Location BOKU: Department of Food Sciences and Technology

BOKU: Originating from the former "Institute of Dairy Research & Bacteriology" and the "Institute of Food Technology", a new "Department of Food Sciences and Technology" (DFST) was established at BOKU - University of Natural Resources and Life Sciences Vienna in 2004.

The department comprises two institutes, each of them organized in thematic laboratories and representing the core disciplines of the food supply chain. Also within our university, the department takes first place with "Food - Nutrition - Health" being one of the main areas of BOKU`s competence.

The „Food Chemistry and Authenticity" Laboratory (Head: Prof. Dr. Helmut K. Mayer) as part of the "Institute of Food Sciences" represents the competent platform for food analytical aspects covering the wide range from chemistry and biochemistry up to protein and lipid analysis as well as molecular biology. It focuses on the development of appropriate analytical techniques to deal with hot topics in the area of food authenticity, food chemistry, nutrition science, and food technology.

Research Activities

Current research activities of our „Food Chemistry and Authenticity" Laboratory focus on the analytical aspects of food chemistry and authenticity of foods:

- Development of analytical tools for the authentication of food and feed (e.g., protein analysis by electrophoresis and chromatography; molecular biological methods; lipid analysis by chromatography, GC-MS)

- Adulteration control of food and feed with a particular focus on species identification (e.g., meat, fish, and milk of different species) and the detection of foreign fat in edible oils and fats (e.g., milk fat, cocoa butter)

- Milk protein analysis (e.g., genetic variants, degradation during cheese ripening)
• Identification of probiotic lactic acid bacterial strains at protein and DNA level

• Evaluation of chemical changes occurring during processing, maturation, and storage of foods (e.g., oxidation, and hydrolysis of fats; impact of antioxidants)

• Detection of allergens in foods based at protein and DNA level (e.g., milk proteins, legumes, eggs)

• Determination of constituents relevant in foodstuffs (e.g., isoflavones, vitamins, essential fatty acids, trans and conjugated fatty acids, essential amino acids, biogenic amines, sugars)

• Analysis of time-temperature integrators for the heat load evaluation of foods (e.g., lactulose, native β-lactoglobulin, furosine) [ESL milk].

**Areas of Competence**

The division has available modern analytical equipment for the analysis of proteins and lipids, for molecular biological tools, and also for the common classical methods in food analysis.

In particular, the most important competences are in the area of food authenticity with a special focus on protein analysis (electrophoresis, HPLC, UPLC), lipid analysis (GC, GC-MS, TLC, HPLC) and molecular biology (PCR, RAPD-PCR, PFGE, PCR-DGGE, Real-time PCR) and the analysis of favourable (beneficial) nutrients, but also harmful contaminants and residues of toxic compounds in food.

**Memberships**

Member of several Scientific Organisations, e.g.: Association of Austrian Food and Biotechnologists (VOELB); Society of Milk Science (GfM); American Society for Microbiology (ASM); Austrian National Committee of International Dairy
Federation (FIL-IDF); IDF Standing Committee on Dairy Science and Technology; Codex Alimentarius Austriacus Commission (Milk and Dairy Products); Austrian Chemical Society (GOECH).

**Human resources:**

- 3 Academics: Prof. Dr. Helmut Mayer; PD Dr. Matthias Schreiner and Dipl.-Ing. Gregor Fiechter
- 2 Lab technician: Iris Biedermann, Nicole Schamberger
- Diploma students (ca. 12-15 per year), PhD students (currently 5), Bachelor students

**Teaching:**

- Laboratory courses ("Food Chemistry", "Food Authenticity"), seminars, practical courses
- Bachelor, Diploma/Master and Doctoral theses

**Authors**

Helmut K. Mayer, Boku, Vienna

**Contact**

*Universität für Bodenkultur (BOKU) Wien*

Gregor-Mendel-Str. 33
1180 Wien
Österreich