ANTIVIRAL COMPOUNDS

PRIORITY OF INVENTION

This application claims priority to United States Provisional Application Numbers 61/177,972, filed 13 May 2009; 61/224,745, filed 10 July 2009; and 61/238,760, filed 01 September 2009. The entire content of each of these applications is hereby incorporated herein by reference.

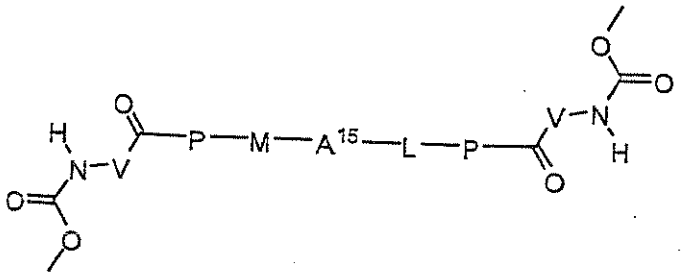
BACKGROUND OF THE INVENTION

Hepatitis C is recognized as a chronic viral disease of the liver which is characterized by liver disease. Although drugs targeting the liver are in wide use and have shown effectiveness, toxicity and other side effects have limited their usefulness. Inhibitors of hepatitis C virus (HCV) are useful to limit the establishment and progression of infection by HCV as well as in diagnostic assays for HCV.

There is a need for new HCV therapeutic agents.

SUMMARY ~~OF THE INVENTION~~

In one aspect, there is provided a compound of formula:



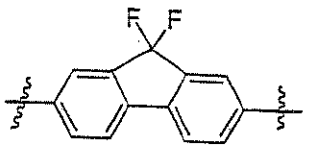
wherein:

V is alkyl;

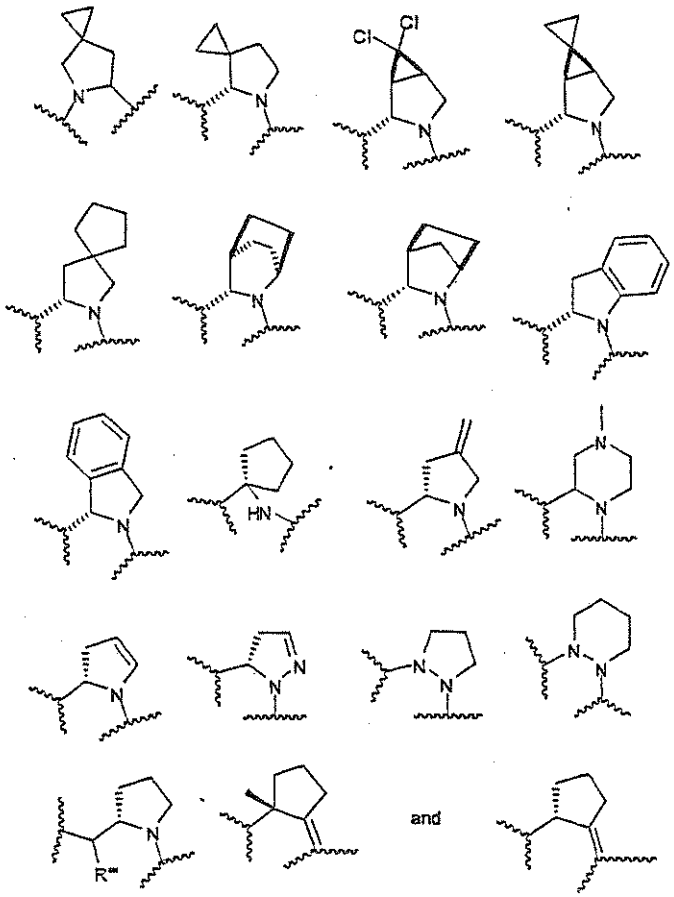
L is benzimidazolyl;

M is a 5-membered heteroaryl ring;

A^{15} is:

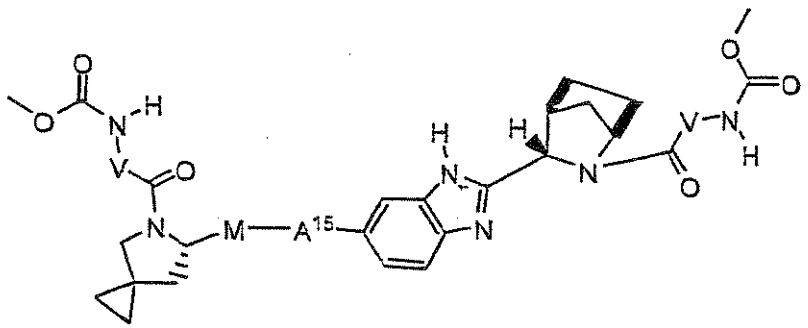


P is selected from:



and R''' is hydrogen or methyl; or a pharmaceutically acceptable salt, or prodrug thereof.

In another aspect, there is provided a compound:

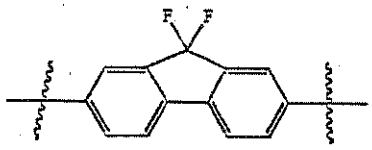


wherein:

V is alkyl;

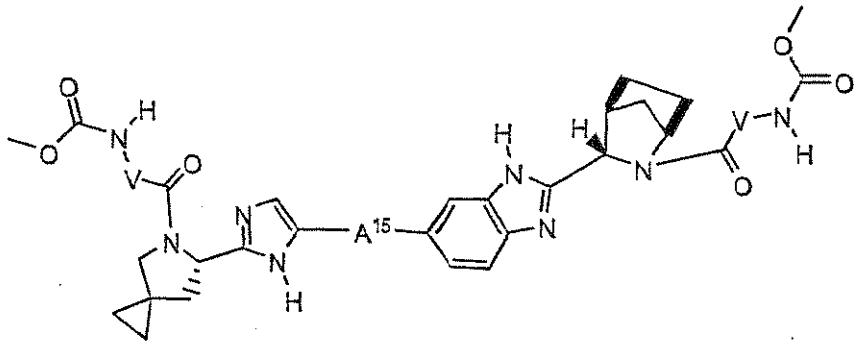
M is a 5-membered heteroaryl ring; and

A^{15} is:



or a pharmaceutically acceptable salt, or prodrug thereof.

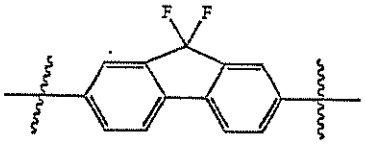
In another aspect, there is provided a compound:



wherein

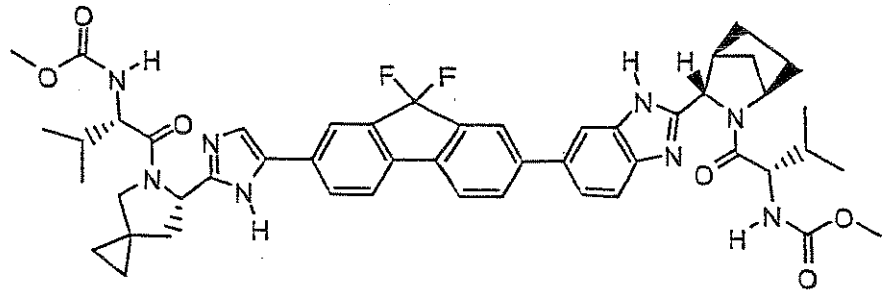
V is alkyl; and

A^{15} is:

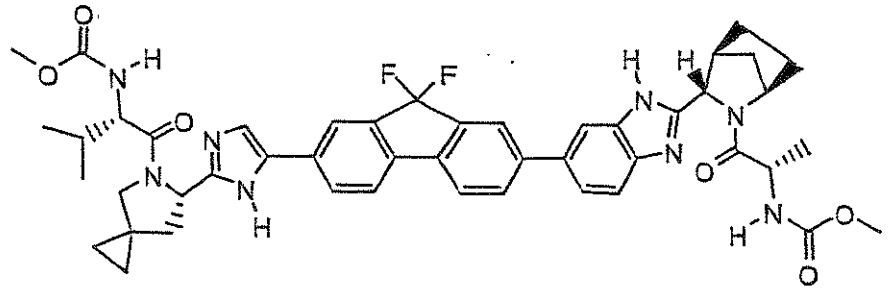


or a pharmaceutically acceptable salt, or prodrug thereof.

In another aspect, there is provided a compound of formula:

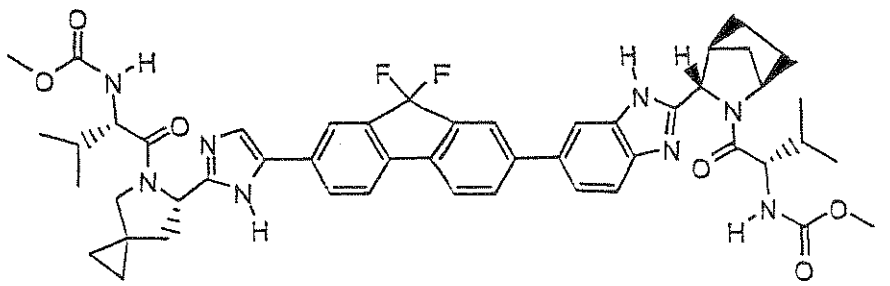


or



or a pharmaceutically acceptable salt, or prodrug thereof.

In another aspect, there is provided a compound of formula:



or a pharmaceutically acceptable salt, or prodrug thereof.

In one embodiment the ~~invention~~ disclosure provides a compound of the disclosure~~invention~~ which is a compound of formula (I):

J-Y-J (I)

as described herein, or a pharmaceutically acceptable salt, or prodrug thereof.

The disclosure~~invention~~ also provides isotopically enriched compounds that are compounds of formula I that comprise an enriched isotope at one or more positions in the compound.

In another aspect, there is provided a pharmaceutical composition comprising the compound as defined above or a pharmaceutically acceptable salt, or prodrug thereof; and at least one pharmaceutically acceptable carrier.

The present disclosure~~invention~~ also provides a pharmaceutical composition comprising a compound of the disclosure~~invention~~ and at least one pharmaceutical acceptable carrier.

The present disclosure~~invention~~ also provides a pharmaceutical composition for use in treating disorder associated with HCV.

The present disclosure~~invention~~ also provides a pharmaceutical composition further comprising an interferon or pegylated interferon.

The present disclosure~~invention~~ also provides a pharmaceutical composition further comprising a nucleoside analog.

The present disclosure~~invention~~ also provides for a pharmaceutical composition wherein said nucleoside analogue is selected from ribavirin, viramidine, levovirin, an L-nucleoside, and isatoribine and said interferon is α-interferon or pegylated α-interferon.

The present disclosure~~invention~~ also provides for a method of treating disorders associated with hepatitis C, said method comprising administering to an individual a pharmaceutical composition which comprises a therapeutically effective amount of a compound of the disclosure~~invention~~.

The present disclosure~~invention~~ also provides a method of inhibiting HCV, comprising administering to a mammal afflicted with a condition associated with HCV activity, an amount of a compound of the disclosure~~invention~~, effective to inhibit HCV.

The present disclosure~~invention~~ also provides a compound of the disclosure~~invention~~ for use in medical therapy (preferably for use in inhibiting HCV activity or treating a condition associated with HCV activity), as well as the use of a compound of the disclosure~~invention~~ for the manufacture of a medicament useful for inhibiting HCV or the treatment of a condition associated with HCV activity in a mammal.

The present disclosure~~invention~~ also provides synthetic processes and novel intermediates disclosed herein which are useful for preparing compounds of the disclosure~~invention~~. Some of the compounds of the disclosure~~invention~~ are useful to prepare other compounds of the disclosure~~invention~~.

In another embodiment~~aspect~~ the disclosure~~invention~~ provides a compound of formula I, or a pharmaceutically acceptable salt or prodrug thereof, for use in the prophylactic or therapeutic treatment of hepatitis C or a hepatitis C associated disorder.

In another embodiment~~aspect~~ the disclosure~~invention~~ provides a method of inhibiting HCV activity in a sample comprising treating the sample with a compound of the disclosure~~invention~~.

In one embodiment the disclosure~~invention~~ provides a compound having improved inhibitory or pharmacokinetic properties, including enhanced activity against development of viral resistance, improved oral bioavailability, greater potency (for example, in inhibiting HCV activity) or extended effective half-life *in vivo*. Certain compounds of the disclosure~~invention~~ may have fewer side effects, less complicated dosing schedules, or be orally active.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to certain embodiments of the invention, examples of which are illustrated in the accompanying structures and formulas. While the invention will be described in conjunction with the enumerated embodiments, it will be understood that they are not intended to limit the invention to those embodiments. On the contrary, the invention is intended to cover all alternatives, modifications, and equivalents, which may be included within the scope of the present invention as defined by the embodiments.