Cellular Localization Analysis of the Hepatitis C Virus Core Protein During Nucleocapsid-like Particles Assembly

Braga, V. L. A.[1]; Silva, A. S[1]; Albernaz, F. P.[1]; Carvalho, C. A. M.[1]; Souza, T. L. F.[2]; Silva, J. L.[1]; Gomes, A. M. O.[1]; & Oliveira, A. C.[1]

[1]Programa de Biologia Estrutural/IBqM de Meis/UFRJ, Brazil. [2]Faculdade de Farmácia/UFRJ/Brazil.

e-mail: vanessabraga@bioqmed.ufrj.br

INTRODUCTION: Hepatitis C virus (HCV) infection is the major cause of chronic liver diseases, infecting around 210 million people worldwide. HCV capsid protein (HCVCP) is involved in several viral and cellular processes, including the capsid assembly process. **OBJECTIVES:** This work aims to gain more information about the cellular localization and the assembly process of HCV in different model cells. **MATERIAL AND METHODS**: With this aim, we constructed vectors to express the full-length HCVCPGFP, composed by 191 amino acids (HCVCP191GFP and GFPHCV191), in HepG2 and Huh7 cells. Also, we constructed, by deletions of HCVCP191GFP, two other forms of the HCV core protein, composed by 124 and 179 amino acids, HCVCP124GFP and HCVCP179GFP, respectively. The same was done for GFPHCV191, generating GFPHCV124 and GFPHCV179 truncated forms. Transfected cells with HCVCP fused with the Green Fluorescent Protein (GFP) at its C-terminal (HCVCPGFP) and N-terminal (GFPHCV) were analyzed by confocal microscopy and fluorescence correlation spectroscopy (FCS). **RESULTS AND DISCUSSION:** Confocal microscopy of HCV191GFP transfected HepG2 cells showed that , 24 and 30 hours post transfection, the HCVCP191GFP is mainly placed in the nucleus, more concentrated in the nucleolus and part is also located in mitochondria. In Huh7 cells, the analysis of nuclear distribution indicates that HCVCP191GFP is also located in the nucleus and, interestingly, this protein seems to be sited on lipid droplets surface. The deletions were confirmed by sequencing and the nuclear distribution analyses of the N-terminal and all truncated forms are in progress in HepG2, Huh7, MEG-01 and Jukart cells. **CONCLUSIONS:** Our data reveals a new approach to understand the assembly of Hepatitis C virus capsid, which is an important target for drugs that may impair the Hepatitis C virus replication.

Keywords: Hepatitis C Virus, Core Protein, Assembly

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