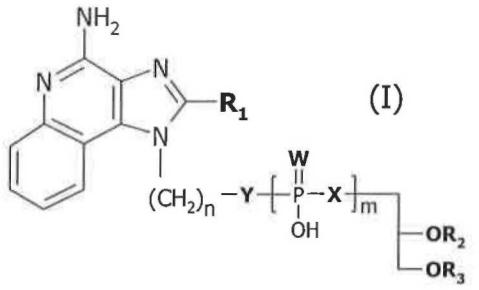
Figure 4 illustrates the antigen- specific CD4 T cell response.

Fig 5 shows serum cytokine response in groups immunized with the liposome -based formulations without (-) or with various amounts of TLR7/8 ligands together with QS21 and MPL.

Fig 6 shows serum cytokine response in groups immunized with the emulsion-based formulations without (-) or with various amounts of TLR7/8 ligands together with QS21 and MPL.

Summary ~~of the Invention~~

The compounds of the subject ~~invention~~ disclosure are adjuvant molecules that comprise a imidazoquinoline molecule which may be covalently linked to a phospho- or phosphonolipid group. The compounds of the subject ~~invention~~ disclosure are described generally by Formula I:



wherein

$\mathbf{R_1}$ = H, C_{1-6} alkyl, C_{1-3} alkoxyC_{1-3} alkyl, C_{3-6}cycloalkylC_{1-3}alkoxy, C_{3-6}cycloalkylC_{1-3}alkyl. . .

n = 1-6

Y = O, NH

X = O, CH_2, CF_2

W = O or S

m = 1-2,

Y = O, NH

X = O, CH_2, CF_2

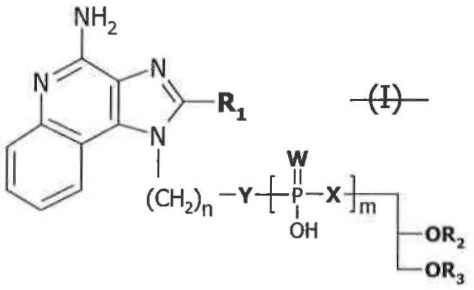
W = O or S

m = 1-2,

R_2 = H or straight/branched/unsaturated C_4-C_{24} alkyl or acyl

R_3 = straight/branched/unsaturated C_4-C_{24} alkyl or acyl *(e.g. phosphatidyl, lysophosphatidyl ether or ester when W=O, X=O, m=1)*

In accordance with one aspect, there is provided a compound having the following formula:



wherein

R_1 = H, C_{1-6} alkyl, C_{1-3} alkoxyC_{1-3} alkyl, C_{3-6}cycloalkylC_{1-3}alkoxy, C_{3-6}cycloalkylC_{1-3}alkyl,

n = 1-6,

X = O, CH_2, CF_2,

W = O or S,

m = 1-2,

R_2 = H or straight/branched/unsaturated C_4-C_{24} alkyl or acyl,

R_3 = straight/branched/unsaturated C_4-C_{24} alkyl or acyl

Y=O, NH.

In accordance with another aspect, there is provided a method for improving the adjuvant activity of an imidazoquinoline comprising

conjugating the imidazoquinoline to a phospho- or phosphonolipid to obtain a compound as disclosed herein.

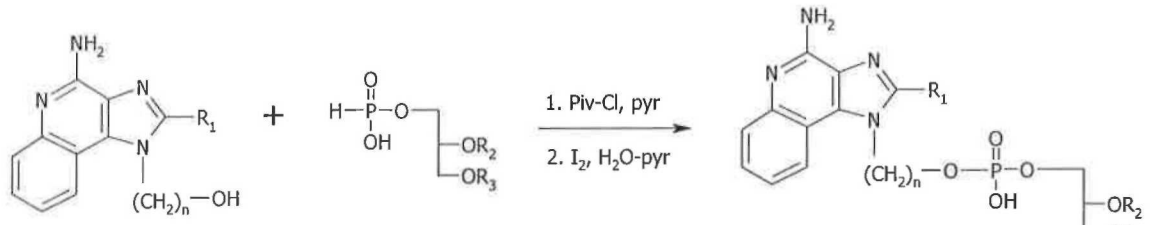
TABLE 1

Example	Ref. No.	*CRX#*	R_1	n	m
1	—	—	—	—	—
2	—	*664*	—	—	—
3	**L1**	*650*	H	2	1
4	**L2**	*652*	n-Bu	2	1
5	**L3**	*651*	CH_2OEt	2	1
6	**L4**	*665*	CH_2OEt	4	1
7	—	—	—	—	—
8	**L5**	*658*	CH_2OEt	2	2

For all Examples shown: Y = W = X = O; $R_2 = R_3$ = hexadecanoyl

EXAMPLE 1

General procedure for the preparation of 4-Amino-1-[2-(1,2-dipalmitoyl-*sn*-glycero-3-phospho)alkyl]-1H-imidazo[4,5-c]quinolines (Compound (I), Y=W=X= O, m=1)

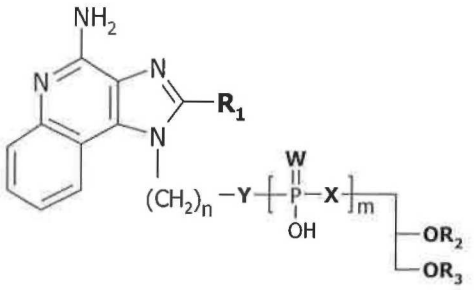


II **III** **IV**

Imidazoquinoline monophosphate diglycerides **IV** were prepared by coupling 4-amino-1-hydroxyalkyl-imidazoquinolines **II** (Gerster et al. *J Med Chem* **2005**, *48*, 3481; Izumi et al. *Bioorg Med Chem* **2003**, *11*, 2541) with 1-H phosphonate **III** according to methods known in the art (Crossman, et al. *J Chem Soc, Perkin Trans 1*, **1997**, 2769; Westerduin,

CLAIMS

1. A compound having the following formula:



wherein

R_1 = H, C_{1-6} alkyl, C_{1-3} alkoxyC_{1-3} alkyl, C_{3-6}cycloalkylC_{1-3}alkoxy, C_{3-6}cycloalkylC_{1-3}alkyl,

n = 1-6,

X = O, CH_2, CF_2,

W = O or S,

m = 1-2,

R_2 = H or straight/branched/unsaturated C_4-C_{24} alkyl or acyl,

R_3 = straight/branched/unsaturated C_4-C_{24} alkyl or acyl
Y=O, NH.

2. A method for improving the adjuvant activity of an imidazoquinoline comprising conjugating the imidazoquinoline to a phospho- or phosphonolipid to obtain a compound as claimed in claim 1.