Abstract

The cells are communicating with each other using membrane-bound receptors. These receptors can recognize various ligands. Signalling via receptors allows the cell to control energy homeostasis, cell growth, differentiation, signalling and migration. Many of membrane-bound receptors are dynamically exchanged between plasma membrane and internal endosomal compartments by exo- and endocytosis. The most studied mechanism of endocytosis is clathrin-mediated endocytosis.

There are many proteins involved in the sophisticated endocytic machinery. So called adaptor proteins allow and/or facilitate proper selection of cargo, which should be internalized. Some of them help to curve the membrane and form a vesicle, some of them may have opposite effect. „Src Homology 3-Domain Growth Factor Receptor-Bound 2-Like (Endophilin) Interacting Protein 1“ (SGIP1) might fall in this category. This protein influences endocannabinoid signalling probably via its effect on cannabinoid receptors endocytosis. SGIP1 was recently identified as a gene involved in regulation of energy metabolism with overexpression leading to obesity.

The aim of this work is structural and functional analysis of SGIP1 membrane phospholipid-binding domain (MP-domain). This domain shares no sequence homology with any of known proteins. In this domain SGIP1 differs from „Fer/Cip4 homology domain only 1/2“ (FCHO1/2) proteins, which are otherwise highly homologous to SGIP1. MP-domain is important for binding SGIP1 to membrane. Therefore it could be a very important component of endocytosis provided by SGIP1. (In Czech)

Key words: endocytosis, receptor internalization, synaptic signalling regulation