RNA 'Friendly' Ligands with Antiviral Activity for the Treatment of Hepatitis C

Tech ID: 19452 / UC Case 2008-145-0

BACKGROUND

The number of deaths from hepatitis C (HCV) is expected to surpass that resulting from HIV in the near future. There is no vaccine or drug available that acts directly on the virus. Current therapy typically consists of combined interferon and ribavirin, both of which have significant side effects that are often severe enough to necessitate additional treatment, thus increasing the overall cost and affecting patient compliance with the treatment regimen.

Viral proteins are the targets of many research projects to find new drugs to treat HCV. These targets are often analogous to those of many HIV programs. One of the challenges to developing a monotherapy targeting viral proteins is the high genetic variability of HCV.

TECHNOLOGY DESCRIPTION

The number of deaths from hepatitis C (HCV) is expected to surpass that resulting from HIV in the near future. There is no vaccine or drug available that acts directly on the virus. Current therapy typically consists of combined interferon and ribavirin, both of which have significant side effects that are often severe enough to necessitate additional treatment, thus increasing the overall cost and affecting patient compliance with the treatment regimen.

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ADVANTAGES

- Novel class of compounds not previously described in the literature.
- Inhibitors of hepatitis C virus protein synthesis.
- Targets sequence is unique to the HCV genome and critical to initiation of viral protein synthesis.
- Binding to the target has been demonstrated.
- Inhibitory activity of a test compound has been demonstrated.
- None or minimal cytotoxicity at concentrations sufficient to inhibit viral replication.
- Five model compounds have been synthesized and tested; synthesis and testing of additional compounds continues.

RELATED MATERIALS

ACS Conference Poster Abstract (National Meeting August 2008)

Synthesis of novel RNA ligands with potential antibacterial/antiviral activity.

Maia Carnevali, Department of Chemistry and Biochemistry, University of California San Diego

We have synthesized a novel class of molecules that contain a cis-3,5-diaminopiperidine (DAP) moiety as a structural mimetic of the 2-deoxystreptamine (2-DOS) pharmacophore of the RNA-binding, natural aminoglycoside antibiotics. The DAP heterocycle retains the spatial orientation of amino groups in 2-DOS, which are key to RNA recognition, while simplifying both stereochemistry and synthetic accessibility. Parallel synthesis has been used to obtain focused libraries around scaffolds containing the DAP ring linked to amino acids. The amino acid building blocks allowed for further diversification with various carboxylic acids. Compounds from the libraries have been tested for binding and biological activity against bacterial and viral RNA targets.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Disease: Infectious Diseases

RELATED CASES

2008-145-0

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