Claims

[Claim 1]

A pharmaceutical composition comprising a double-stranded oligonucleotide, wherein

a first strand consists only of a CpG oligonucleotide consisting of 8 to 50 nucleotides,

a second strand is an oligonucleotide consisting of 8 to 60 nucleotides and comprising a sequence capable of hybridizing with the first strand, but excluding an RNA oligonucleotide,

the length of the second strand is 50 % or more of that of the first strand, and

a lipid comprising C12 to C30 hydrocarbon chain(s) binds to the second strand through a linker.

[Claim 2]

The pharmaceutical composition comprising a double-stranded oligonucleotide of claim 1, wherein the oligonucleotide of the second strand is an oligonucleotide consisting of DNA nucleosides and/or nucleoside derivatives.

[Claim 3]

The pharmaceutical composition comprising a double-stranded oligonucleotide of claim 2, wherein the nucleoside derivative is a nucleoside having a substituent at the 2' position of the sugar and/or a nucleoside having a bridge structure between the 4' and 2' positions of the sugar.

[Claim 4]

The pharmaceutical composition comprsing a double-stranded oligonucleotide of claim 3, wherein the bridge structure between the 4' and 2' positions of the sugar is 4'-(CH_2)m-O-2', wherein m is an integer of

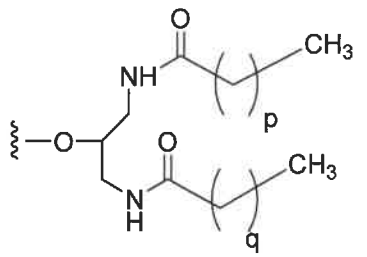
1 to 4.

[Claim 5]

The pharmaceutical composition comprising a double-stranded oligonucleotide of any one of claims 1 to 4, wherein the lipid is a diacyl lipid.

[Claim 6]

The pharmaceutical composition comprising a double-stranded oligonucleotide of claim 5, wherein the diacyl lipid is



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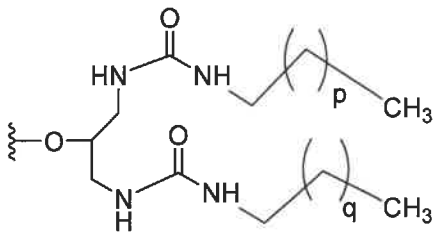

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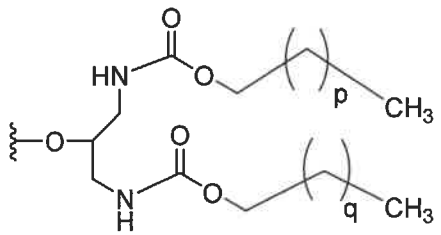

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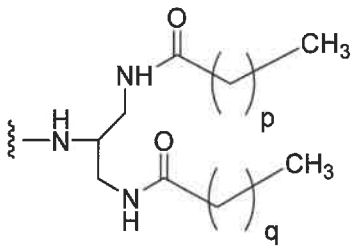


wherein p and q are each independently an integer of 10 to 28.

[Claim 7]

The pharmaceutical composition comprising a double-stranded oligonucleotide of any one of claims 1 to 6, wherein the lipid binds at the 3' end and/or 5' end of the second strand.

[Claim 8]

The pharmaceutical composition comprising a double-stranded

oligonucleotide of any one of claims 1 to 7, wherein the linker is an oligonucleotide linker.

[Claim 9]

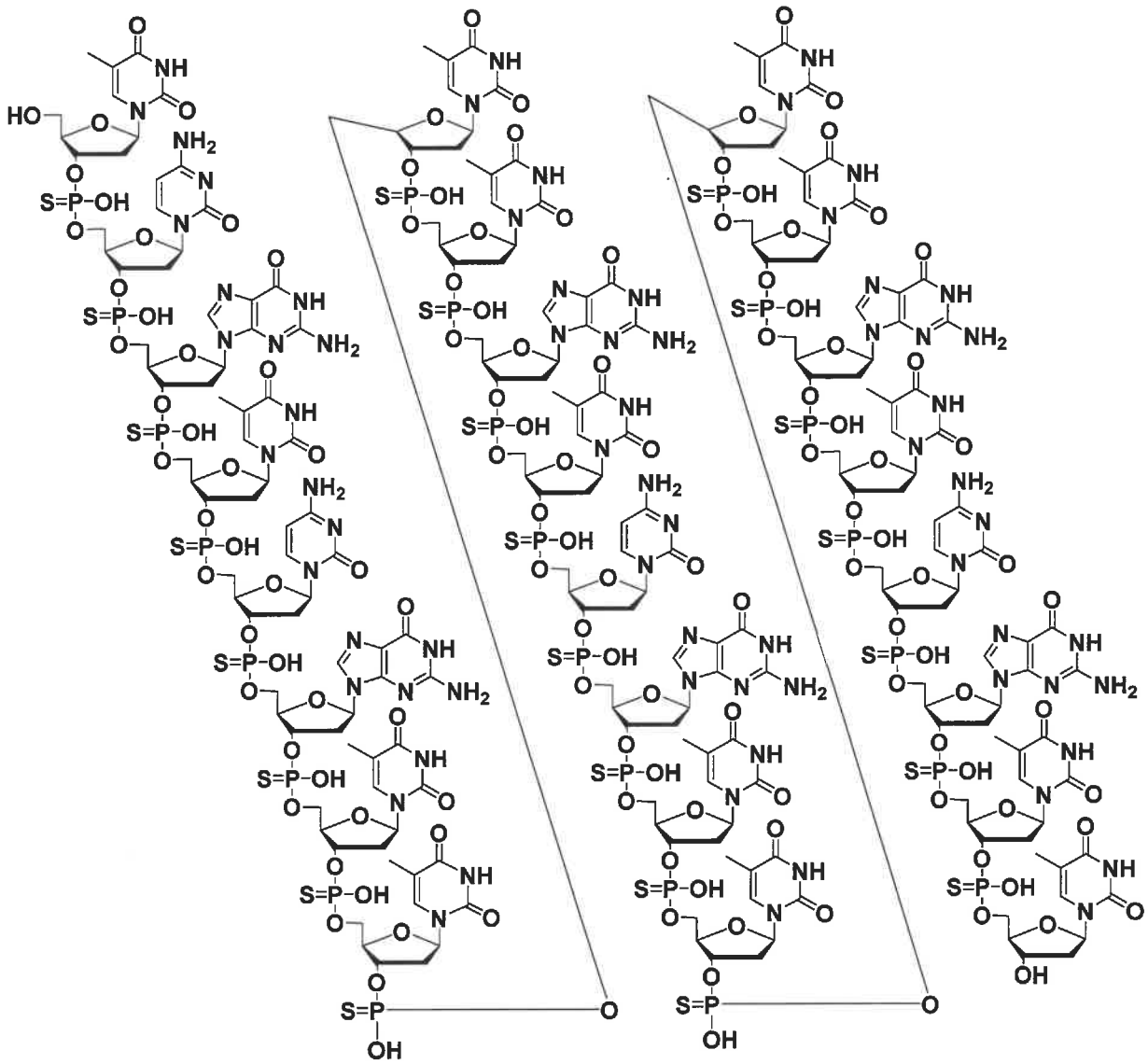
The pharmaceutical composition comprising a double-stranded oligonucleotide of claim 8, wherein the linker is -(dX^1)u-, wherein X^1 is each independently, A, G, C or T, and u is an integer of 1 to 8.

[Claim 10]

The pharmaceutical composition comprising a double-stranded oligonucleotide of any one of claims 1 to 9, wherein the CpG oligonucleotide is an oligonucleotide consisting of the sequence of SEQ ID NO: 13.

[Claim 11]

A pharmaceutical composition comprising a double-stranded oligonucleotide consisting of a first strand and a second strand, wherein the first strand is a strand of the following formula:



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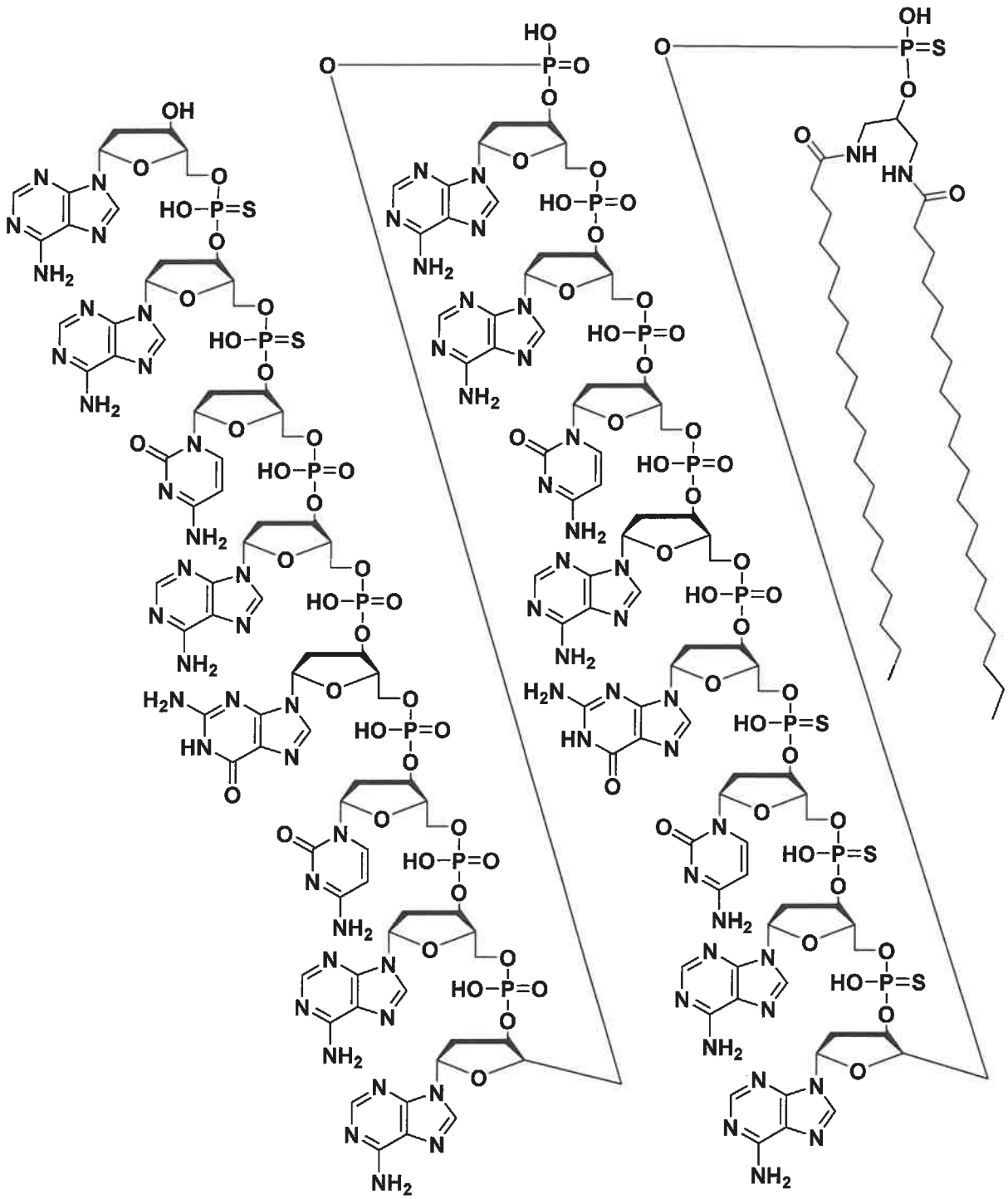
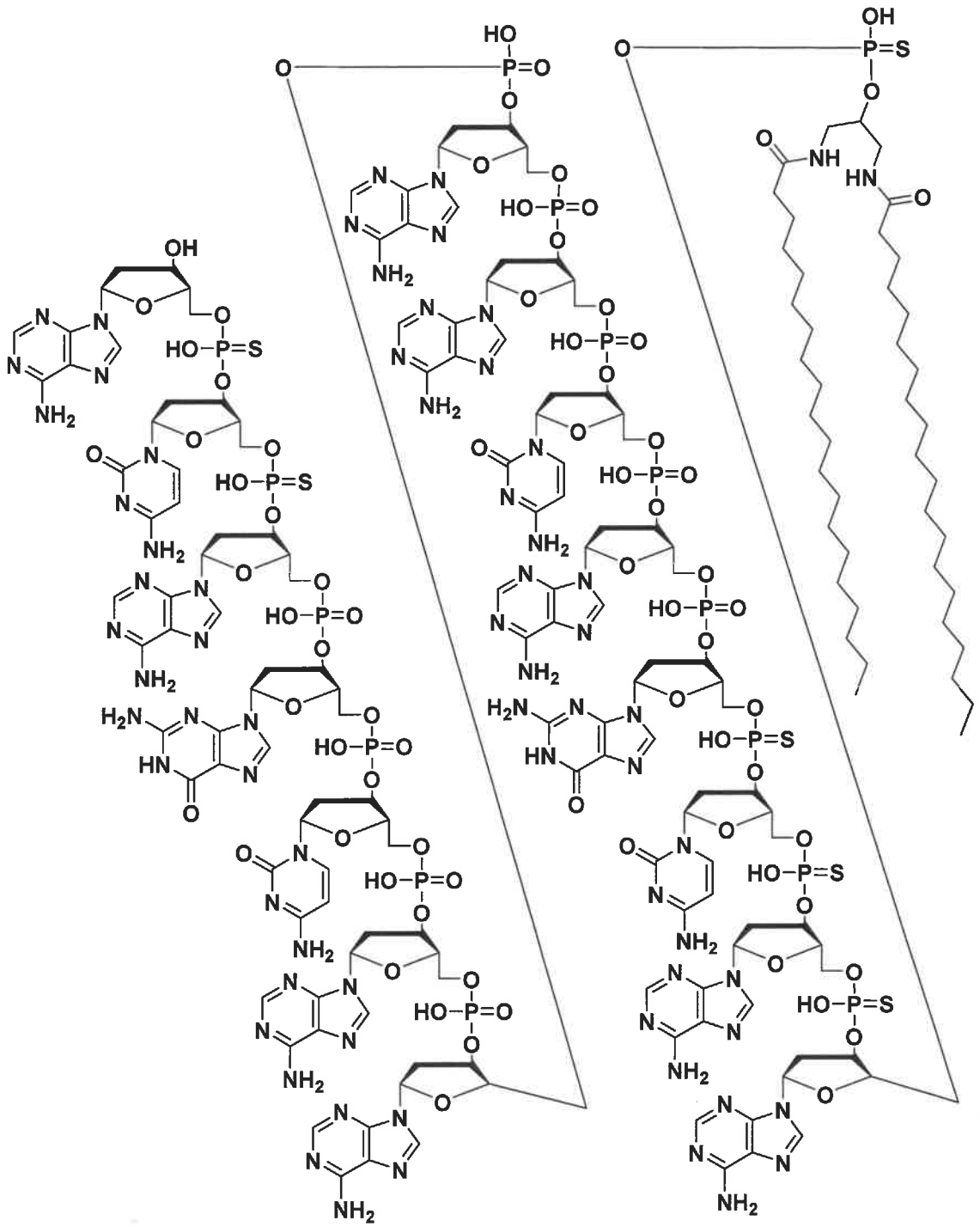
and the second strand is a strand represented by the formula selected from the followings,

the formula :



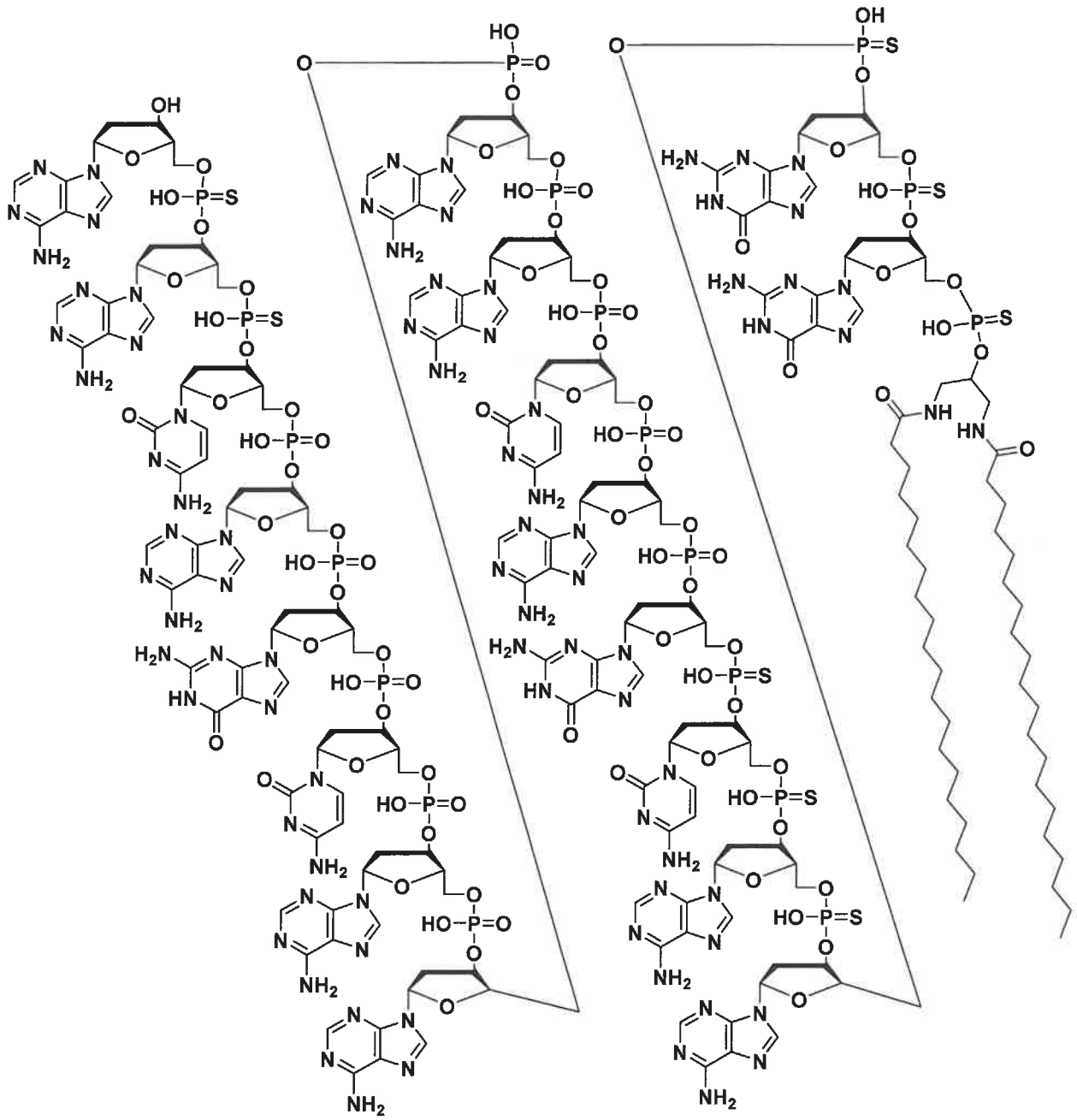
(S-28)

the formula :



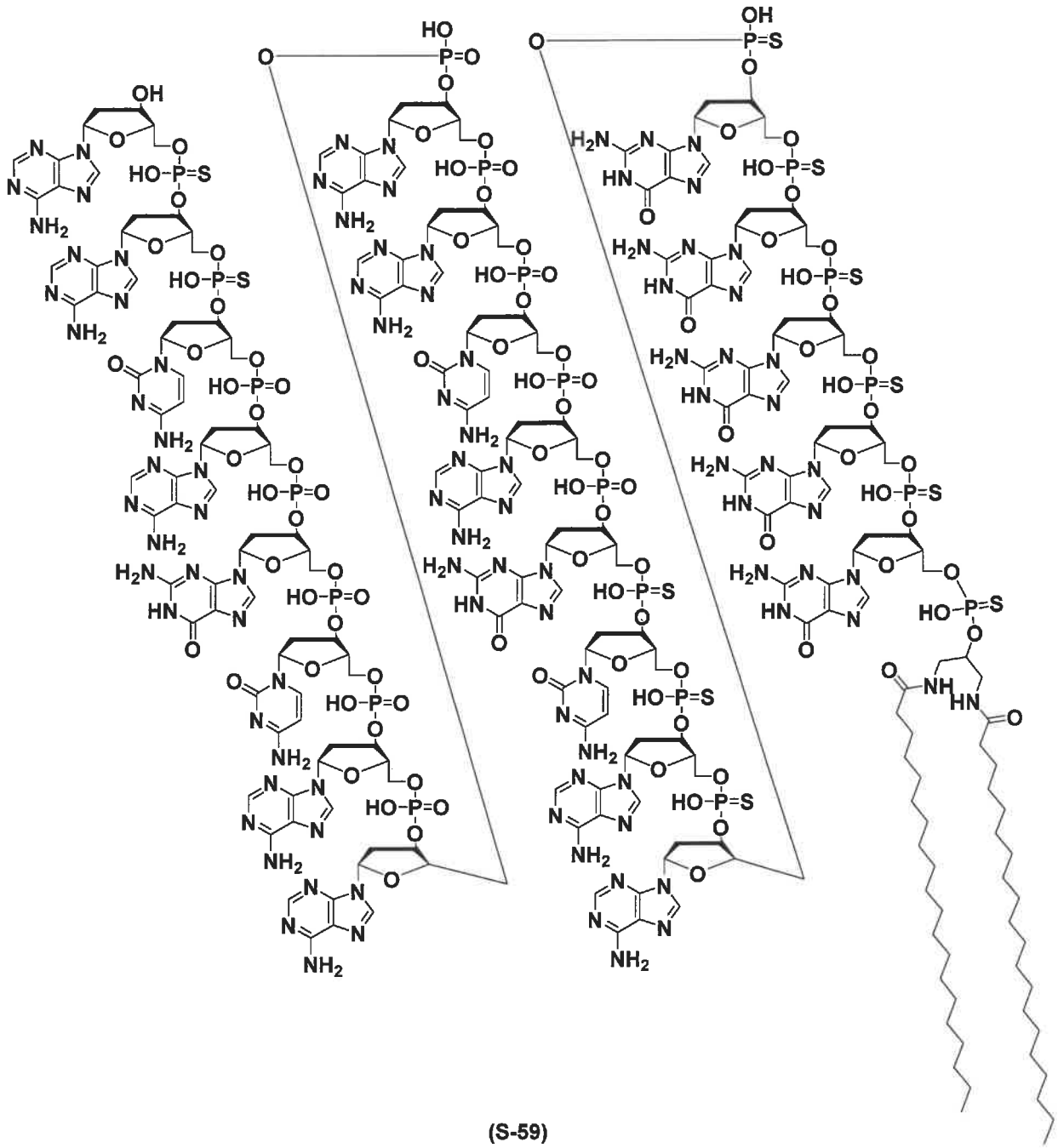
(S-29)

the formula :



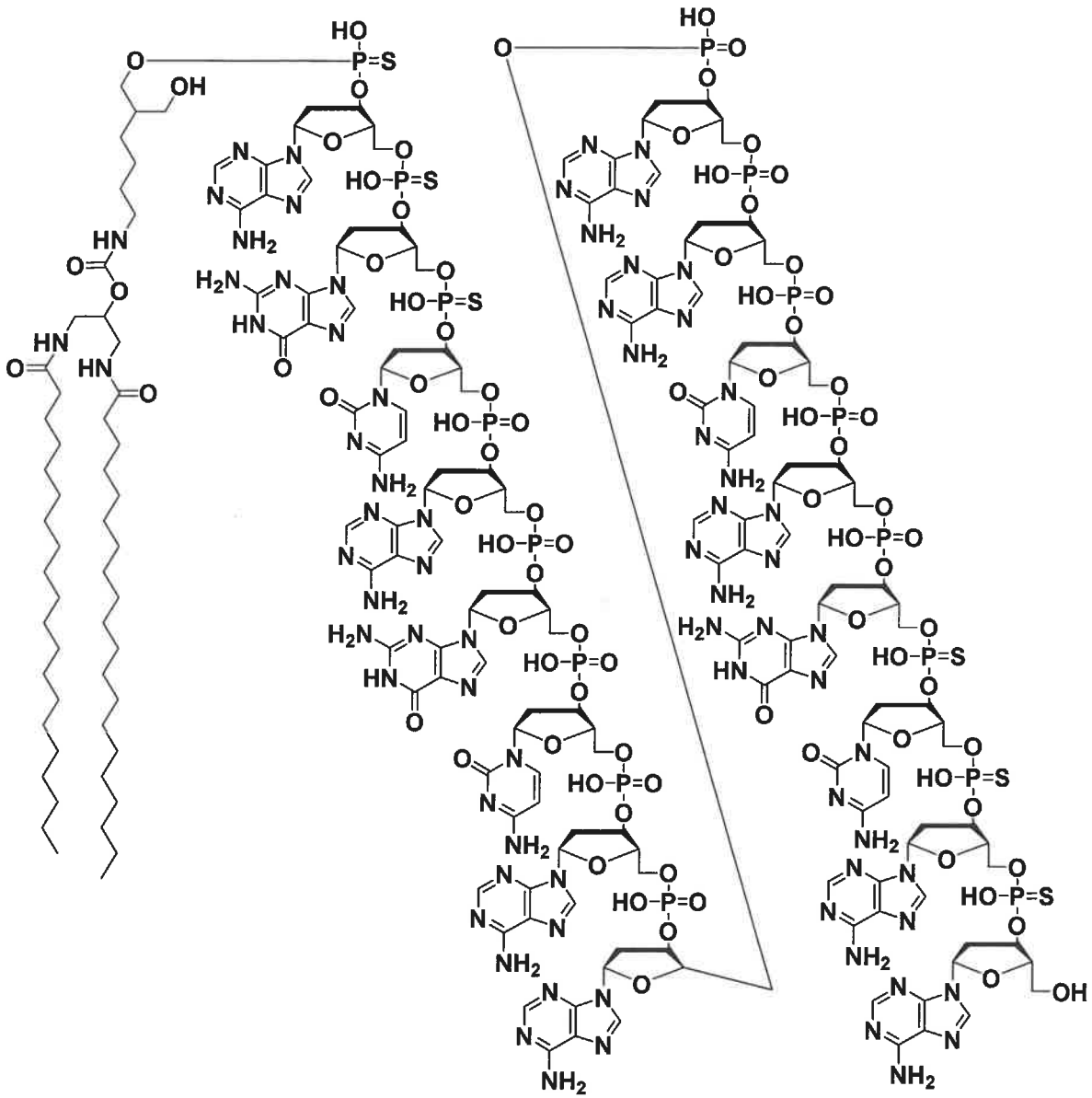
(S-58)

the formula :



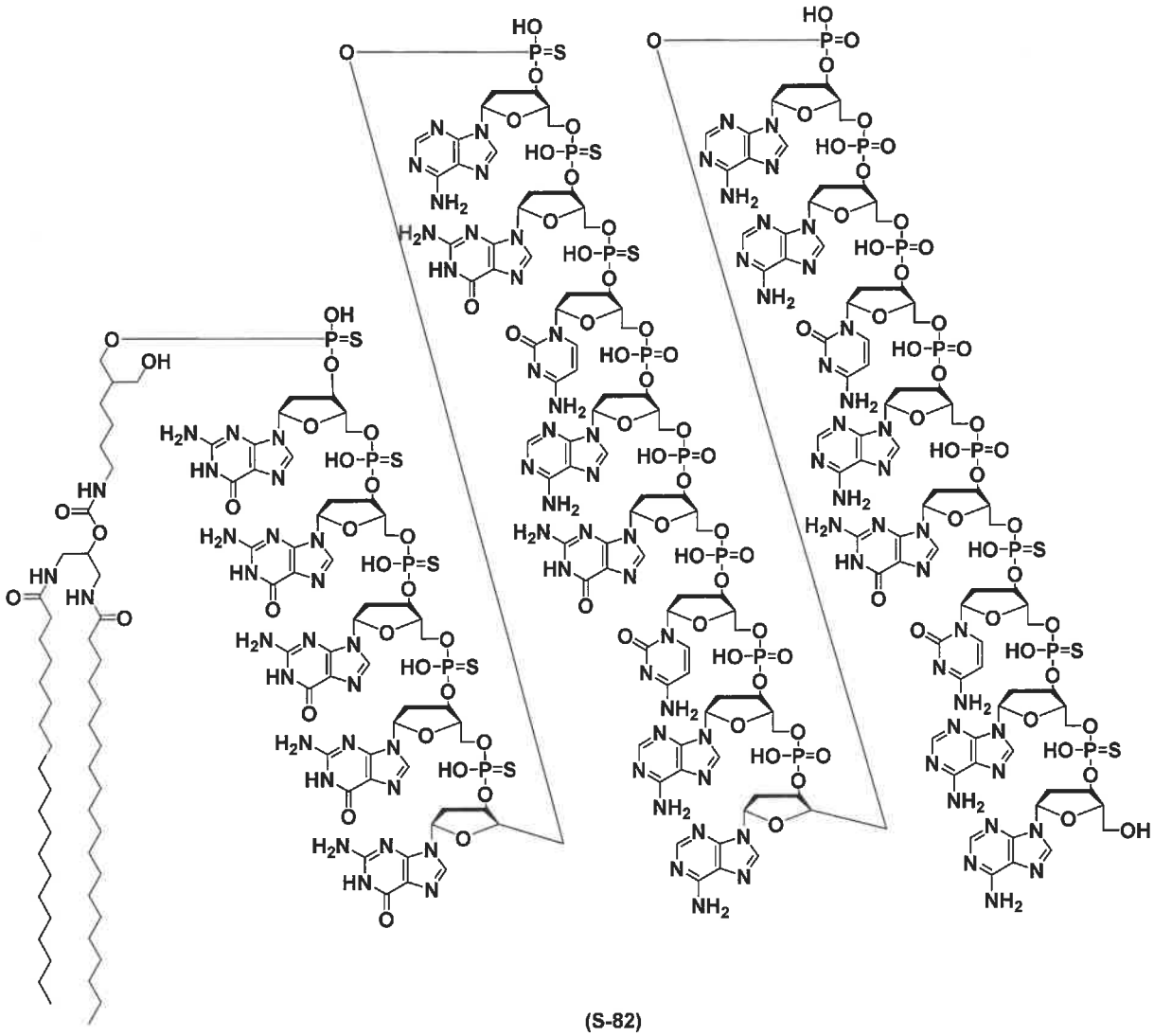
(S-59)

the formula :



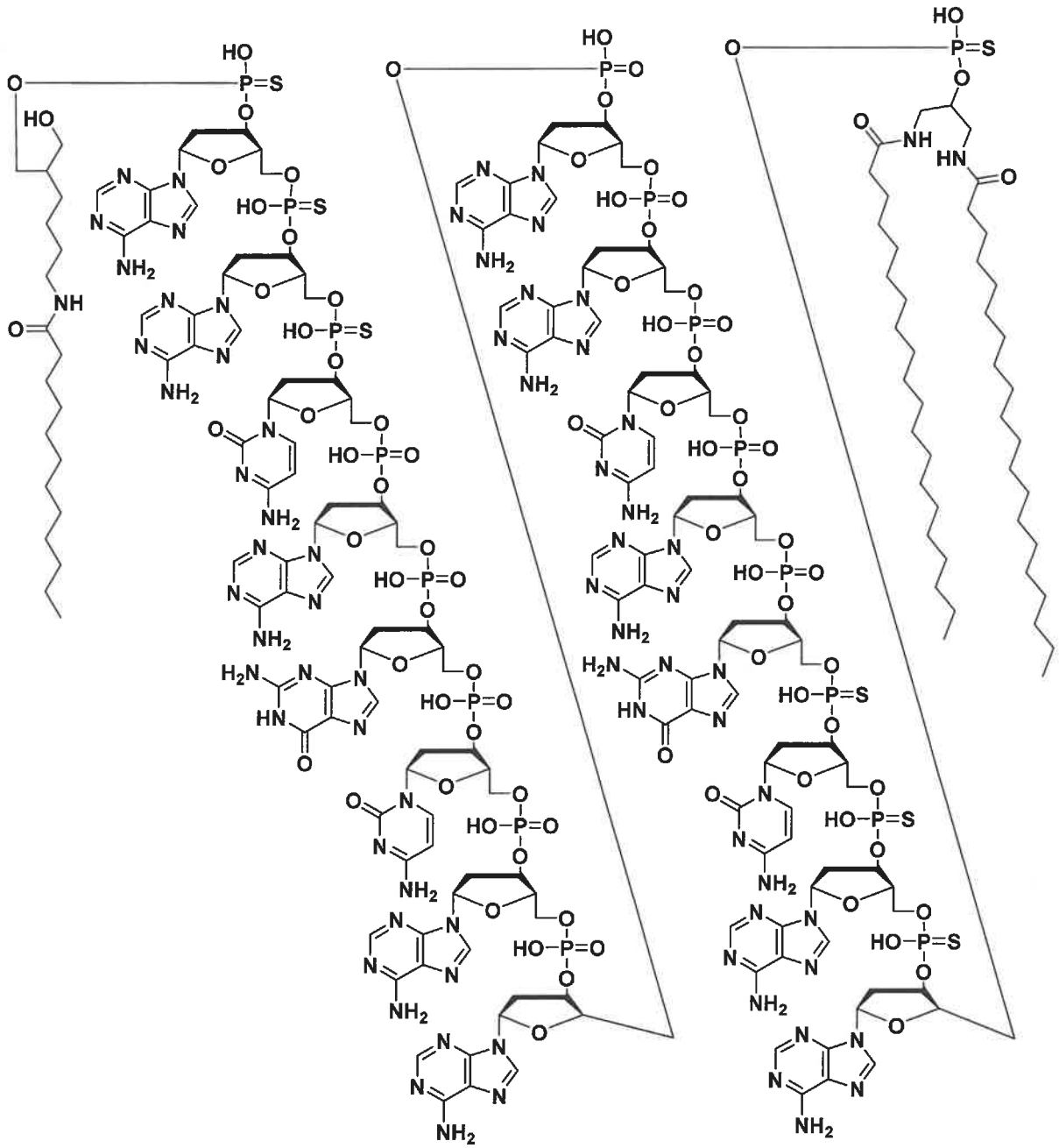
(S-80)

the formula :



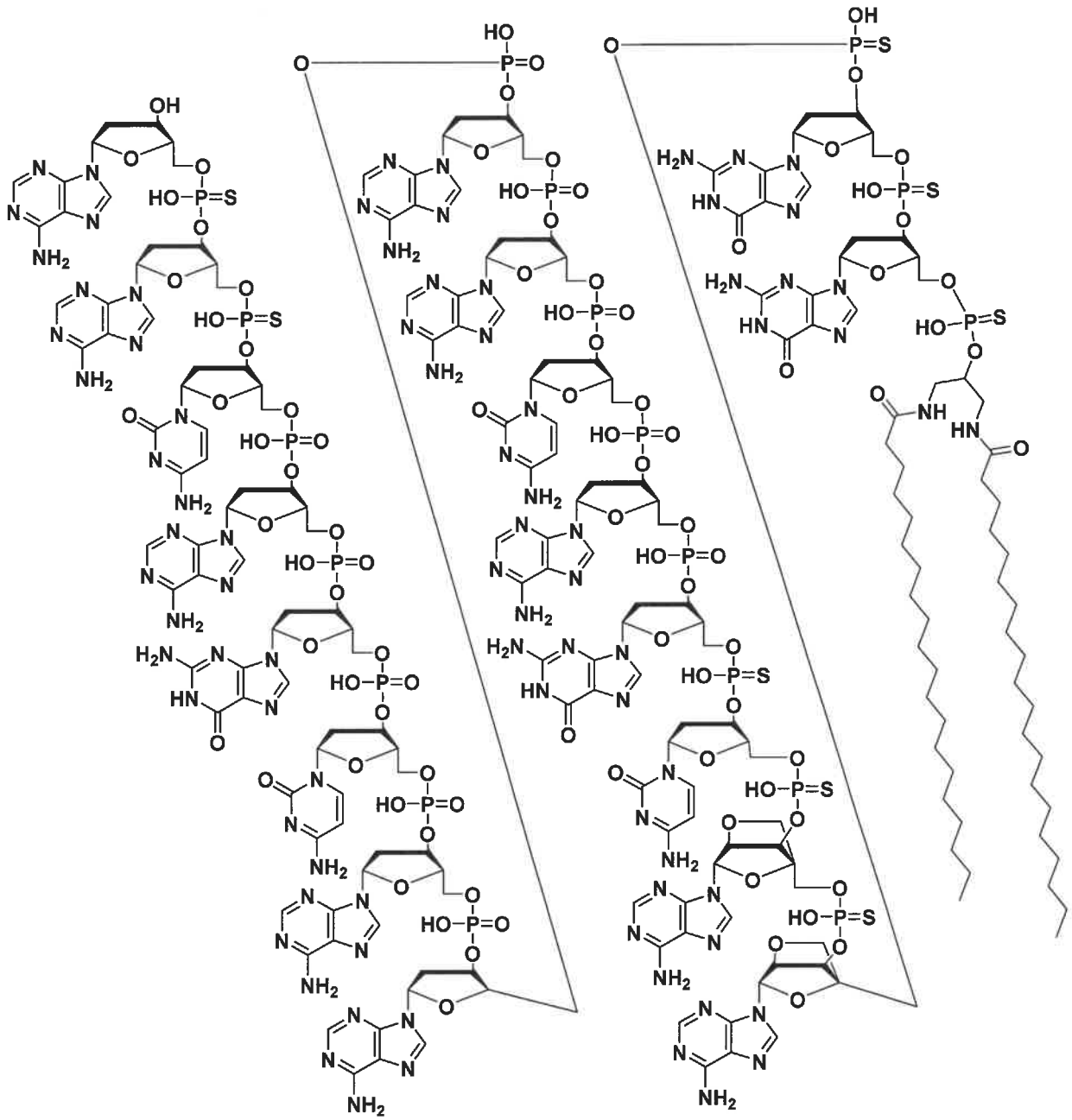
(S-82)

the formula :



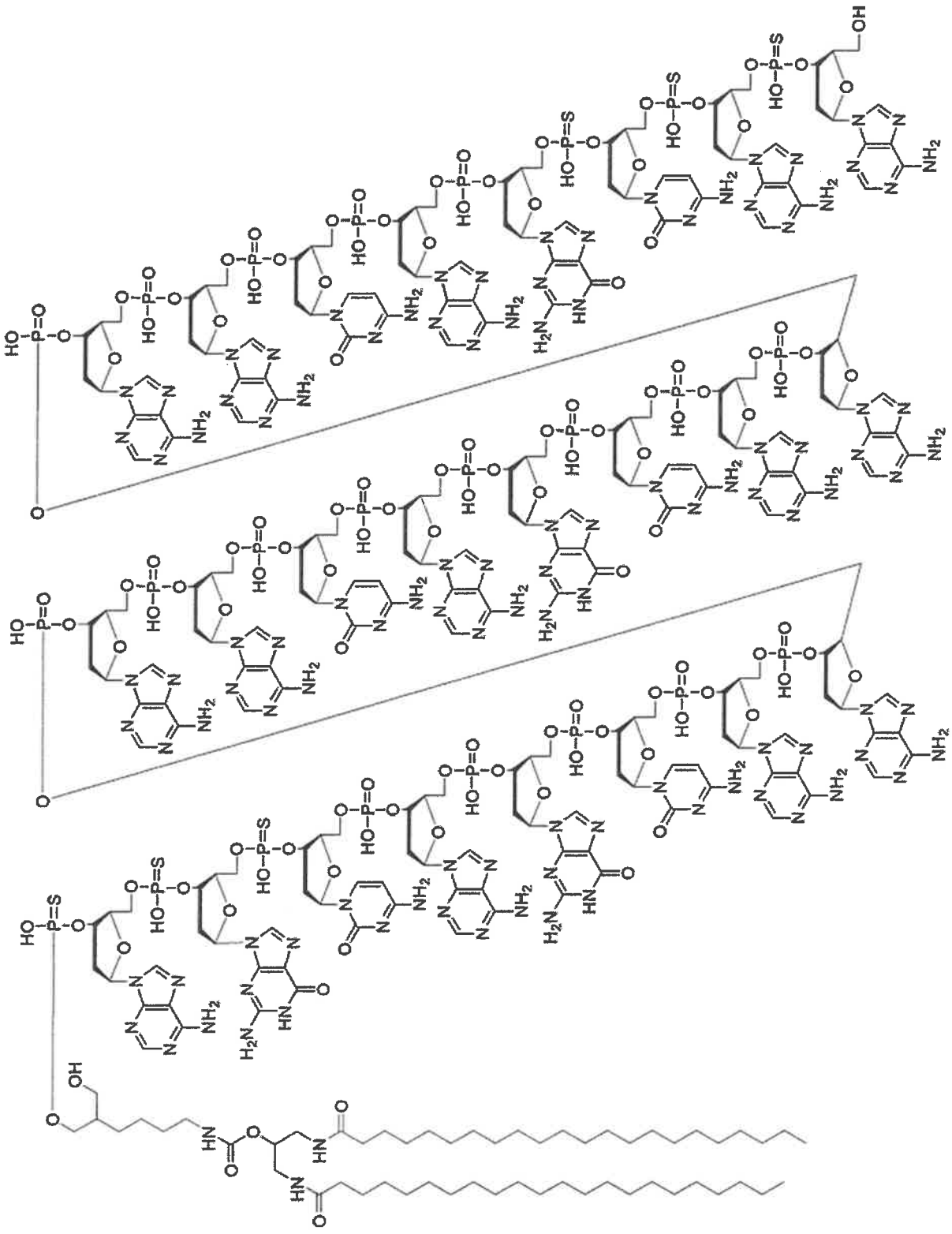
(S-93)

the formula :



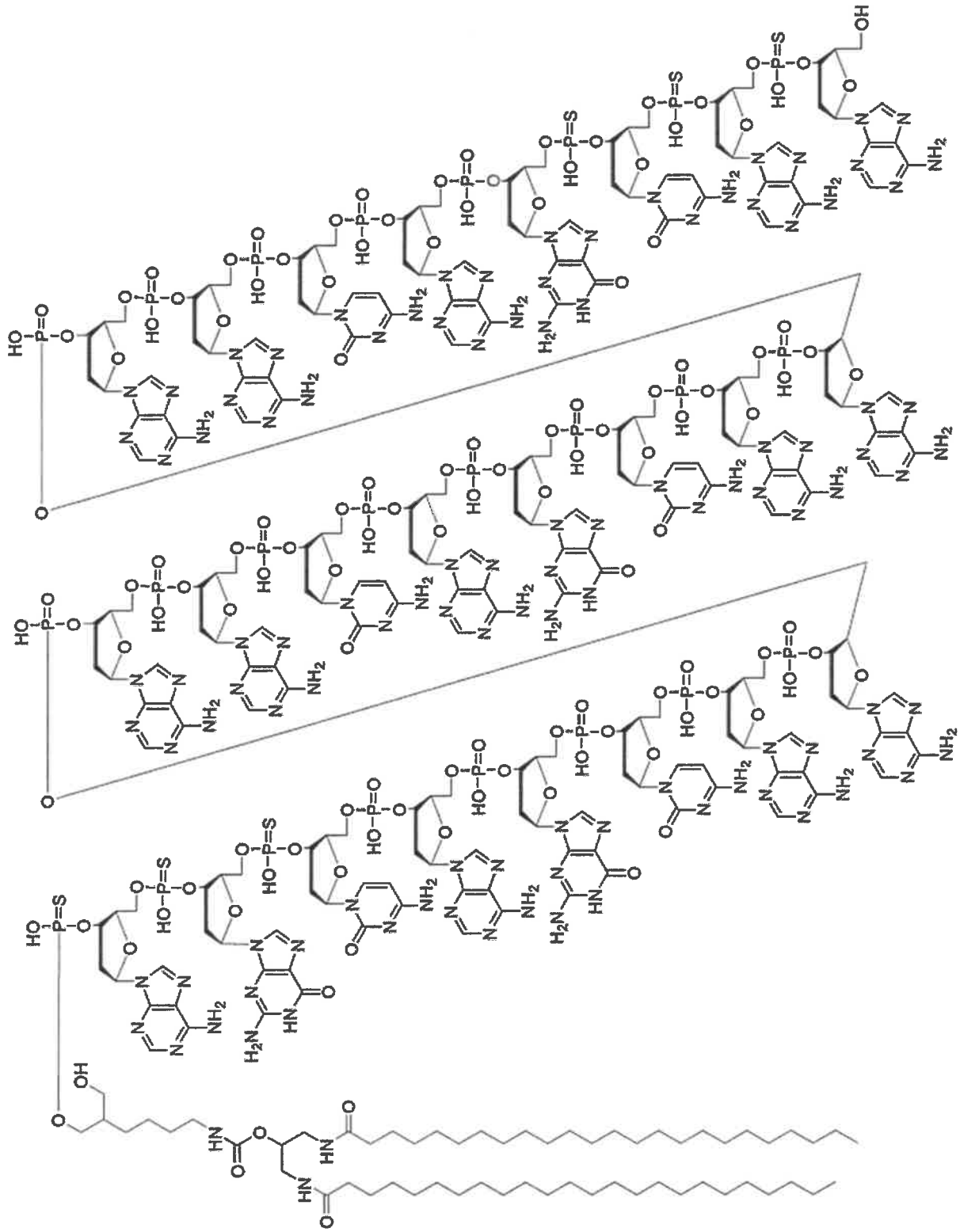
(S-136)

the formula :



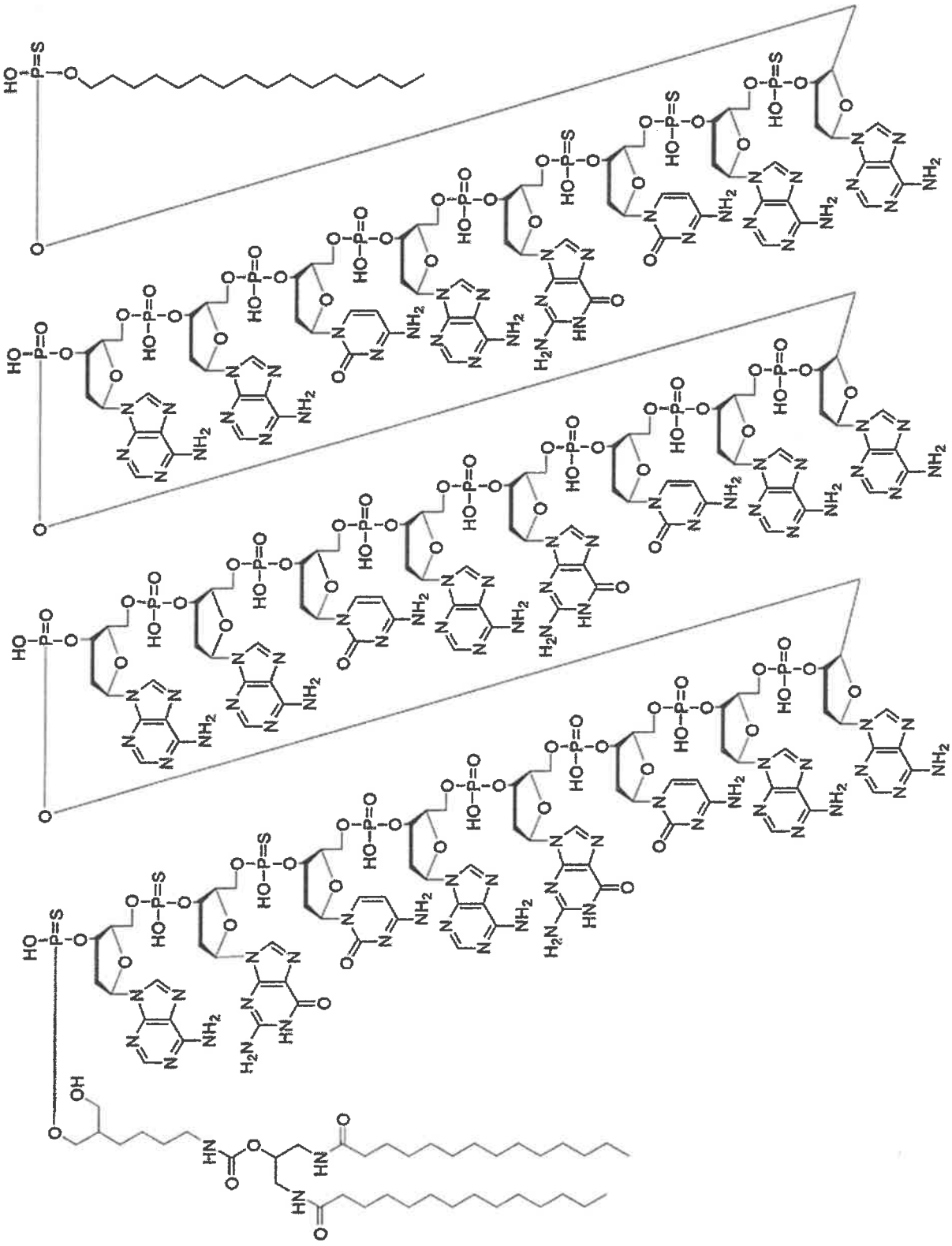
(S-141)

the formula :



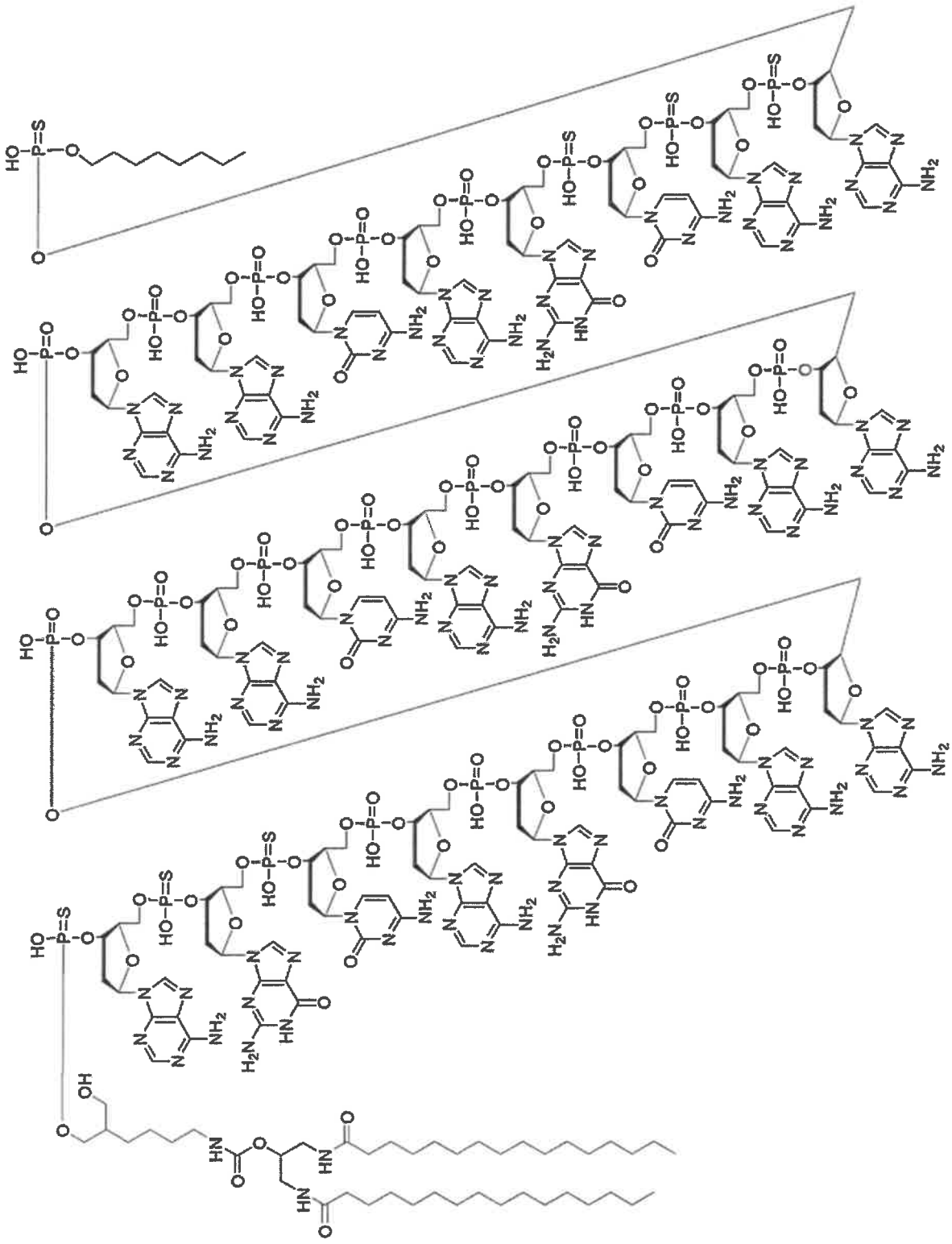
(S-143)

the formula :



(S-151)

and the formula :



(S-179)

[Claim 12]

The pharmaceutical composition of any one of claims 1 to 11, further comprising an antigen.

[Claim 13]

The pharmaceutical composition of claim 12, wherein the antigen is a microbial antigen, a self-antigen or an addictive substance.

[Claim 14]

The pharmaceutical composition of Claim 13, wherein the antigen is a microbial antigen, and the microbial antigen is a bacterial antigen, a viral antigen or a parasitic antigen.

[Claim 15]

The pharmaceutical composition of Claim 13, wherein the antigen is a self-antigen, and the self-antigen is a tumor antigen, an antigen associated with Alzheimer's Disease, an antigen against a human antibody, or an antigen that is expressed from human endogenous retroviral elements.

[Claim 16]

The pharmaceutical composition of Claim 13, wherein the antigen is an addictive substance, and the addictive substance is nicotine or cocaine.