IJAE
Vol. 123, n. 1 (Supplement): 185, 2018
ITALIAN JOURNAL OF ANATOMY AND EMBRYOLOGY

Sarcoglycan subcomplex and Alpha-Dystroglycan in human digestive tract: immunofluorescence analysis

Giuseppina Rizzo, Giuseppe Santoro, Grazia Giulia Pantè, Claudia Previti and Angelo Favaloro

University of Messina, Department of Biomedical and Dental Sciences and Morphofunctional Imaging, Messina, Italia

The sarcoglycan complex (SGC) is a multimember transmembrane complex consisting of six glycosylated transmembrane proteins (α,β,δ,γ,ε,ζ). These proteins, primarily expressed in skeletal muscle fibers, interact with other member of dystrophin-glycoprotein complex (DGC), dytrophin, dystroglycans and syntrophins, in order to provide a mechano-signaling connection from the cytoskeleton to the extracellular matrix in myocytes and to stabilize the sarcolemma during contraction and release cycles in the muscle tissue. Our previous investigations have shown that sarcoglycans are not only muscle-specific but they are also present in the epithelial tissues, such as gingival, prostatic, respiratory and digestive, and also in the adipose tissue, demonstrating that these proteins are involved in cell-cell and cell-matrix interactions [1]. In order to verify the presence of sarcoglycans in the digestive epithelium and their interaction between α-dystroglycan, we performed immunofluorescence reactions on biopsies of normal sigmoid colon obtained from 10 subjects who underwent for other pathological reasons. Moreover, in the same samples, also we carried-out immunofluorescence reactions testing mucins. Mucins are a superfamily of highly glycosylated protein, they are part of mucus. The main roles of mucus are to protect and lubricate the underlying epithelia by injuries like enzymes, pH, bacteria and viruses. Mucins, also, lead to coordinate the apoptosis among cellular responses playing a key role as biomarkers for cancer and inflammatory diseases [2]. For the first time, our results show that: (i) sarcoglycans are expressed in the basal, lateral and apical cell's sides; (ii) sarcoglycans colocalize in the apical region with mucins and α-dystroglycan; (iii) α-dystroglycan colocalizes with mucin in the cellular apical region. Our results suggest that a interactions between these sarcoglycans and mucus exists and, in our opinion, α-dystroglycan can play a key role in this interaction. On the basis of our results, we hypothesize that α-dystroglycan and sarcoglycans may have a role in the determination of the cell's polarity, supported by the colocalization of mucins and dystroglycans in the apical area.

References

[1] Anastasi (2010) Sarcoglycans are not muscle-specific: hypothetical roles. Ital J Anat Embryol. 115(1-2): 19-24.
[2] Malin E. V. Johansson et al (2011) Composition and functional role of the mucus layers in the intestine. Cell. Mol. Life Sci. 68: 3635–3641

Key words

Sarcoglycan, alpha-dystroglycan, mucin, epithelium.