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A comparative evaluation of phosphorothioate and phosphodiester analogues of lysophosphatidylcholine toward murine β pancreatic cells: *In vitro* studies

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Based on the results of research conducted recently, lysophosphatidylcholine (LPC) has been observed to be not only a structural component of cellular membranes but also a biologically active molecule influencing regulation of metabolic diseases, such as obesity and diabetes. Much attention has been paid to the fact that LPC causes an increase in glucose-stimulated insulin secretion from β pancreatic cells. To address the need of further characterization of various LPC species with regard to diversity of their structures as well as longer biological half-lives we have recently described the chemical synthesis of new sulfur analogues of LPC with well-defined fatty acid residues [1]. In order to prevent possible 1→2 acyl migration in LPC analogues, the oxygen atom in position 2 of glycerol was protected by methylation. A series of phosphorothioate and phosphorodithioate derivatives of 2-OMe-LPC bearing five different fatty acid residues both saturated (12:0, 14:0, 16:0, 18:0) and unsaturated (18:1) were prepared. Preliminary studies towards pancreatic βTC-3 cells proved that even a slight difference in chemical structure of a stimulus may result in significant changes in the exerted biological effects

1. Rytczak, P.; Drzazga, A.; Gendaszewska-Darmach, E.; Okruszek, A. The chemical synthesis and cytotoxicity of new sulfur analogues of 2-methoxy-lysophosphatidylcholine. *Bioorg Med Chem Lett*., 2013, 23(24), 6794-6798.

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Biography

Edyta Gendaszewska-Darmach is an Asissstant Professor at Faculty of Biotechnology and Food Sciences, Lodz University of Technology. She completed her PhD degree in Bioorganic Chemistry from Polish Academy of Sciences. Her research involves anti-diabetic and wound healing properties of natural and modified biophosphates (nucleotides and lysophospholipids) as well as biomaterials for regenerative medicine.

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