

LABORATORY OF FERMENTATION TECHNOLOGY

Description of main activities:

The application of fermentation process in microbial production of primary and secondary metabolites, the employment of immobilized biocatalysts, the scale-up of fermentation processes, down-stream processing of special chemicals, optimization and demonstration of fermentation and isolation processes. The Laboratory has unique equipment for up-stream processes (more than 20 bioreactors with working volumes from 0.1 up to 800 litres) and down-stream operations (micro-, ultra-, nanofiltration, filtration with back-flush, electrodialysis, ion exchange separation, vacuum evaporation, crystallisation). The Laboratory equipment allows for the targeted research and demonstration in food, medical and industrial biotechnology.

Equipment available:

- New Brunswick BioFlo 510 a 660 Fermenters – in situ autoclavable fermenters for scale up processes - 20 and 100 l,
- Novaferm Fermenters for cultivations in 5, 12, 150 and 400 l,

- Gas chromatograph Agilent FID and MS detector, qualitative and quantitative analysis of fermentation broth metabolites and trace analysis,
- Ultrafiltration and microfiltration unit Chezar for high capacity biomass and protein separation,
- Micro-Oxymax Metabolic gases analyzer (Columbus Instruments USA): O₂, CO₂, CO, methane, H₂, H₂S measurements,
- Vacuum distillation (Simax), high capacity vacuum distilling for chemicals concentration,
- Ion exchange chromatography for medium/product desalting,
- HPLC Agilent with UV/VIS and RI detector, analysis of microbial products and metabolites,
- Freeze Dryers Leybold-Heraeus concentration of biochemicals and drying of microbial cultures,
- Bactron Anaerobic Chamber, manipulation with anaerobes,
- Ekokrok Laminar flow cabinet, sterile work with microorganisms,

- -80 °C ultra-low temperature freezer Thermo Scientific, long-term storage of microorganisms and enzymes,
- Hitachi ultracentrifuge, protein isolation,
- Continuous Cell Disruptor, cell disruption is provided in continuous mode,
- AKTA pilot – semi industrial low pressure chromatography, protein purification,
- Electrodialysis – high capacity purification and sample desalting.

CONTACT

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