New Ligands of CRABP2 Suggest a Role for this Protein in Chromatin Remodeling

Rossetto, D. B.¹, Brantis-de-Carvalho, C. E.¹, Costa, E. T.², Camargo, A. A.², Zanelli, C. F.¹ and Valentini, S. R.¹

¹Departamento de Ciências Biológicas, Faculdade de Ciências Farmacêuticas - UNESP, Araraquara-SP-Brazil; ²Instituto Ludwig de Pesquisa - São Paulo-SP-Brazil

Retinoic acid (RA) regulates transcription of a series of genes involved in cell proliferation, differentiation and apoptosis by binding to the RA receptor (RAR) and retinoid X receptor (RXR) heterodimers. The cellular retinoic acid-binding protein 2 (CRABP2) is involved in the transport of RA from the cytosol to specific RA receptors in the nucleus, acting as a coactivator of nuclear retinoid receptors. In order to better understand the mechanism of cellular signaling by retinoic acid involving CRABP2, we used the yeast two-hybrid system as a tool for the identification of physical protein-protein interactions. Twelve putative CRABP2-interacting proteins were identified in the screen in the presence of retinoic acid, out of which five are related to transcription regulation, more specifically, to the process of chromatin remodeling: t-complex 1 (TCP1), H3 histone, family 3A (H3F3A), H3 histone, family 3B (H3F3B), beta tubulin (TUBB) and SR-related CTD-associated factor 1 (SCAF1). Co-localization analysis using confocal fluorescence microscopy indicates the interaction between CRABP2 and phosphorylated H3 histone, suggesting a role for CRABP2 in chromatin remodeling. The confirmation of these physical interactions by other methods and the study of their biological relevance are in progress and may reveal new functions for CRABP2 in the control of the transcriptional program induced by RA.

Keywords: CRABP2, Saccharomyces cerevisiae and yeast two-hybrid system
Supported by FAPESP, CNPq and CAPES