gene expression levels were decreased (30–45%), independently of viral genotype. Total DGAT activity was found increased in Huh7.5 cells infected by JFH1 (1.6±0.2), genotype 1b (2.1±0.2) and genotype 3a (1.9±0.1).
DGAT activity in Huh7 cells was increased upon HCV infection (JFH1: 1.6±0.03, G1a: 1.54±0.04 and G3a: 1.9±0.04). Quercetin had an inhibitory effect on DGAT activity (1.5±0.1 fold) when cells were infected by genotype 3a and 1a. Quercetin inhibited viral replication in a dose-dependent manner; quercetin 25uM: 31.23%; 50uM: 42.5% and 100uM: 86.41% compared to interferon treatment (100%inhibition).
Conclusions: HCV infection increased DGAT-1 gene expression and DGAT activity, improving viral replication. Quercetin decreased DGAT activity and reduced viral replication. DGAT1 protein can arise as a new target for hepatitis C therapy.

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A NEW DOUBLE-EFFECT THERAPEUTIC STRATEGY USING A HISTONE DEACETYLASE INHIBITOR FOR HCV-ASSOCIATED HEPATOCELLULAR CARCINOMA

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Background and Aim: The histone deacetylase inhibitor (HDACi) suberoylanilide hydroxamic acid (SAHA) is emerging as a promising agent for epigenetic therapy of several cancers. The aim of this study is to investigate the effect of SAHA on hepatitis C virus (HCV) replication and hepatocellular carcinoma (HCC).
Methods: We used OR6 replicon cells, in which genotype 1b full-length HCV RNA replicates and its replication can be monitored by luciferase reporter assay, HepG2 and Huh7 as HCC cells. OR6 cells were treated with SAHA at non-toxic doses and HCV RNA replication was measured. To determine comprehensive gene expression changes induced by SAHA treatment, microarray analysis was applied and quantitative RT-PCR was performed. Chromatin immunoprecipitation (ChIP) assay was also performed to confirm histone acetylation in specific genes. Effect of SAHA on the proliferation, *micro RNA (miR)* expression, and its target protein expression of HepG2 and Huh7 were also studied to investigate the effect on cancer cells.
Results: SAHA treatment showed no toxicity to OR6 cells at concentrations below 1 mcM HCV RNA replication was significantly inhibited in a dose-dependent manner. The microarray analysis and quantitative RT-PCR revealed that *osteopontin* (*OPN*) and *apolipoprotein-A1* (*Apo-A1*) were candidates for responsible genes to reduce HCV replication. On the other hand, expression of *miR-122*, which is involved in HCV replication, showed no significant difference after SAHA treatment. ChIP assay revealed that histone H3 acetylation levels at the promoter regions of these specific genes were significantly increased. SAHA at more than 1mcM significantly decreased cell proliferation of OR6, HepG2 and Huh7 and one of candidates for responsible genes and its target protein was *miR-1274a* and *FOXO4*.
Conclusion: These results indicate that SAHA has a suppressive effect on both HCV replication and HCC cell proliferation through alterations in host gene expression. Although the master controls of these effects were not clear, several miRNAs and their target proteins seemed candidates. Thus, epigenetic therapy with HDACi might have a double-effect therapeutic strategy for HCV-associated HCC from both anti-viral and anti-cancer reactions.

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A NOVEL METHOD FOR NON-INVASIVE DIAGNOSIS OF HEPATITIS C VIRUS USING ELECTROMAGNETIC SIGNAL DETECTION: A MULTICENTER INTERNATIONAL STUDY

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Background: Chronic hepatitis C virus (HCV) infection is a worldwide major health problem. RT-PCR is the standard technique for detection of HCV viremia. A simple, rapid, non-invasive electromagnetic sensor (C-FAST device) was patented; in which the resonant electromagnetic signal of HCV-RNA nucleotides (molecule signature) is recorded as a consensus frequency and replayed for its identification.
Aim: The study compared the diagnostic utility and reliability of C-FAST device in detection of HCV viremia with the standard HCV-PCR.
Subjects and Methods: The first phase was done as pilot in Egypt on 79 participants, the second phase was done both nationally and internationally in five centers: one center from Egypt, two centers from Pakistan and two centers from India (800, 92 and 113 subjects respectively). The third phase was done nationally as multicenter study on (1600) participants for ensuring its representativeness. Consenting subjects were subjected to both C-FAST device and the reference Gold Standard "PCR" to assess the device validity under the same described procedures and methodology throughout the three phases that ensured independent, blind comparison with PCR. The device was also assessed nationally and internationally by two different observers independently on the same participants to test its reliability.
Results: When compared to PCR technique, C-FAST device during all phases revealed sensitivity ranges from 95% to 100%, specificity ranges 95.5% to 100%, PPV ranges 89.5% to 100%, NPV ranges from 95% to 100% and positive likelihood ratios ranges from 21.8% to 38.5%. The results of Kappa (95.5% to 99.9%) indicate that the two observers have the same percent agreement. They classify everyone exactly the same way on using the C fast device.
Conclusion: This study confirmed the efficiency of C-FAST device in recording and replaying the HCV electromagnetic signal. It is practical evidence that nucleotides emit electromagnetic signals that can be used for its identification. As compared to PCR, C-FAST is an accurate, valid and non-invasive device.

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HEPATITIS C VIRUS PROPAGATION IN HUMAN CD4+ AND CD8+ T LYMPHOCYTES

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Introduction and Aim: Accumulated molecular and clinical evidence indicate that immune cells can support replication of hepatitis C virus (HCV). To investigate the ability of patient-derived, wild-type HCV to infect CD4+ and CD8+ T lymphocytes and to assess properties of the virions produced, we employed a previously established *in vitro* HCV replication system in which normal human T cells served as targets.