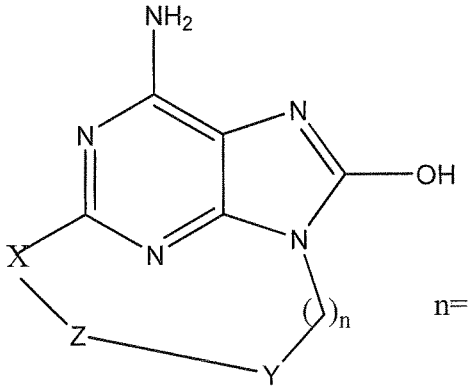
However, there exists a strong need for novel Toll-Like receptor modulators having preferred selectivity, higher potency, higher metabolic stability, and an improved safety profile compared to the compounds of the prior art.

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). For more information reference Fried et. al. Peginterferon-alfa plus ribavirin for chronic hepatitis C virus infection, *N Engl J Med* 2002; 347: 975-82. 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 treating virus 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.

IFN-alfa is also given in combination with other drugs in the treatment of certain types of cancer (refer to Eur. J. Cancer 46, 2849–57, and Cancer Res. **1992**, *52*, 1056 for examples). TLR 7/8 agonists are also of interest as vaccine adjuvants because of their ability to induce pronounced Th1 response (refer to Hum. Vaccines 2010, 6, 1−14, and Hum. Vaccines 2009, 5, 381−394 for examples).

In accordance with ~~the~~ a first aspect of the present ~~invention~~ disclosure, a compound of formula (I) is provided

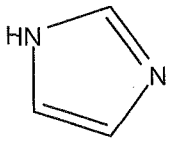


(I)

n= 1 to 3

and pharmaceutically accepted salts thereof, wherein

X is oxygen, nitrogen, sulfur or

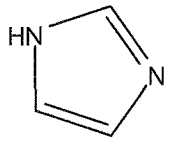


,

Y represents an aromatic ring or heterocyclic ring comprising at least a nitrogen, optionally substituted by one or more substituents independently selected from C_{1-6}alkyl, C_{1-4}alkoxy, trifluoromethyl or halogen,

Z represents C_{1-10} saturated or unsaturated alkyl optionally substituted by an alkyl or alkylhydroxyl;
or Z represents C_{1-6}alkyl -NH-C(O)- C_{1-6}alkyl- or C_{1-6}alkyl -NH-C(O)- C_{1-6}alkyl -O-;
or Z represents C_{1-10}alkyl -O- wherein said alkyl is unsaturated or saturated and can optionally be substituted by an alkyl or alkylhydroxyl ,
or Z represents C_{1-6}alkyl-O-C_{1-6}alkyl- wherein said alkyl is unsaturated or saturated and can optionally be substituted by an alkyl or alkylhydroxyl
or Z represents C_{1-6}alkyl-O-C_{1-6}alkyl-O- wherein said alkyl is unsaturated or saturated and can optionally be substituted by an alkyl or alkylhydroxyl.

Part of the ~~invention~~ disclosure is also those compounds of formula (I) wherein
X is O, N-C_{1-4}alkyl, NH, S or



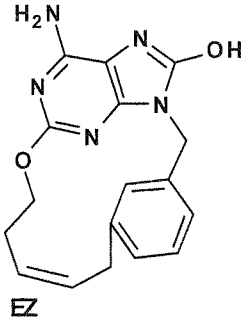
,

Y represents an aromatic ring or heterocyclic ring comprising at least a nitrogen, optionally substituted by one or more substituents independently selected from C_{1-6}alkyl, C_{1-4}alkoxy, trifluoromethyl, halogen, C(O)NH- C_{1-6}alkyl, NH(CO)-C_{1-6}alkyl, CN, NH-C_{1-6}alkyl, N-(C_{1-6}alkyl)$_2$, C(O)-C_{1-6}alkyl or OH,

Z represents C_{1-10} saturated or unsaturated alkyl optionally substituted by an alkyl or alkylhydroxyl or OH;
or Z represents C_{1-6}alkyl -NH-C(O)- C_{1-6}alkyl- or C_{1-6}alkyl -NH-C(O)- C_{1-6}alkyl -O-;
or Z represents C_{1-6}alkyl –NCH_3-C(O)- C_{1-6}alkyl- or C_{1-6}alkyl –NCH_3-C(O)- C_{1-6}alkyl -O-;
or Z represents C_{1-6}alkyl –C(O)-NH- C_{1-6}alkyl- or C_{1-6}alkyl –C(O)-NH- C_{1-6}alkyl -O-;
or Z represents C_{1-6}alkyl –C(O)-NCH_3- C_{1-6}alkyl- or C_{1-6}alkyl –C(O)-NCH_3- C_{1-6}alkyl -O-;
or Z represents C_{1-10}alkyl -O- wherein said alkyl is unsaturated or saturated and can optionally be substituted by an alkyl or alkylhydroxyl or OH;
or Z represents C_{1-10}alkyl -NH- wherein said alkyl is unsaturated or saturated and can optionally be substituted by an alkyl or alkylhydroxyl or OH;

or Z represents C_{1-6}alkyl-O-C_{1-6}alkyl- wherein said alkyl is unsaturated or saturated and can optionally be substituted by an alkyl or alkylhydroxyl or OH;
or Z represents C_{1-6}alkyl-O-C_{1-6}alkyl-O- wherein said alkyl is unsaturated or saturated and can optionally be substituted by an alkyl or alkylhydroxyl or OH.

Preferred compounds having one of the following formula's according to the disclosure ~~invention~~ were selected from the group of:



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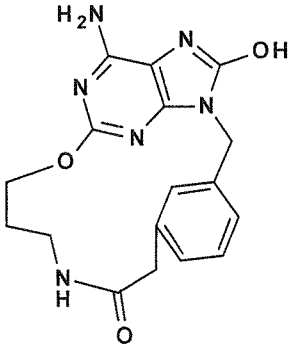

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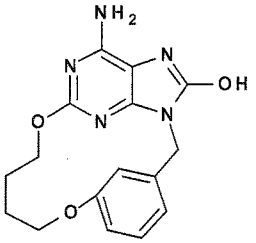

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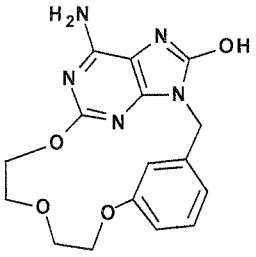

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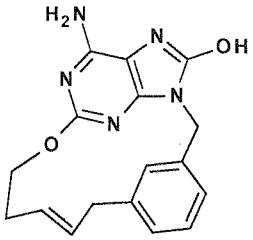

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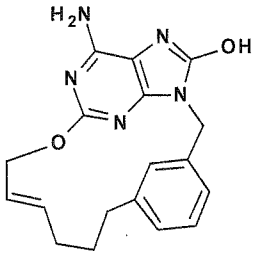

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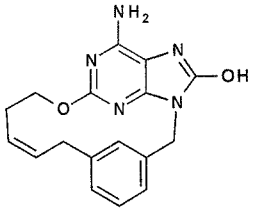

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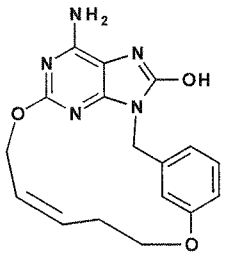

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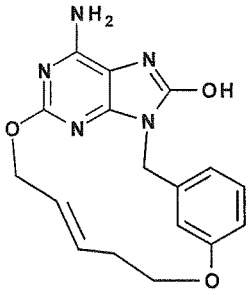

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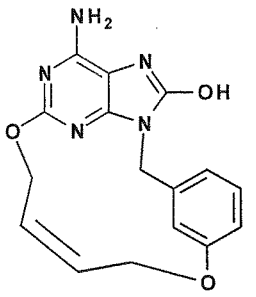
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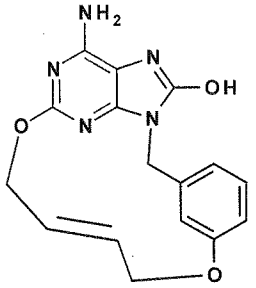
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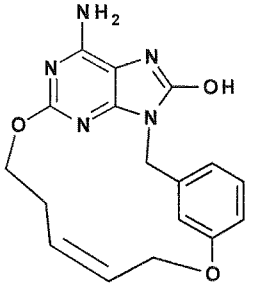
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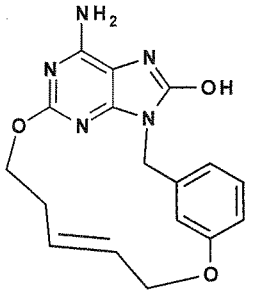
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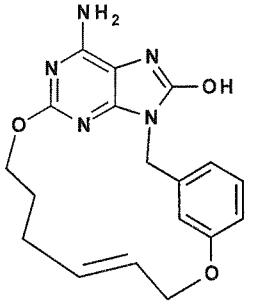
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Other preferred compounds according to the disclosure ~~invention~~ are compounds having the following numbers (as mentioned in the Tables 1 and 2 respectively): 32, 45, 60, 64, 65, 68, 75, 87, 90, 91 and 92.

A second aspect of the present disclosure provides for ~~Part of the invention is also~~ a pharmaceutical composition comprising a compound of formula (I) or a pharmaceutically acceptable salt, solvate or polymorph thereof as disclosed herein together with one or more pharmaceutically acceptable excipients, diluents or carriers.

Furthermore, a third aspect of the disclosure provides ~~to the invention belongs~~ a compound of formula (I) or a pharmaceutically acceptable salt, solvate or polymorph thereof as disclosed herein or a pharmaceutical composition above mentioned for use as a medicament.

A fourth aspect of the disclosure provides ~~The invention also relates to~~ a compound of formula (I) or a pharmaceutically acceptable salt, solvate or polymorph thereof as disclosed herein or a pharmaceutical composition above mentioned for use in the treatment of a disorder in which the modulation of TLR7 is involved.

The term "alkyl" refers to a straight-chain or branched-chain mostly saturated (but in specific compounds according to the invention being unsaturated) aliphatic hydrocarbon containing the specified number of carbon atoms.

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