World Journal of Gastroenterology

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DOI: 10.3748/wjg.v6.iSuppl3.8

World J Gastroenterol 2000 September 15; 6(Suppl 3): 8
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

Molecular biology of liver disorders: The hepatitis C virus and molecular targets for drug development

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Received: May 12, 2000
Revised: June 27, 2000
Accepted: July 10, 2000
Published online: September 15, 2000

Abstract

Advances in molecular biology made possible the discovery of the virus that causes hepatitis C. However, little is known about the fundamental aspects of hepatitis C virus (HCV) replication, primarily because a robust cell culture has not been established. As a result, the currently available drugs for the treatment of hepatitis C are not specifically directed against HCV. Based on what is known about the molecular biology of HCV, however, drugs can now be developed against specific viral and cellular targets. The next generation of drugs for the treatment of hepatitis C will likely be directed against non-structural HCV proteins with known enzymatic activities, such as the proteases, RNA helicase and RNA polymerase. Others agents targeted against the viral RNA, core protein that assembles into the virion capsid and putative cellular "receptors" that bind HCV envelope proteins are also being developed. These drugs should have fewer side effects than those currently available and be much more effective for the treatment of chronic hepatitis C.

Key words: Liver diseases; Hepatitis C virus/drug therapy; Molecular biology; Antiviral agents; United states food and drug administration; Interferon-alpha/therapeutic use; RNA, catalytic/therapeutic use; Oligonucleotides, antisense

Worman HJ, Lin F. Molecular biology of liver disorders: The hepatitis C virus and molecular targets for drug development. *World J Gastroenterology* 2000; 6(Suppl 3): 8 Available from: URL: http://www.wjgnet.com/1007-9327/full/v6/iSuppl3/8.htm DOI: http://dx.doi.org/10.3748/wjg.v6.iSuppl3.8

E- Editor: Hu S

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