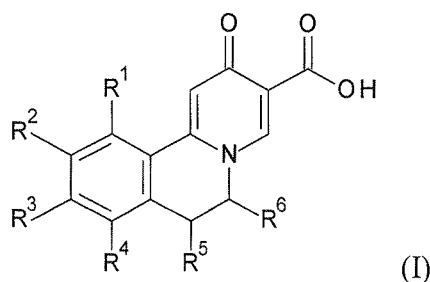


et al. *J Virol*, (2011), 85, 987-95; Woltman et al. *PLoS One*, (2011), 6, e15324; Op den Brouw et al. *Immunology*, (2009b), 126, 280-9).

SUMMARY

5

In an aspect, there is provided the novel compounds of formula I



wherein

- R^1 is hydrogen, halogen, C_{1-6} alkyl, C_{1-6} alkylamino or C_{1-6} alkoxy;
- 10 R^2 is hydrogen; halogen; C_{1-6} alkyl, which is unsubstituted or once, twice or three times substituted by fluoro; C_{1-6} alkoxy, which is unsubstituted or once, twice or three times substituted by fluoro; cyano; C_{3-7} cycloalkyl; hydroxy or phenyl- $C_xH_{2x}-O-$;
- R^3 is hydrogen;
- halogen;
- 15 C_{1-6} alkyl, which is unsubstituted or once, twice or three times substituted by fluoro; cyano; pyrrolidinyl; phenyl- $C_xH_{2x}-N(C_{1-6}alkyl)-$; C_{1-6} alkoxycarbonylpiperazinyl;
- 20 or R^7-O- , wherein R^7 is hydrogen; C_{1-6} alkyl, which is unsubstituted or substituted with one to three substituents independently selected from fluoro, hydroxy and C_{2-6} alkenyl; C_{1-6} alkoxy C_{1-6} alkyl; C_{1-6} alkoxy C_{1-6} alkoxy C_{1-6} alkyl; amino C_{1-8} alkyl; C_{1-6} alkylcarbonylamino C_{1-8} alkyl; C_{1-6} alkylsulfonylamino C_{1-8} alkyl; C_{1-6} alkylsulfanyl C_{1-6} alkyl; C_{1-6} alkylsulfonyl C_{1-6} alkyl; cyano C_{1-6} alkyl; C_{3-7} cycloalkyl C_{1-6} alkyl; cyano C_{3-7} cycloalkyl C_{1-6} alkyl; phenyl C_{1-6} alkyl;
- 25 pyrrolidinylcarbonyl C_{1-6} alkyl; C_{2-6} alkynyl; hydroxy C_{1-6} alkyl C_{2-6} alkynyl; amino C_{1-6} alkoxy C_{1-6} alkyl; C_{1-6} alkylamino C_{1-6} alkoxy C_{1-6} alkyl; di C_{1-6} alkylamino C_{1-6} alkoxy C_{1-6} alkyl; carboxy C_{1-6} alkyl; or C_{1-6} alkoxycarbonylamino C_{1-8} alkyl; heteroaryl C_{1-6} alkyl, wherein heteroaryl is *N*-

In another aspect, there is provided the use of a compound as defined herein for the preparation of a medicament for the inhibition of HBsAg production or secretion.

In another aspect, there is provided the use of a compound as defined herein for the preparation of a medicament for the inhibition of HBV DNA production.

5 In another aspect, there is provided a compound as defined herein for the treatment or prophylaxis of HBV infection.

The disclosure is also relates to their manufacture, medicaments based on a compound in accordance with the disclosure and their production as well as the use of compounds of formula I as HBsAg inhibitors and HBV DNA production inhibitors. Accordingly, the compounds of
10 formula I are useful for the treatment or prophylaxis of HBV infection.

DETAILED DESCRIPTION OF THE INVENTION

DEFINITIONS

15 As used herein, the term “C₁₋₆alkyl” alone or in combination signifies a saturated, linear- or branched chain alkyl group containing 1 to 6, particularly 1 to 4 carbon atoms, for example methyl, ethyl, propyl, isopropyl, 1-butyl, 2-butyl, *tert*-butyl and the like. Particular “C₁₋₆alkyl” groups are methyl, ethyl, isopropyl and *tert*-butyl.

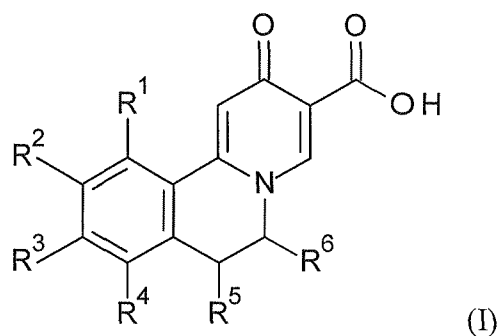
20 The term “C₂₋₆alkenyl” denotes an unsaturated, linear or branched chain alkenyl group containing 2 to 6, particularly 2 to 4 carbon atoms, for example vinyl, propenyl, allyl, butenyl and the like. Particular “C₂₋₆alkenyl” group is allyl and vinyl.

The term “C₂₋₆alkynyl” denotes an unsaturated, linear or branched chain alkynyl group containing 2 to 6, particularly 2 to 4 carbon atoms, for example ethynyl, 1-propynyl, propargyl, butynyl and the like. Particular “C₂₋₆alkynyl” groups are ethynyl and 1-propynyl.

25 The term “C_xH_{2x}” alone or in combination signifies a saturated, linear- or branched chain alkyl group containing 1 to 6, particularly 1 to 4 carbon atoms.

Claims

1. A compound of formula I



5

wherein

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

R^2 is hydrogen; halogen; C_{1-6} alkyl, which is unsubstituted or once, twice or three times substituted by fluoro; C_{1-6} alkoxy, which is unsubstituted or once, twice or three times substituted by fluoro; cyano; C_{3-7} cycloalkyl; hydroxy or phenyl- $C_xH_{2x}-O-$;

10

R^3 is hydrogen;

halogen;

C_{1-6} alkyl, which is unsubstituted or once, twice or three times substituted by fluoro; cyano;

15 pyrrolidinyl;

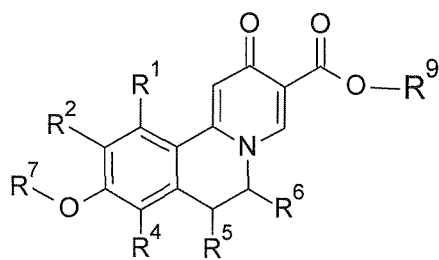
phenyl- $C_xH_{2x}-N(C_{1-6}alkyl)-$;

C_{1-6} alkoxycarbonylpiperazinyl;

or R^7-O- , wherein R^7 is hydrogen; C_{1-6} alkyl, which is unsubstituted or substituted with one to three substituents independently selected from fluoro, hydroxy and C_{2-6} alkenyl; C_{1-6} alkoxy C_{1-6} alkyl; C_{1-6} alkoxy C_{1-6} alkoxy C_{1-6} alkyl; amino C_{1-8} alkyl; C_{1-6} alkylcarbonylamino C_{1-8} alkyl; C_{1-6} alkylsulfonylamino C_{1-8} alkyl; C_{1-6} alkylsulfanyl C_{1-6} alkyl; C_{1-6} alkylsulfonyl C_{1-6} alkyl; cyano C_{1-6} alkyl; C_{3-7} cycloalkyl C_{1-6} alkyl; cyano C_{3-7} cycloalkyl C_{1-6} alkyl; phenyl C_{1-6} alkyl;

20 pyrrolidinylcarbonyl C_{1-6} alkyl; C_{2-6} alkynyl; hydroxy C_{1-6} alkyl C_{2-6} alkynyl; amino C_{1-6} alkoxy C_{1-6} alkyl; C_{1-6} alkylamino C_{1-6} alkoxy C_{1-6} alkyl; di C_{1-6} alkylamino C_{1-6} alkoxy C_{1-6} alkyl; carboxy C_{1-6} alkyl; or C_{1-6} alkoxycarbonylamino C_{1-8} alkyl; heteroaryl C_{1-6} alkyl, wherein heteroaryl is *N*-containing monocyclic heteroaryl; or heterocycloalkyl C_{1-6} alkyl, wherein heterocycloalkyl is monocyclic heterocycloalkyl;

25



(B);

wherein R¹ to R⁷ are defined as in any one of claims 1 to 20, R⁹ is C₁₋₆alkyl.

- 5 29. A compound according to any one of claims 1 to 27 for use as therapeutically active substance.
30. A pharmaceutical composition comprising a compound in accordance with any one of claims 1 to 27 and a therapeutically inert carrier.
- 10 31. The use of a compound according to any one of claims 1 to 27 for the preparation of a medicament for the treatment or prophylaxis of HBV infection.
32. The use of a compound according to any one of claims 1 to 27 for the preparation of a medicament for the inhibition of HBsAg production or secretion.
- 15 33. The use of a compound according to any one of claims 1 to 27 for the preparation of a medicament for the inhibition of HBV DNA production.
- 20 34. A compound according to any one of claims 1 to 27 for the treatment or prophylaxis of HBV infection.