Potent and broad spectrum medicinal drugs against all genotypes of hepatitis C virus (HCV)

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As many as 200 million people worldwide are infected with hepatitis C virus (HCV). About 3-4 million people are infected per year and more than 350,000 people die yearly from hepatitis C-related diseases. In the present study, the water extract of the leaves of the wild Egyptian artichoke (WEA) showed improvement of HCV infection symptoms. Therefore, our study was divided into two main strategies: The clinical investigation of WEA extract on some infected Egyptian patients. The results showed outstanding activity against HCV and its complications such as ascites and jaundice by measuring the PCR and liver functions such as ALT and AST. The phytochemistry of the WEA extract and its subsequent evaluation of inhibition capacity in vitro using cell-culture derived HCV. The chemical investigation of the WEA extract resulted in the identification of six compounds. Importantly, all compounds inhibited HCV infection; compounds cynaropicrin and grosheimol were the most potent among the six. The EC50 were estimated at 1.03 μM, 1.27 μM and 299 μM for compounds 1, 2 and WEA extract, respectively, by using a luciferase-carrying reporter virus. Time-of-addition experiments revealed that they inhibit HCV virus at a time-point during entry. Furthermore, compounds 1 and 2, apart from cell-free infection inhibited HCV cell-cell transmission. Finally, the results showed that compounds 1 and 2 inhibited HCV particles from genotypes 1a, 1b, 2b, 3a, 4a, 5a, 6a and 7a indicating that these compounds inhibit HCV cell entry independently of viral genotype or subtype. Thus, these compounds are promising candidates for the development of new pangenotypic entry inhibitors for the HCV infection. All of these results were applied for patenting.

Biography

Mahmoud Fahmi Elsebaei has completed his PhD in 2011 from Bonn University, Germany and Postdoctoral studies from Oulu University, Finland and Nice University, France. He has published more than 20 publications (including patent applications) in reputed journals such as J Virology, Med Chem Letters, European J Org Chem and Nat Prod Reports. He is working on chasing hepatitis C virus using natural compounds and recently in 2016 he has discovered potent and broad spectrum compounds against HCV which published in J Virology. He is a Reviewer in many international journals.

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