administer drug against RSV replication. It would be particularly preferred to provide drugs against RSV replication that could be administered perorally.

A reference on structure-activity relations, in respect of RSV inhibition, of 5-substituted benzimidazole compounds is X.A. Wang et al., Bioorganic and Medicinal Chemistry Letters 17 (2007) 4592-4598.

Compounds that exhibit anti-RSV activity are disclosed in WO2012/080446, WO2012/080447, WO2012/080449, WO2012/080450 and WO2012/080451.

WO-2004/069256 discloses 2-cyanopyrrolopyrimidines and WO-2004/076455 discloses spiro-substituted 2-cyanopyrrolopyrimidines as capthepsin K or S inhibitors useful in the treatment of various pain disorders. Teno N. et al. in *Bioorganic & Medicinal* Chemistry *Letters*, vol. 17, 6096 - 6100 (2007) and Teno N. et al. in *J. Med. Chem.*, vol. 51, 5459 - 5462 (2008) disclose 2-cyanopyrrolopyrimidines as cathepsin K inhibitors.

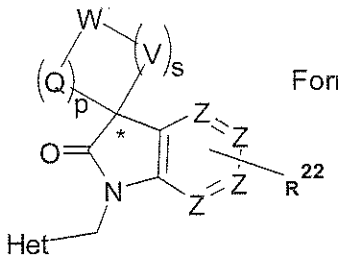
Potential problems which RSV antivirals may encounter are toxicity, mutagenicity, lack of selectivity, poor efficacy, poor bioavailability, and difficulty of synthesis.

It is desired to provide new compounds that have antiviral activity. Particularly, it would be desired to provide new drugs that have RSV replication inhibitory activity. Further, it would be desired to retrieve compound structures that allow obtaining antiviral biological activities of the order of magnitude in the stronger regions of the prior art, and preferably at a level of about the most active, more preferably of even stronger activity, than compounds disclosed in the art. A further desire is to find compounds having oral antiviral activity.

There is a need for additional RSV inhibitors that may overcome at least one of these disadvantages or having one of the desired effects.

Summary ~~of the Invention~~

In order to better address one or more of the foregoing desires, the ~~invention~~disclosure, in one aspect, presents antiviral compounds represented by Formula (RI),



Formula (RI)

optionally substituted with one or more substituents selected from the group consisting of halogen, CF_3, OH, CN, OCH_3,and $OC(=O)CH_3$).

In another aspect, the disclosure relates to a compound as defined herein for use as a medicament.

~~In another aspect, t~~The disclosure ~~invention~~ relates to the foregoing compounds for use in the treatment of RSV infections in warm-blooded animals, preferably humans. In another aspect, the disclosure relates to a compound as defined herein, or a pharmaceutical composition as defined herein, for use in the treatment of a respiratory syncytial virus infection. ~~In yet another aspect, t~~The ~~invention~~ disclosure also presents a method of treatment of viral RSV infections in a subject in need thereof, comprising administering to said subject an effective amount of a compound as defined above. In still another aspect, the ~~invention~~ disclosure resides in the use of a compound as defined above, ~~for~~ in the manufacture of a medicament ~~in~~ for the treatment of viral RSV infections.

~~In a further aspect, t~~The ~~invention~~ disclosure also relates to a pharmaceutical composition comprising a compound as defined above, and a pharmaceutically acceptable excipient. In another aspect, the disclosure relates to a pharmaceutical composition comprising a pharmaceutically acceptable carrier, and as active ingredient a therapeutically effective amount of a compound as defined herein.

~~In a still further aspect, t~~The ~~invention~~ disclosure also provides methods for preparing the compounds defined above.

Detailed description of the invention

The invention, in a broad sense, is based on the judicious recognition that the compounds of Formula (RI) generally possess an interesting RSV inhibitory activity.

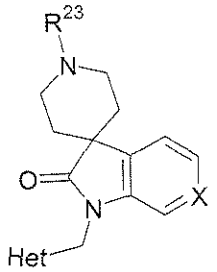
The present invention will further be described with respect to particular embodiments and with reference to certain examples but the invention is not limited thereto but only by the claims. Where the term "comprising" is used in the present description and claims, it does not exclude other elements or steps. Where an indefinite or definite article is used when referring to a singular noun e.g. "a" or "an", "the", this includes a plural of that noun unless something else is specifically stated.

Whenever the term "substituted" is used in the present invention, it is meant, unless otherwise is indicated or is clear from the context, to indicate that one or more hydrogens, in particular from 1 to 4 hydrogens, preferably from 1 to 3 hydrogens, more

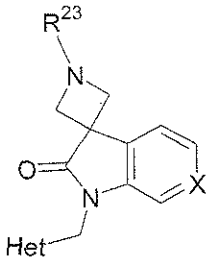
preferably 1 hydrogen, on the atom or radical indicated in the expression using "substituted" are replaced with a selection from the indicated group, provided that the normal valency is not exceeded, and that the substitution results in a chemically stable compound, i.e. a compound that is sufficiently robust to survive isolation to a useful degree of purity from a reaction mixture, and formulation into a therapeutic agent.

As used herein "C_1-C_6alkyl" as a group or part of a group defines straight or branched chain saturated hydrocarbon radicals having from 1 to 6 (1, 2, 3, 4, 5 or 6) carbon

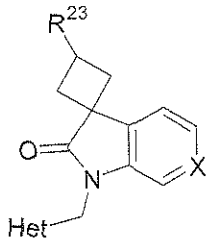
12. A compound according to any one of the previous claims, wherein the compound has Formula RII, RIII, RIV, RV, RVI or RVII;



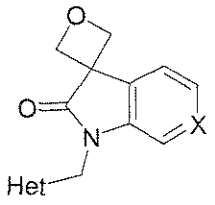
Formula RII



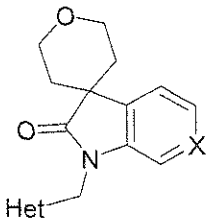
Formula RIII



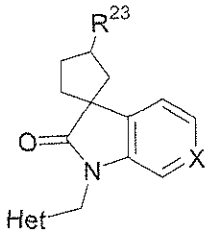
Formula RIV



Formula RV



Formula RVI

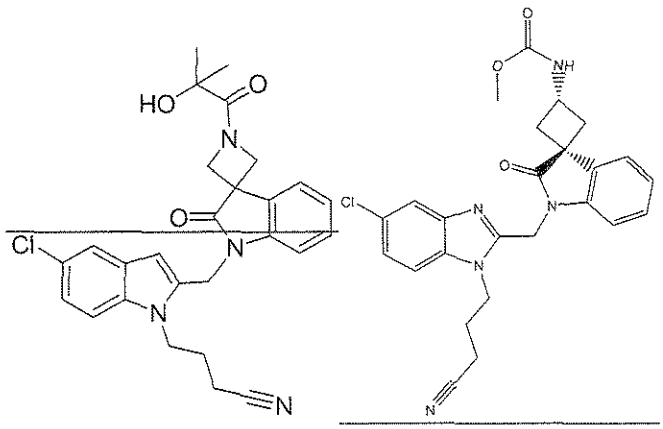


Formula RVII

or any stereoisomeric form thereof, wherein Het, X and R^{23} are defined as in any one of the previous claims.

13. The compound as claimed in claim 12 wherein R^{23} is selected from the group consisting of hydrogen, hydroxyl, C_1-C_6alkyl, C_1-C_3alkyl-R^{24}, SO_2R^{24}, O-R^{24}, phenyl, pyridinyl pyrimidyl, pyrazolyl, $C(=O)OR^{24}$, $C(=O)R^{24}$, wherein any of such C_1-C_6alkyl, phenyl, pyridinyl, pyrimidyl, pyrazolyl is optionally substituted with one or more of the following substituents; OCH_3, halogen, OH or CN.

14. The compound as claimed in claim 1 wherein the compound is



or a pharmaceutically acceptable addition salt or a solvate thereof.

15. A compound as defined in any one of claims 1 to 14 for use as a medicine.

16. A pharmaceutical composition comprising a pharmaceutically acceptable carrier, and as active ingredient a therapeutically effective amount of a compound as defined in any one of claims 1 to 14.

17. A compound as claimed in any of claims 1 to 14, or a pharmaceutical composition as claimed in claim 15 for use in the treatment of a respiratory syncytial virus infection.

18. Use of a compound as defined in any one of claims 1 to 14 in the manufacture of a medicament for the treatment of ~~A method for treating~~ viral RSV infections ~~in a subject in need thereof, comprising administering to said subject an effective amount of a compound as defined in any one of claims 1 to 14~~.