Non Patent Literature 1: Journal of American Chemical Society, 2014, Vol. 136, p. 16958-16961

Summary

Technical Problem

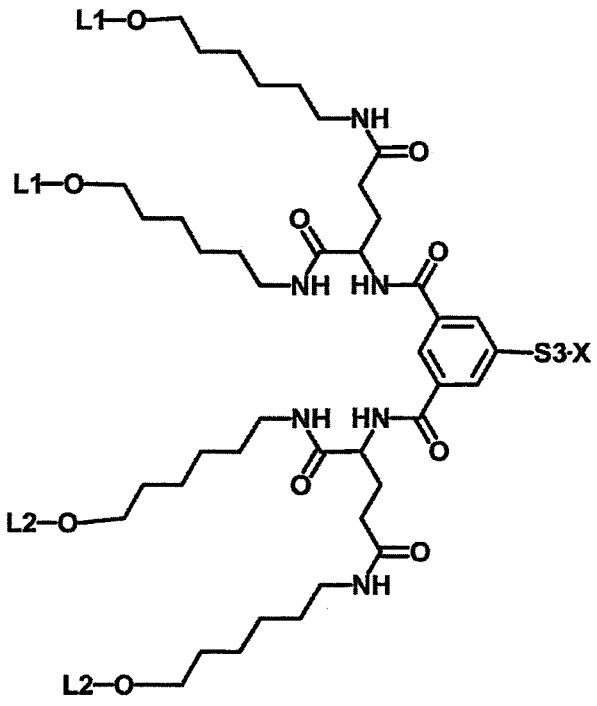
[0007]

An object of the embodiments disclosed herein is to provide a novel nucleic acid conjugate.

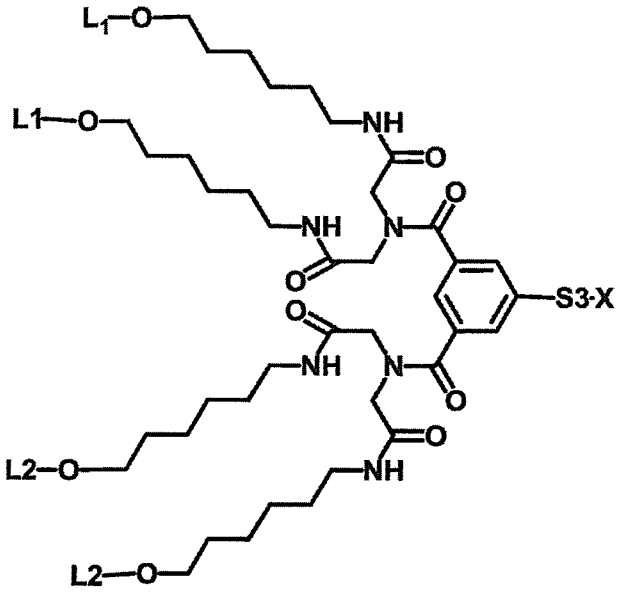
Solution to Problem

[0007a]

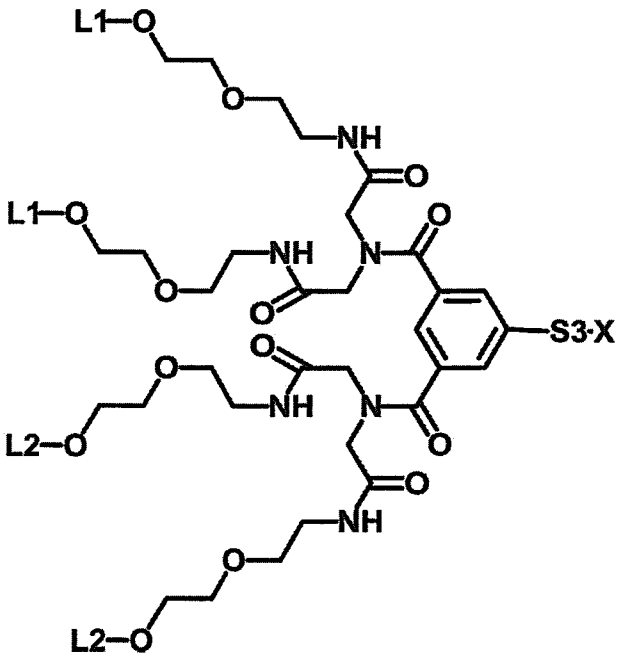
In an aspect, there is provided a nucleic acid conjugate having any structure represented by the following formulas 7-1 to 7-9:Formula 7-1:



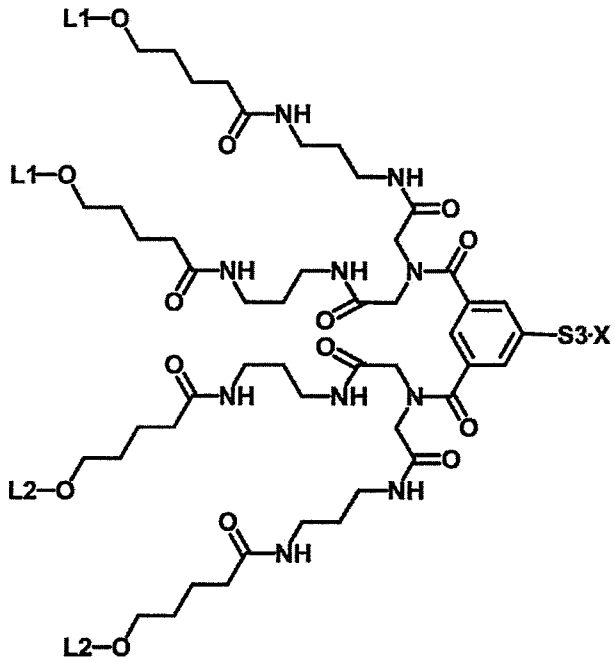
Formula 7-2:



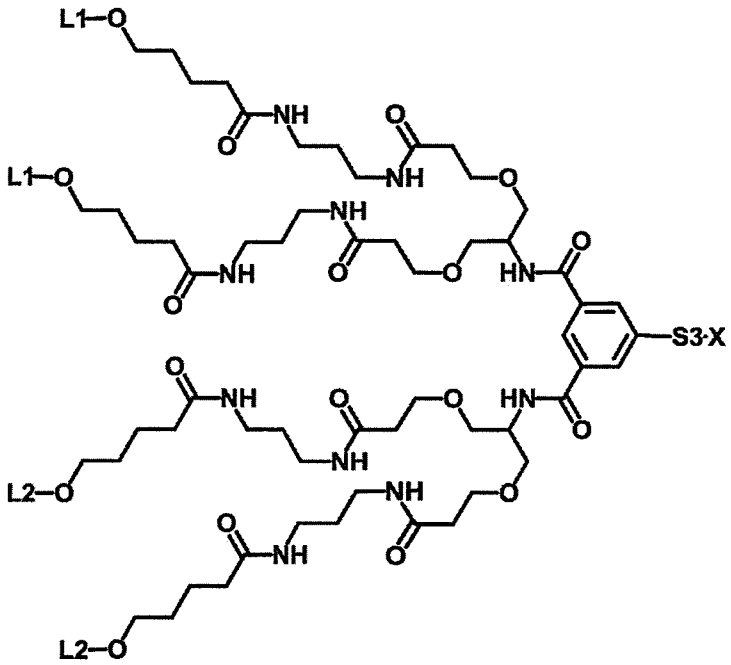
Formula 7-3:



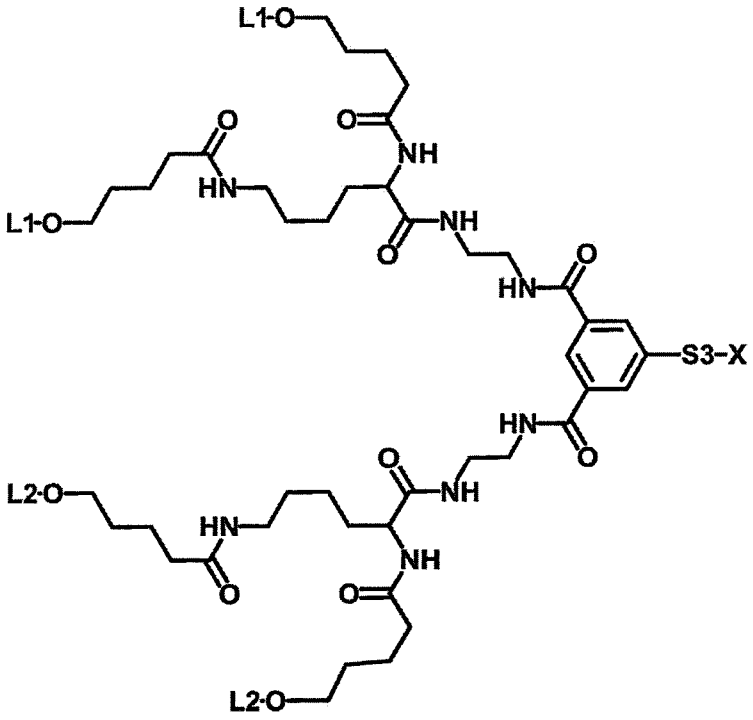
Formula 7-4:



Formula 7-5:



Formula 7-6:



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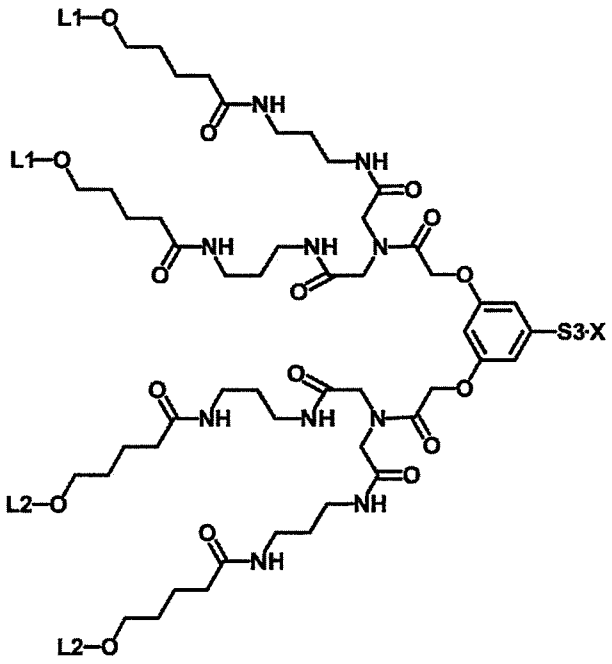
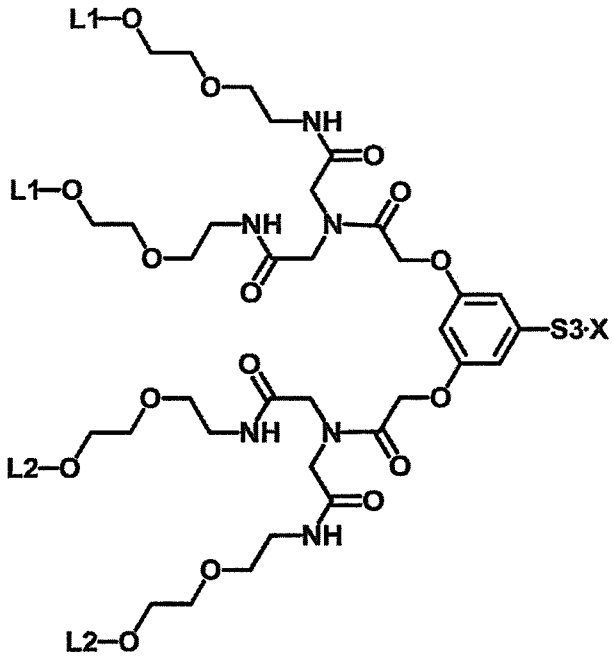
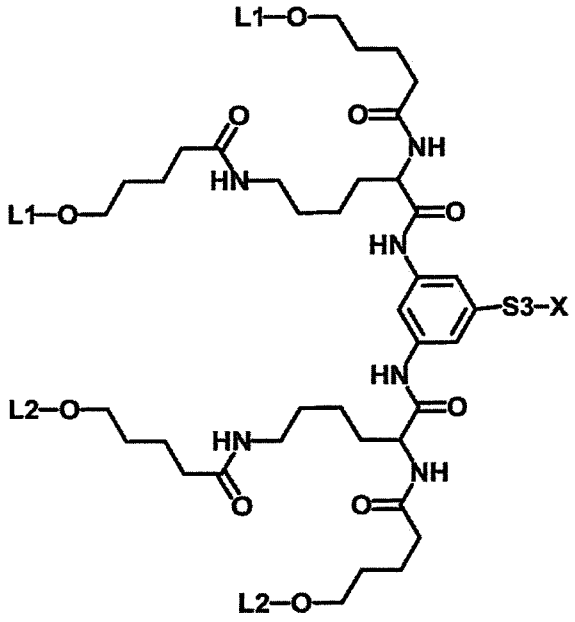


Formula 7-8:



Formula 7-9:



wherein

X is an oligonucleotide,

L1 and L2 are each independently a sugar ligand, and

S1, S2 and S3 are each independently a linker.

[0007b]

In an aspect, there is provided a pharmaceutical composition comprising a nucleic acid conjugate as defined above.

[0007c]

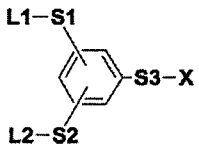
In another aspect, there is provided a nucleic acid conjugate as defined above or a pharmaceutical composition as defined above for use in the treatment or prevention of disease.

[0008]

The present disclosure relates to the following (1) to (22):

(1) A nucleic acid conjugate represented by the following formula 1:

Formula 1:



wherein

X is an oligonucleotide,

L1 and L2 are each independently a sugar ligand, and

S1, S2 and S3 are each independently a linker.

(2) The nucleic acid conjugate according to (1), wherein the nucleic acid conjugate has a structure represented by the following formula 2:

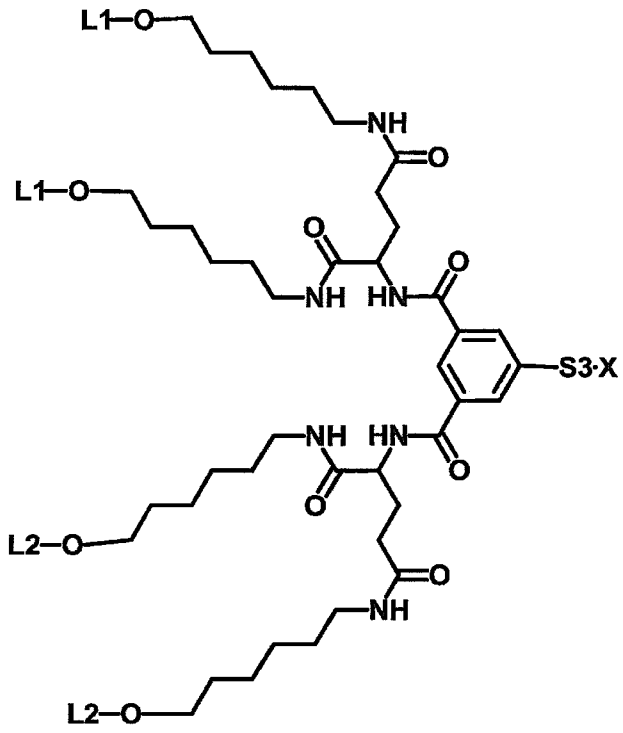
Formula 2:

Claims

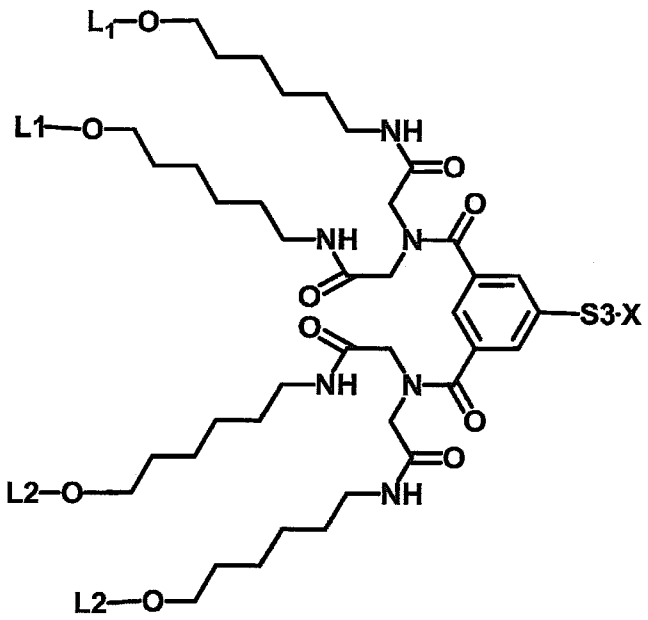
[Claim 1]

A nucleic acid conjugate having any structure represented by the following formulas 7-1 to 7-9:

Formula 7-1:



Formula 7-2:



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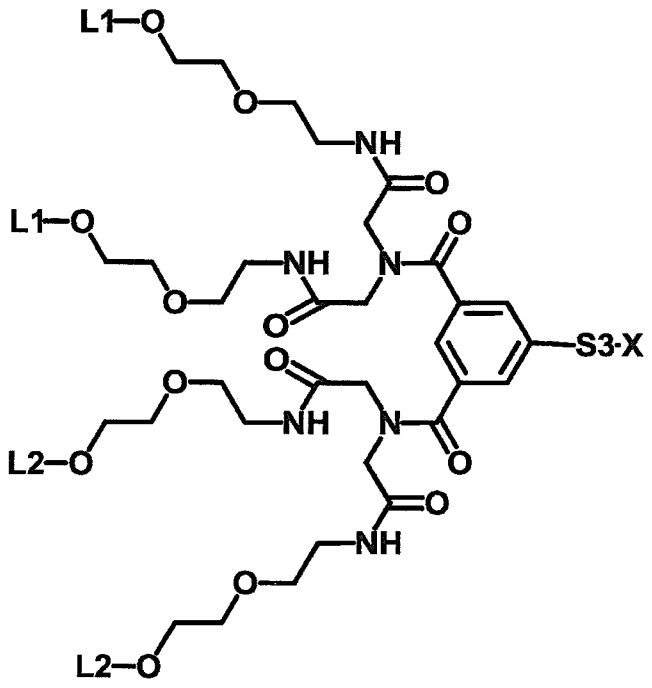

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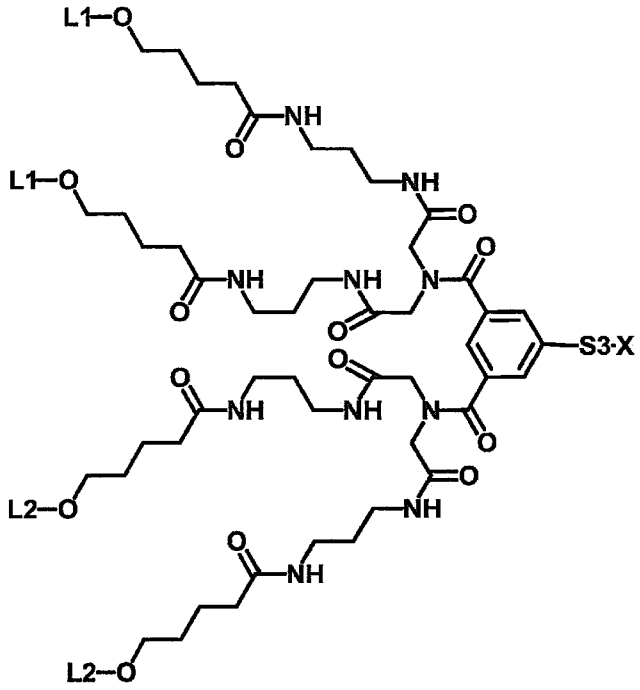

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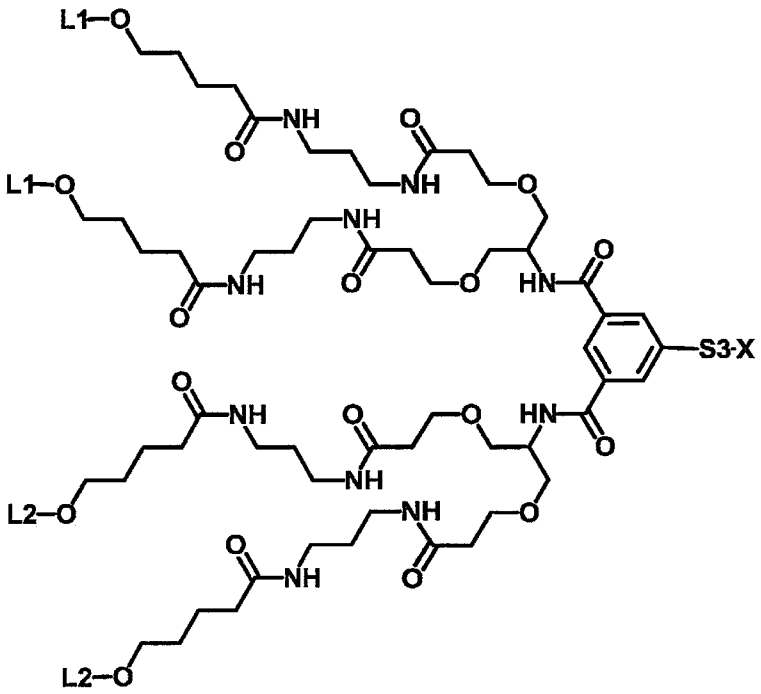

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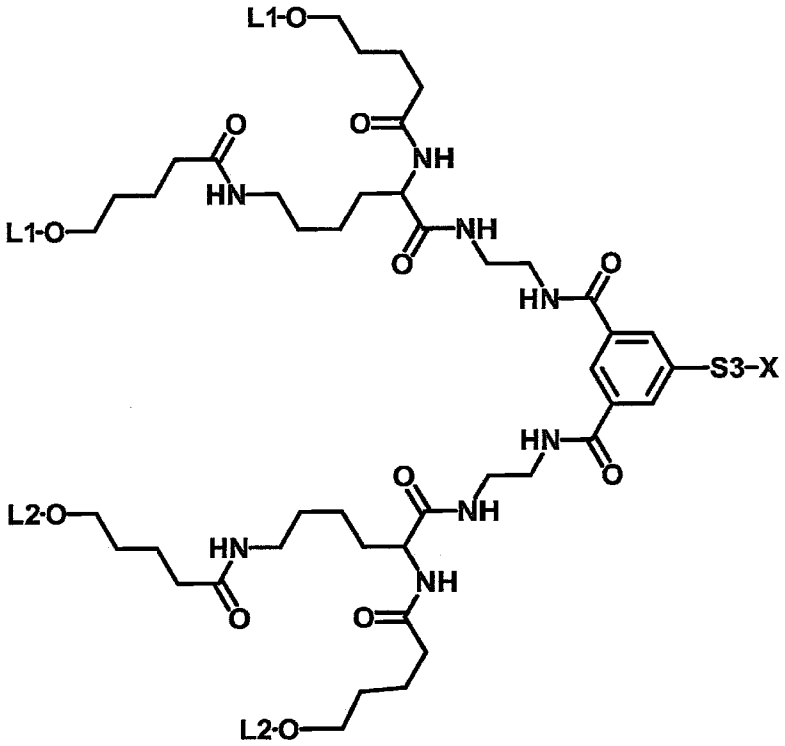

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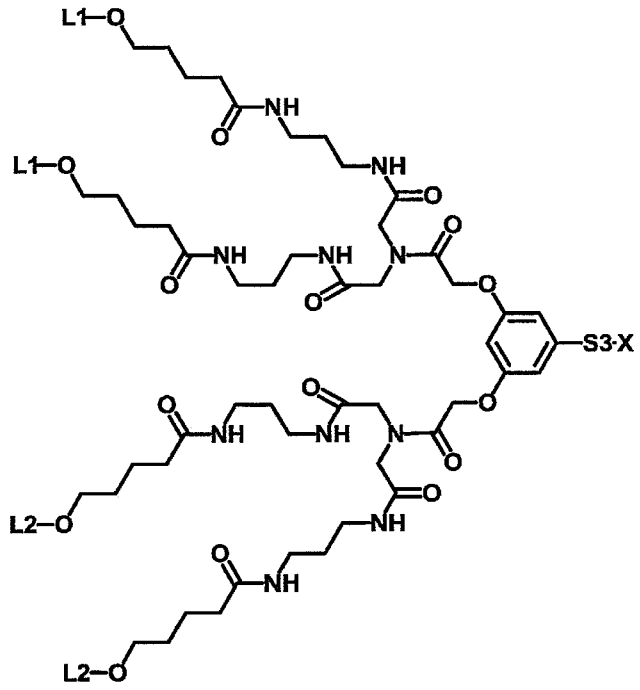
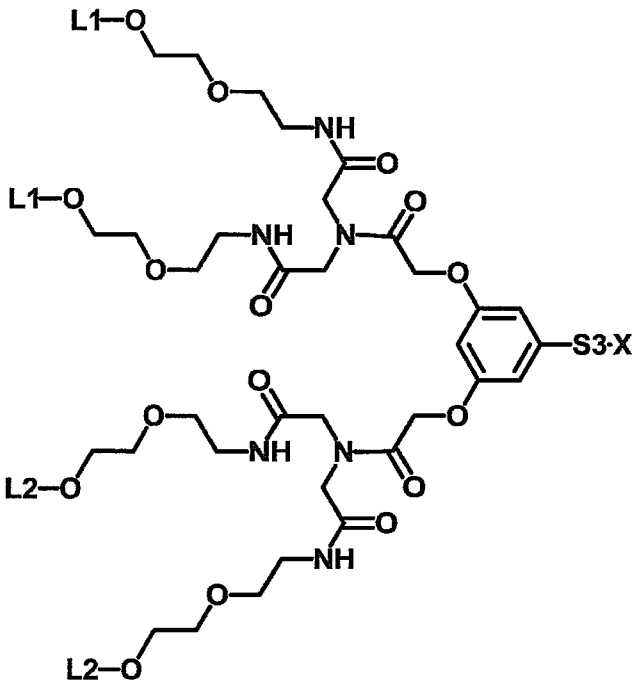
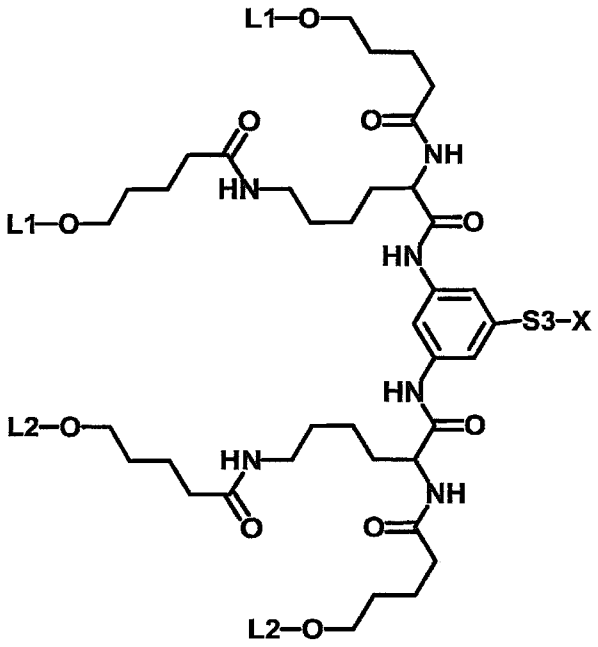


Formula 7-8:



Formula 7-9:



wherein

X is an oligonucleotide,

L1 and L2 are each independently a sugar ligand, and

S1, S2 and S3 are each independently a linker.

[Claim 2]

The nucleic acid conjugate according to claim 1, wherein the sugar ligand is mannose or N-acetylgalactosamine.

[Claim 3]

The nucleic acid conjugate according to claim 1 or 2, wherein the oligonucleotide comprises a modified nucleotide.

[Claim 4]

A pharmaceutical composition comprising a nucleic acid conjugate according to any one of claims 1 to 3.

[Claim 5]

The pharmaceutical composition according to claim 4, wherein the pharmaceutical composition is for transfer into a cell.

[Claim 6]

The pharmaceutical composition according to claim 5, wherein the cell is a liver cell.

[Claim 7]

The pharmaceutical composition according to any one of claims 4 to 6, wherein the pharmaceutical composition is intravenously administered or subcutaneously administered.

[Claim 8]

A nucleic acid conjugate according to any one of claims 1 to 3 or a

pharmaceutical composition according to any one of claims 4 to 7 for use in the treatment or prevention of disease.