CLAIMS

Claim 1.

A liposome formulation, comprising:

a PEGylated liposome,

wherein the PEGylated liposome comprises an NKT cell-activating ligand and a liposome-constituting lipid,

wherein the NKT cell-activating ligand is α-galactosylceramide or an analog thereof, which is specifically recognized by an NKT cell receptor on an NKT cell, and

wherein the liposome-constituting lipid comprises a choline-containing phospholipid, a PEGylated lipid, and a cholesterol-based lipid.

Claim 2

The liposome formulation according to claim 1, wherein the choline-containing phospholipid is a phosphatidylcholine selected from the group consisting of dipalmitoylphosphatidylcholine, dioleoylphosphatidylcholine, palmitoyloleoylphosphatidylcholine, and stearoyloleoylphosphatidylcholine.

Claim 3.

The liposome formulation according to claim 1 or 2, wherein, in the PEGylated lipid, a terminus of PEG is a hydroxyl group.

Claim 4.

The liposome formulation according to any one of claims 1 to 3, wherein a size of the PEGylated liposome is in a range of an average particle diameter of 10 to 500 nm.

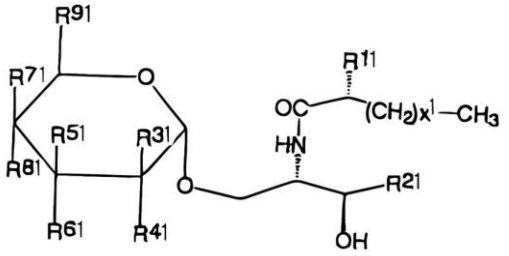
Claim 5.

The liposome formulation according to any one of claims 1 to 4, wherein, in the PEGylated liposome, a mol% ratio of the choline-containing phospholipid (X), the PEGylated lipid (Y), and the cholesterol-based lipid (Z) is X:Y:Z = 1 : (0.03 to 0.176) : (0.34 to 1.35).

Claim 6.

The liposome formulation according to any one of claims 1 to 5, wherein the α-galactosylceramide or the analog thereof is a compound represented by formula (I), a salt thereof, or a solvate thereof:

[Chemical Formula 1]

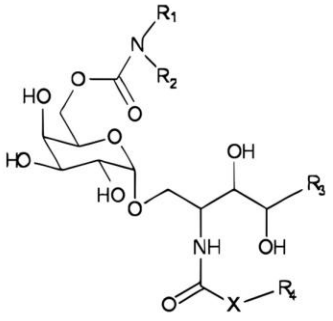


(I)

Claim 7.

The liposome formulation according to any one of claims 1 to 5, wherein the analog of α-galactosylceramide is a compound represented by formula (VI), a salt thereof, or a solvate thereof:

[Chemical Formula 6]

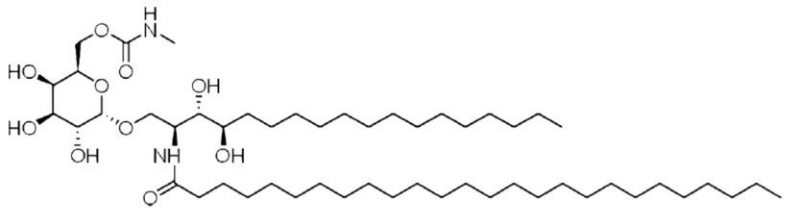


(VI)

Claim 8.

The liposome formulation according to claim 7, wherein the analog of α-galactosylceramide is a compound represented by the following formula (VI-1), a salt thereof, or a solvate thereof:

[Chemical Formula 7]



(VI-1)

Claim 9.

The liposome formulation according to any one of claims 1 to 8, wherein the PEGylated liposome satisfies conditions 1, 2, and 3:

(condition 1) a size of the PEGylated liposome is in a range of an average particle diameter of 60 to 140 nm;

(condition 2) in the PEGylated lipid, a terminus of PEG is a hydroxyl group; and

(condition 3) a surface charge of the PEGylated liposome is a negative charge.

Claim 10.

The liposome formulation according to claim 9, wherein, in condition 3, the surface charge of the PEGylated liposome is from -80 to 5 mV.

Claim 11.

A pharmaceutical composition, comprising the liposome formulation according to any one of claims 1 to 10.

Claim 12.

The pharmaceutical composition according to claim 11, which is for anticancer use.

Claim 13.

The pharmaceutical composition according to claim 11 or 12, which is for anticancer use, wherein a target cancer is triple-negative breast cancer, and the PEGylated liposome contained in the liposome formulation satisfies conditions 1, 2, and 3:

(condition 1) a size of the PEGylated liposome is in a range of an average particle diameter of 60 to 140 nm;

(condition 2) in the PEGylated lipid, a terminus of PEG is a hydroxyl group; and

(condition 3) a surface charge of the PEGylated liposome is a negative charge.

Claim 14.

The pharmaceutical composition according to claim 13, wherein, in condition 3, the surface charge of the PEGylated liposome is from -80 to 5 mV.

Claim 15.

Use of the pharmaceutical composition according to claim 13 or 14 in the manufacture of a medicament for the treatment of cancer in a subject having triple-negative breast cancer.