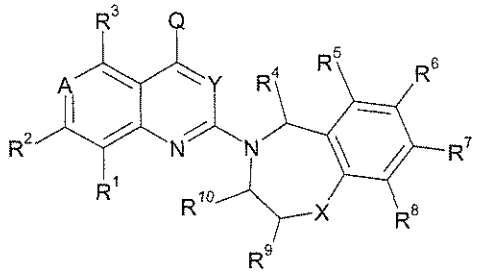
clinical trials in similar patient population for ALN-RSV01 are on-going (www.clinicaltrials.gov).

Nevertheless, safe and effective treatment for RSV disease is needed urgently.

It has been found that the compounds of the present ~~invention~~disclosure belong to a new chemical class of RSV inhibitors for the treatment or prophylaxis of RSV infection. The compounds of the ~~invention~~disclosure are therefore useful in the treatment or prophylaxis of RSV disease.

In a first aspect, there is provided a compound of formula (I)



(I)

Wherein

R^1 is hydrogen, halogen, or C_{1-6}alkyl;

R^2 is hydrogen, halogen, or C_{1-6}alkyl;

R^3 is hydrogen, halogen, or C_{1-6}alkyl;

R^4 is hydrogen, or C_{1-6}alkyl;

R^5 is hydrogen, or halogen;

R^6 is hydrogen, halogen, hydroxy, C_{1-6}alkoxy, carboxy, morpholinyl, or 4-C_{0-6}alkylpiperazin-1-yl;

R^7 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkylaminocarbonyl, diC_{1-6} alkylaminocarbonyl, C_{1-6}alkylsulfonyl, phenoxy, or hydroxy$(CH_2)_{2-6}$-O-;

R^8 is hydrogen, halogen, or C_{1-6}alkoxy;

R^9 is hydrogen, C_{1-6}alkyl, or =O;

R^{10} is hydrogen, or =O, provided that R^9 and R^{10} are not =O simultaneously;

A is nitrogen, or -C-R^{11}, wherein R^{11} is hydrogen, halogen, C_{1-6}alkyl, cycloalkyl, C_{1-6}alkoxy, trifluoromethyl, trifluoromethoxy, pyridinyloxy, C_{1-6}alkoxy$(CH_2)_{1-6}$-O-,

difluoromethoxy, cyano, nitro, amino, vinyl, acetylenyl, aminocarbonyl, hydroxy$(CH_2)_{2-6}$-O-, C_{1-6}alkylsulfinyl, C_{1-6}alkylsulfonyl, hydroxy$(CH_2)_{1-6}$, deuteratedC_{1-6}alkyl, carboxyl, C_{1-6}alkoxycarbonyl, hydroxy, difluoromethyl, -CH(hydroxy) C_{1-6}alkyl, or C_{1-6}alkylsulfanyl;

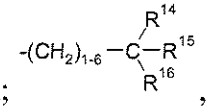
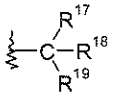
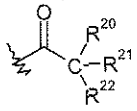
X is -CH_2-, -O-, -NH-, -CF_2-, -C(C_{1-6}alkyl)(OH)-, -S-, -C(=O)-, -C(=NOC_{0-6}alkyl)-, -S(=O)-, -S(O_2)- or -S(=O)(NH)-;

Y is -CH-, or nitrogen;

Q is hydrogen; halogen; C_{1-6}alkyl, unsubstituted or once or twice substituted by amino or hydroxy, provided that di-substitution is not on the same carbon; amino$(CH_2)_{2-6}$aminosulfonyl; 2-amino-4,5-dihydro-1,3-oxazol-4-yl$(CH_2)_{1-6}$; carboxy$(CH_2)_{1-6}$; phenylsulfonyl; piperidin-4-yl-carbonyl; 1*H*-pyrazol-3-yl; pyrrolidin-3-yloxy; piperidin-4-yloxy; amino$(CH_2)_{2-6}$-O-; or

$NR^{12}R^{13}$, wherein one of R^{12} and R^{13} is hydrogen, C_{1-6}alkyl, or hydroxy$(CH_2)_{2-6}$, and the other one is {1-[amino$(CH_2)_{0-6}$]-3,3-difluorocyclobutyl}$(CH_2)_{1-6}$; guanidino$(CH_2)_{2-6}$; (*S*-C_{1-6}alkylsulfonimidoyl)$(CH_2)_{2-6}$; 2-oxa-6-aza-spiro[3.4]oct-8-yl; {3-[amino$(CH_2)_{0-6}$]tetrahydrofuran-3-yl}$(CH_2)_{1-6}$; 3-aminomethyl-1,1-dioxidothietan-3-ylmethyl; 3-amino-1,1-dioxidothietan-3-ylmethyl; 3-(aminomethyl)thietan-3-ylmethyl; (1,1-dioxidothiomorpholin-4-yl)ethyl; C_{0-6}alkyl(oxetanyl)N$(CH_2)_{2-6}$; 4,5-dihydro-1*H*-imidazol-2-yl; amino$(CH_2)_{2-6}$-O-$(CH_2)_{2-6}$; amino$(CH_2)_{2-10}$; amino$(CH_2)_{1-6}$difluoromethyl$(CH_2)_{1-6}$; amino$(CH_2)_{1-6}$difluoromethyldifluoromethyl$(CH_2)_{1-6}$; amino$(CH_2)_{1-6}$fluoromethyl$(CH_2)_{1-6}$; amino$(CH_2)_{1-6}$oxetanyl$(CH_2)_{0-6}$; amino$(CH_2)_{0-6}$oxetanyl$(CH_2)_{1-6}$; amino$(CH_2)_{2-6}$sulfanyl$(CH_2)_{2-6}$; amino$(CH_2)_{2-6}$sulfonyl$(CH_2)_{2-6}$; amino$(CH_2)_{0-6}$carbonyl$(CH_2)_{0-6}$; aminocycloalkyl$(CH_2)_{0-6}$; 2-aminodihydrooxazol-4-yl$(CH_2)_{1-6}$; 2-aminodihydrooxazol-5-yl$(CH_2)_{1-6}$; (2-amino-5-methyl-4,5-dihydro-1,3-oxazol-5-yl)methyl; aminophenyl; 4-aminotetrahydropyran-4-yl$(CH_2)_{1-6}$; azetidin-2-yl$(CH_2)_{1-6}$; azetidin-3-yl$(CH_2)_{0-6}$; azetidinylcarbonyl; C_{1-6}alkoxy$(CH_2)_{2-6}$; C_{1-6}alkoxy$(CH_2)_{2-6}$amino$(CH_2)_{2-6}$; C_{1-6}alkyl; C_{1-6}alkylamino$(CH_2)_{2-6}$; C_{1-6}alkylaminocarbonyl$(CH_2)_{0-6}$; C_{1-6}alkylaminooxetanyl$(CH_2)_{1-6}$; C_{1-6}alkylcarbonyl; C_{1-6}alkylcarbonylamino$(CH_2)_{2-6}$; C_{1-6}alkylcarbonylamino$(CH_2)_{1-6}$oxetanyl$(CH_2)_{0-6}$; C_{1-6}alkylsulfinyl$(CH_2)_{2-6}$; C_{1-6}alkylsulfonyl; carboxy$(CH_2)_{1-6}$; cyano$(CH_2)_{1-6}$; diC_{1-6}alkylamino$(CH_2)_{2-6}$; diC_{1-6}alkylaminocarbonyl; difluoromethyl$(CH_2)_{1-6}$amino$(CH_2)_{2-6}$; hydrogen; hydroxy$(CH_2)_{2-10}$; hydroxy$(CH_2)_{2-6}$amino$(CH_2)_{2-6}$; hydroxy$(CH_2)_{1-6}$carbonyl; hydroxy$(CH_2)_{0-6}$oxetanyl$(CH_2)_{1-6}$; hydroxy$(CH_2)_{1-6}$oxetanyl$(CH_2)_{0-6}$; hydroxycycloalkyl; isoxazolyl; morpholin-2-yl$(CH_2)_{1-6}$; morpholin-4-yl$(CH_2)_{2-6}$; oxetanyl$(CH_2)_{0-6}$; *N*-oxetanylpyrrolidin-3-yl; oxo-pyrrolidinylcarbonyl; phenylaminocarbonyl; phenyl$(CH_2)_{0-6}$aminooxetanyl$(CH_2)_{1-6}$; phenylcarbonyl; piperazinyl$(CH_2)_{2-6}$; piperidin-1-yl$(CH_2)_{2-6}$; piperidin-2-yl$(CH_2)_{1-6}$; piperidin-3-yl$(CH_2)_{0-6}$; piperidin-4-yl$(CH_2)_{0-6}$; piperidinylcarbonyl; pyrazinylcarbonyl; pyrazol-3-yl;

pyridazinylcarbonyl; pyridinyl$(CH_2)_{0-6}$carbonyl; pyridinylamino$(CH_2)_{2-6}$; pyrrolidin-3-yl, unsubstituted or 4-substituted by halogen; pyrrolidin-4-yl, unsubstituted or 3-substituted by hydroxy or C_{1-6}alkoxy; pyrrolidin-2-yl$(CH_2)_{1-6}$; pyrrolidinylcarbonyl; tetrahydrofuran-3-yl;

tetrahydropyran-4-yl; tetrazolyl$(CH_2)_{2-6}$; trifluoromethylcarbonylamino$(CH_2)_{1-6}$oxetanyl; trifluoromethylsulfonyl; , wherein R^{14} is hydrogen, C_{1-6}alkyl or hydroxy$(CH_2)_{1-6}$; R^{15} is hydroxy, C_{1-6}alkyl, hydroxy$(CH_2)_{1-6}$ or amino; and R^{16} is C_{1-6}alkyl, trifluoromethyl, hydroxy$(CH_2)_{1-6}$, amino$(CH_2)_{1-6}$, aminocarboxy or carboxy$(CH_2)_{1-6}$; , wherein R^{17} is hydrogen, C_{1-6}alkyl or hydroxy$(CH_2)_{1-6}$; R^{18} is hydroxy$(CH_2)_{1-6}$ or C_{1-6}alkyl; R^{19} is hydroxy$(CH_2)_{1-6}$, amino$(CH_2)_{1-6}$, carboxy or aminocarboxy$(CH_2)_{0-6}$; or , wherein R^{20} is hydrogen or C_{1-6}alkyl; R^{21} is C_{1-6}alkyl; R^{22} is C_{1-6}alkoxy or amino;

R^{12} and R^{13}, with the nitrogen atom to which they are attached, may form a pyrrolidinyl, piperazinyl, piperidinyl, morpholinyl, azetidinyl, diazepanyl or oxopyrrolidinyl ring; which may be unsubstituted, once or twice substituted by a group selected from halogen, C_{1-6}alkyl, C_{1-6}alkoxy, gemdimethyl, amino, aminocarbonyl, hydroxy, oxetanylamino, C_{1-6}alkylpiperazinyl, and amino$(CH_2)_{1-6}$;

R^{12} and R^{13}, with the nitrogen atom to which they are attached may form a bridge ring or a spiral ring selected from 2-oxa-6-aza-spiro[3.4]octan-6-yl, 2-oxa-5,7-diazaspiro[3.4]octan-6-one-5-yl, (4aS,7aR)-hexahydropyrrolo[3,4-b][1,4]oxazin-6(2H)-yl, 4,5,6,6a-tetrahydro-3aH-pyrrolo[3,4-d][1,3]oxazol-5-yl, 2-aza-bicyclo[2.1.1]hexan-2-yl, and 3-aza-bicyclo[3.1.0]hexan-3-yl; which may be unsubstituted or further substituted by amino;

and pharmaceutically acceptable salt and stereoisomers thereof.

In a second aspect, there is provided a compound as defined above for use as a therapeutically active substance.

In a third aspect, there is provided a pharmaceutical composition comprising a compound as defined above and a therapeutically inert carrier.

In a fourth aspect, there is provided the use of a compound as defined above for the preparation of a medicament for the treatment or prophylaxis of respiratory syncytial virus infection.

In a fifth aspect, there is provided a compound as defined above for the treatment or prophylaxis of respiratory syncytial virus infection.

As used herein, the term "C_{0-6}alkyl" alone or in combination signifies a chemical bond, or hydrogen, or saturated, linear- or branched chain alkyl group containing 1 to 6, preferably 1 to 4 carbon atoms, for example methyl, ethyl, propyl, isopropyl, 1-butyl, 2-butyl, *tert*-butyl and the like. Preferred "C_{0-6}alkyl" groups are chemical bond, hydrogen, methyl, ethyl, isopropyl, *tert*-butyl.

As used herein, the term "C_{1-6}alkyl" alone or in combination signifies a saturated, linear- or branched chain alkyl group containing 1 to 6, preferably 1 to 4 carbon atoms, for example methyl, ethyl, propyl, isopropyl, 1-butyl, 2-butyl, *tert*-butyl and the like. Preferred "C_{1-6}alkyl" groups are methyl, ethyl, isopropyl, *tert*-butyl.

As used herein, the term "C_{2-6}alkyl" alone or in combination signifies a saturated, linear- or branched chain alkyl group containing 2 to 6, preferably 2 to 4 carbon atoms, for example ethyl, propyl, isopropyl, 1-butyl, 2-butyl, *tert*-butyl and the like. Preferred "C_{2-6}alkyl" groups are ethyl, isopropyl, *tert*-butyl.

As used herein, the term "$-(CH_2)_{0-6}-$" signifies a chemical link, hydrogen, or a saturated, linear alkyl chain containing from 1 to 6 carbon atoms, preferably, the term signifies hydrogen or $-(CH_2)_{1-4}-$.

As used herein, the term "$-(CH_2)_{1-6}-$" signifies a saturated, linear alkyl chain containing from 1 to 6 carbon atoms, preferably from 1 to 4 carbon atoms.

As used herein, the term "$-(CH_2)_{2-6}-$" signifies a saturated, linear alkyl chain containing from 2 to 6 carbon atoms, preferably from 2 to 4 carbon atoms.

As used herein, the term "$-(CH_2)_{2-10}-$" signifies a saturated, linear alkyl chain containing from 2 to 10 carbon atoms, preferably from 2 to 4 carbon atoms.

The term "cycloalkyl", alone or in combination, refers to a saturated carbon ring containing from 3 to 7 carbon atoms, preferably from 3 to 6 carbon atoms, for example,

(1,3,4,5-tetrahydro-2*H*-2-benzazepin-2-yl)quinolin-4-yl]propan-1-amine; [2-(1,3,4,5-tetrahydro-2*H*-2-benzazepin-2-yl)quinolin-4-yl]methanol; 2-(6-chloroquinolin-2-yl)-2,3,4,5-tetrahydro-1*H*-2-benzazepine; 3-[6-chloro-2-(1,3,4,5-tetrahydro-2*H*-2-benzazepin-2-yl)quinolin-4-yl]propane-1,2-diol; (*4S*)-4-{2-[2-(1,3,4,5-tetrahydro-2*H*-2-benzazepin-2-yl)quinolin-4-yl]ethyl}-4,5-dihydro-1,3-oxazol-2-amine; *N*-(2-aminoethyl)-2-(1,3,4,5-tetrahydro-2*H*-2-benzazepin-2-yl)quinoline-4-sulfonamide trifluoroacetate; 4-{4-[(2-aminoethyl)amino]-6-methylquinolin-2-yl}-1,3,4,5-tetrahydro-2*H*-1,4-benzodiazepin-2-one; *N*-[6-methyl-2-(1,2,3,5-tetrahydro-4*H*-1,4-benzodiazepin-4-yl)quinolin-4-yl]ethane-1,2-diamine; *N*-[2-(2,3-dihydro-1,4-benzoxazepin-4(5*H*)-yl)quinolin-4-yl]ethane-1,2-diamine; *N*-[(3-aminooxetan-3-yl)methyl]-2-[(5*E*)-5-(methoxyimino)-1,3,4,5-tetrahydro-2*H*-2-benzazepin-2-yl]-6-methylquinolin-4-amine and 2-(4-{[(3-aminooxetan-3-yl)methyl]amino}-6-methylquinazolin-2-yl)-1,2,3,4-tetrahydro-5*H*-2-benzazepin-5-one.

16. A compound according to any one of claims 1 to 15 for use as a therapeutically active substance.

17. A pharmaceutical composition comprising a compound in accordance with any one of claims 1 to 15 and a therapeutically inert carrier.

~~18. The use of a compound according to any one of claims 1 to 15 for the treatment or prophylaxis of respiratory syncytial virus infection.~~

18~~19~~. The use of a compound according to any one of claims 1 to 15 for the preparation of a medicament for the treatment or prophylaxis of respiratory syncytial virus infection.

19~~20~~. A compound according to any one of claims 1 to 15 for the treatment or prophylaxis of respiratory syncytial virus infection.

~~21. A method for the treatment or prophylaxis of respiratory syncytial virus infection, which method comprisis administering an effective amount of a compound as defined in any one of claims 1 to 15.~~

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