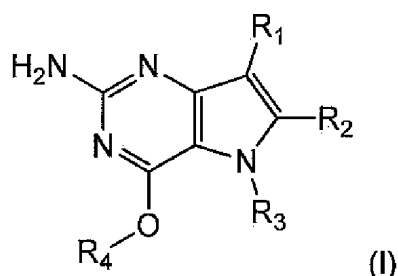


In the treatment of certain viral infections, regular injections of interferon (IFN-alfa) can be administered, as is the case for hepatitis C virus (HCV). Orally available small molecule IFN inducers offer the potential advantages of reduced immunogenicity and convenience of administration. Thus, novel IFN inducers are potentially effective new class of drugs for the treatment of viral infections. For an example in the literature of a small molecule IFN inducer having antiviral effect see De Clercq, E.; Descamps, J.; De Somer, P. *Science* 1978, 200, 563-565.

Interferon α is also given to patients in combination with other drugs in the treatment of certain types of cancer. TLR 7/8 agonists are also of interest as vaccine adjuvants because of their ability to induce pronounced Th1 response.

However, there exists a strong need for novel Toll-Like receptor modulators having preferred selectivity, and an improved safety profile compared to the compounds of the prior art.

In accordance with one aspect of the present disclosure a compound of formula (I) is provided



and their pharmaceutically acceptable salt, solvate or polymorph thereof wherein

R₁ is H, fluorine or methyl;

R₂ is H, halogen or C₁₋₃ alkyl;

R₃ is C₁₋₆ alkyl optionally substituted by one or more substituents independently selected from aryloxy, heterocycle, halogen, aryl, alkylamino, dialkylamino, C₁₋₆ alkyl, carboxylic acid, carboxylic ester, carboxylic amide, nitrile, or C₁₋₆ alkoxy;

or wherein

R₃ is an alkylaryl optionally substituted by one or more substituents independently selected from halogen, aryloxy, aryl, alkylamino, dialkylamino, C₁₋₆ alkyl, carboxylic acid, carboxylic ester, carboxylic amide, sulfonamide, nitrile, or C₁₋₆ alkoxy;

R₄ is C₁₋₆ alkyl optionally substituted by one or more substituents independently selected from hydroxyl, C₁₋₆ alkyl, C₃₋₇ cycloalkyl, C₂₋₆ alkenyl or aryl optionally further substituted by C₁₋₆ alkyl, and C₃₋₇ cycloalkyl optionally further substituted by C₁₋₆ alkyl;

or wherein

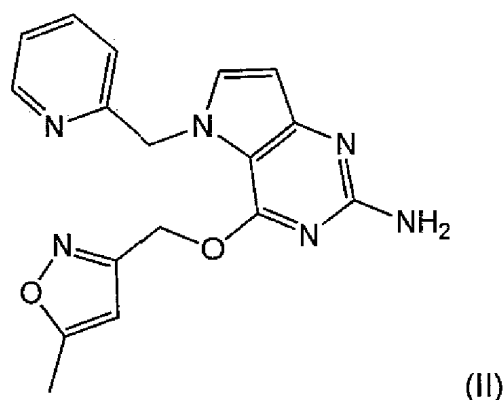
R₄ is an alkylaryl optionally substituted by one or more substituents independently selected from halogen, aryloxy, aryl, alkylamino, dialkylamino, C₁₋₆ alkyl, carboxylic acid, carboxylic ester, carboxylic amide, sulfonamide, nitrile, or C₁₋₆ alkoxy.

- 5 Preferred compounds are those of formula (I) wherein R₃ is a CH₂-aryl group (substituted or unsubstituted), and R₁, R₂, and R₄ are described as above.

In a second embodiment are the compounds of formula (I) wherein R₃ and R₄ are both CH₂-aryl groups optionally further substituted as described above, and R₁, and R₂ are as described as above.

- 10 Other preferred embodiments are those of formula (I) wherein R₁ is fluorine, R₂ is hydrogen, and R₃ and R₄ are described as above.

The most preferred compound is compound of formula (II) having the following chemical structure:



- 15 The compounds of formula (I) and (II) and their pharmaceutically acceptable salt, solvate or polymorph thereof have activity as pharmaceuticals, in particular as modulators of Toll-Like Receptor (especially TLR7) activity.

- 20 In a further aspect the present disclosure provides a pharmaceutical composition comprising a compound of formula (I) or (II) or a pharmaceutically acceptable salt, solvate or polymorph thereof according to the current disclosure together with one or more pharmaceutically acceptable excipients, diluents or carriers.

In a further aspect the present disclosure provides a compound of formula (I) or (II) or a pharmaceutically acceptable salt, solvate or polymorph thereof according to the current disclosure, or a pharmaceutical

composition comprising said compound of formula (I) or (II) or a pharmaceutically acceptable salt, solvate or polymorph thereof according to the current disclosure for use as a medicament.

5 Another aspect of the disclosure provides a compound of formula (I) or (II) or a pharmaceutically acceptable salt, solvate or polymorph thereof according to the current disclosure, or said pharmaceutical composition comprising said compound of formula (I) or (II) or a pharmaceutically acceptable salt, solvate or polymorph thereof according to the current disclosure for use in the treatment of any disorder in which the modulation of TLR7 is involved.

10 The term "alkyl" refers to a straight-chain or branched-chain saturated aliphatic hydrocarbon containing the specified number of carbon atoms.

The term "halogen" refers to fluorine, chlorine, bromine or iodine.

15 The term "alkylaryl" refers to a straight-chain or branched-chain saturated aliphatic hydrocarbon containing the specified number of carbon atoms substituted by an aryl wherein "aryl" is defined as below.

The term "alkenyl" refers to an alkyl as defined above consisting of at least two carbon atoms and at least one carbon-carbon double bond.

The term "cycloalkyl" refers to a carbocyclic ring containing the specified number of carbon atoms.

20 The term "alkoxy" refers to an alkyl (carbon and hydrogen chain) group singularly bonded to oxygen like for instance a methoxy group or ethoxy group.

25 The term "aryl" means an aromatic ring structure optionally comprising one or two heteroatoms selected from N, O and S, in particular from N and O. Said aromatic ring structure may have 5, 6 or 7 ring atoms. In particular, said aromatic ring structure may have 5 or 6 ring atoms.

The term "aryloxy" refers to an aromatic ring structure. Said aromatic group is singularly bonded to oxygen.

30 The term "heterocycle" refers to molecules that are saturated or partially saturated and include tetrahydrofuran, dioxane or other cyclic ethers. Heterocycles containing nitrogen include, for example azetidine, morpholine, piperidine, piperazine, pyrrolidine, and the