
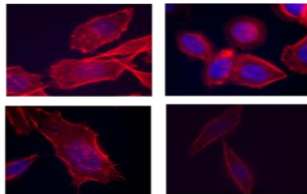
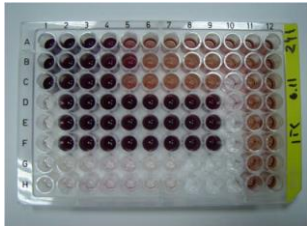
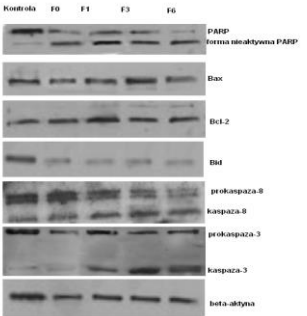




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<p>name of the unit:</p> <p style="text-align: center;">LABORATORY OF PHYTOCOMPOUNDS AND NUTRIGENOMICS</p> <p style="text-align: center;">Institute of Molecular and Industrial Biotechnology, Lodz University of Technology</p>		<p>symbol:</p> <p style="text-align: center;">I-51</p> <p style="text-align: center;">https://www.binoz.p.lodz.pl/pl/instytut-biotechnologii-molekularnej-i-przemyslowej/o-instytucie</p>
<p>head of the unit:</p> <p style="text-align: center;">prof. Maria Koziołkiewicz</p>	<p>potential promoters:</p> <p style="text-align: center;">Anna Podśędek, PhD, DSc, TUL Prof. Małgorzata Zakłós-Szyda, PhD, Dsc,</p>	<p>contact person:</p> <p style="text-align: center;">phone: 42 631-34-43 anna.podsedek@p.lodz.pl malgorzata.zaklos-szyda@p.lodz.pl</p>
<p>scope of activities:</p> <ul style="list-style-type: none"> ▪ Qualitative and quantitative characteristics of plant-derived raw materials (extraction, separation, chromatographic analysis) ▪ Determination of antioxidant activity of food components by means of in vitro methods and model cells ▪ Analysis of food components stability under conditions of simulated digestion ▪ Analysis of polyphenolics and digestive enzymes interaction ▪ Characteristics of phytochemicals activity under in vitro conditions using specific model cells addressed to studies of metabolic syndrome and other diet-related diseases. ▪ Search of natural compounds possessing antidiabetic activity and acting as specific ligands of GPCR receptors ▪ Determination of cytotoxicity, efficacy and molecular mechanisms of chemotherapeutics using cancer cell models 		   
<p>present activities:</p> <p>The main areas of interest and research directions are the following problems falling within the general concept of Nutrition and Food Technology:</p> <ol style="list-style-type: none"> 1. Multidirectional characteristics of bioactive dietary phytochemicals 2. Molecular mechanisms responsible for antidiabetic activity of phytochemicals <p>Dietary phytochemicals (polyphenols, lipids, vitamins, carotenoids, fatty acids of plant origin) are known to regulate cellular processes by modulation of metabolic and signaling pathways. It has been evidenced that these natural molecules can activate or inhibit cellular enzymes, receptors, transporters or transcription factors. Proper modulation of these targets by natural compounds present in diet is likely the best solution to the prevention of metabolic disorders such as diabetes, obesity, liver diseases etc. Since diabetes remains one of the most abundantly spread and deadly diseases worldwide without a sufficient remedy, looking for novel and effective solutions for its prevention and treatment is of key importance. Studying of natural dietary compounds in terms of their potential anti-diabetic properties is, therefore, a reasonable direction to develop food and nutrition technology sciences.</p>		
<p>future activities:</p> <p>Studies on regulation of lipid and carbohydrate metabolism by plant extracts and pure chemical compounds.</p> <p>Studies on transcriptional and/or epigenetic gene regulation influenced by bioactive diet-components</p>		



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Keywords: diet, phytochemicals, diabetes, signalling pathways, receptors, epigenetics

List of internship proposal in this research team:

Identification of signaling pathways activated by selected dietary phytochemicals.

1. Pietrzyk N., Zakłós-Szyda M., Koziołkiewicz M., Podśedek A. *Viburnum opulus* L. fruit phenolic compounds protect against FFA-induced steatosis of HepG2 cells *via* AMPK pathway. *Journal of Functional Foods*, 2021, Vol.80, 104437, doi.org/10.1016/j.jff.2021.104437
2. Kajszczyk D., Kowalska-Baron A., Podśedek A. Glycoside hydrolases and non-enzymatic glycation inhibitory potential of *Viburnum opulus* L. fruit – in vitro studies. *Antioxidants*, 2021, 10, 989, doi.org/10.3390/antiox10060989
3. Kajszczyk D., Zakłós-Szyda M., Podśedek A. *Viburnum opulus* L. – A review of phytochemistry and biological effects. *Nutrients*, 2020, 12,3398, s. 1-30, doi:10.3390/nu12113398
4. Podśedek A., Zakłós-Szyda M., Polka D., Sosnowska D. Effects of *Viburnum opulus* fruit extracts on adipogenesis of 3T3-L1 cells and lipase activity. *Journal of Functional Foods*, 2020, 73, 104111, doi.org/10.1016/j.jff.2020.104111
5. Drzaga A., Cichońska E., Koziołkiewicz M., Gendaszewska-Darmach E. Formation of β TC3 and MIN6 pseudoislets changes the expression pattern of Gpr40, Gpr55, and Gpr119 receptors and improves lysophosphatidylcholines - potentiated glucose-stimulated insulin secretion. *Cells*, 2020, 9, 2062, s. 1-20, doi:10.3390/cells9092062