in food products using gas chromatography (GC-O) and issues related to their quantitation. Also benefits of comprehensive gas chromatography (GCxGC) and advances in mass spectrometry in resolving complex mixtures of flavor compounds will be discussed. Various methods involving volatile/flavor compounds profiling and their application in the oil rancidity and authenticity testing will be presented. Finally, potential of the bound flavor compounds and methods used for their analysis will be discussed based on wine terpenes examples.

Keywords: Flavour, aroma, gas chromatography, GC-O

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