Spotlight on cellular lipid binding proteins

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Editorial

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Specific cellular proteins capable of reversibly and non-covalently associating with lipids, and therefore designated as lipid binding proteins or lipid chaperones, are established to serve a broad range of physiological functions in various tissues. In general, these cellular lipid binding proteins determine the bio-availability of their ligands, thereby markedly influencing the subsequent processing, utilization, and/or signaling effect of lipids. The family of intracellular lipid binding proteins comprises a.o. cytoplasmic fatty acid-binding proteins (FABPs), retinol/retinoic acid binding proteins, and oxysterol binding protein. Membrane-associated lipid binding proteins include a.o. the multifunctional protein CD36 and a group of so-called fatty acid transport proteins (FATPs). Together, these membrane-associated and cytoplasmic proteins facilitate the transport of lipids across biological membranes and within the aqueous cytoplasm, and by this property influence the role of lipids as vital components of many biological processes and as crucial parameter in the pathogenesis of numerous common diseases. In addition, pharmacological agents that compete with lipid binding by these proteins will modify the function of cellular lipid binding proteins. In view of the occurrence of several tissue-specific types of lipid binding proteins, such agents may provide tissue-specific or cell type-specific control of metabolic regulation, lipid signaling pathways, and inflammatory responses. Now that the biological functions of cellular lipid binding proteins are getting better understood, examples of the feasibility of such pharmacological intervention strategy have become available.

Continued interest in the cellular lipid binding proteins has led to the organization of a series of international conferences specifically devoted to this topic. The 8th International Conference on Lipid Binding Proteins was held in La Plata, Argentina, on November 3–6, 2013, and was organized by Betina Córsico and Horacio Garda and her team from the University of La Plata. As with the previous meetings, this 8th conference has opened new research venues in a field that has become of increasing importance for the understanding of various chronic diseases and their treatments. The current issue of *Prostaglandins, Leukotrienes and Essential Fatty Acids* contains a collection of selected articles based on the lectures and posters presented during the conference. These articles combined provide insight into our current understanding of the significance of cellular lipid binding proteins for the functioning of the cell under normal and pathophysiological conditions.

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