Tercera Epoca Revista Científica de la Facultad de Ciencias Médicas Octubre 2010 | Vol 2 N°1

2010 Octubre, 2(1): 1-

UNRAVELING INTESTINAL FATTY ACID BINDING PROTEINS FUNCTIONS: ANALYSIS OF FABP-MEMBRANE AND FABP-PROTEIN INTERACTIONS

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Introducción

Intestinal enterocytes express large concentrations of two homologous fatty acid binding proteins (FABPs): intestinal FABP (IFABP) (15.1 kDa) and liver FABP (LFABP) (14.2 kDa). It has long been hypothesized that FABPs participate in the intracellular transport and processing of the large quantities of fatty acids (FA) absorbed by the intestine, but their specific function are still poorly understood. In particular, it is currently not known why a single cell type contains two distinct types of FABP.

Objetivos

We expect to identify the interaction partners of intestinal FABPs in order to describe the molecular crosstalk relevant for its biological functions.

Materiales y métodos

In this work, we took advantage of different structural variants of intestinal FABPs and a battery of biochemical and biophysical methodologies to analyze its interaction with membranes and other proteins. Tb/DPA complex leakage, binding to sucrose loaded vesicles, Cyt c competition assay and radiolabeled photoactivable phospholipid crosslinking were employed to study different factors (vesicle curvature, ligand nature, lipid composition, etc) that modulate the interaction of FABPs with artificial model membranes. On the other hand, a fluorescence based assay was employed to analyze colisional transfer of fatty acid analogs between IFABP and LFABP in a stopped-flow module.

Resultados

Lipid composition and ligand binding show strong changes in membrane interaction properties of IFABP and LFABP, as evidenced by different techniques. Collisional transfer of fluorescent fatty acids suggests functional interaction between these intestinal FABPs.

Conclusiones

Intestinal FABPs could interact differentially with each other and with subcellular membranous fractions accordingly with ligand binding. The results in vitro presented here may reflect in vivo functions of intestinal FABPs. Increasing evidence supports the idea that FABPs participate and modulate several cell functions and further studies will be needed to unravel its physiological role.