

Name of journal: *World Journal of Hepatology*

ESPS Manuscript NO: 13252

Columns: REVIEW

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 Hepatitis C virus genetic variability and evolution

Natalia Echeverría, Gonzalo Moratorio, Juan Cristina, Pilar Moreno

Abstract

Hepatitis C virus (HCV) has infected over 170 million people worldwide and creates a huge disease burden due to chronic, progressive liver disease. HCV is a single-stranded, positive sense, RNA virus, member of the *Flaviviridae* family. The high error rate of RNA-dependent RNA polymerase and the pressure exerted by the host immune system, has driven the evolution of HCV into 7 different genotypes and more than 67 subtypes. HCV evolves by means of different mechanisms of genetic variation. On the one hand, its high mutation rates generate the production of a large number of different but closely related viral variants during infection, usually referred to as a quasispecies. The great quasispecies variability of HCV has also therapeutic implications since the continuous generation and selection of resistant or fitter variants within the quasispecies spectrum might allow viruses to escape control by antiviral drugs. On the other hand HCV exploits recombination to ensure its survival. This enormous viral diversity together with some host factors has made it difficult to control viral dispersal. Current treatment options involve pegylated interferon- α (IFN- α) and ribavirin (RBV) as dual therapy or in combination with a direct-acting antiviral (DAA) drug, depending on

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