

[0010]

Namely, the albumin-sugar chain complex, functional molecule carrier and bioimaging probe according to the present invention are as indicated in [1] to [11] below.

5 [1] An albumin-sugar chain complex comprising five or more molecules of an asparagine-linked sugar chain bound per molecule of albumin.

 [2] The albumin-sugar chain complex of [1] above, wherein the sugar on a non-reducing terminal of the
10 asparagine-linked sugar chain comprises a sugar selected from the group consisting of N-acetylglucosamine, galactose, mannose and sialic acid.

 [3] The albumin-sugar chain complex of [1] or [2] above, wherein the asparagine-linked sugar chain is one or
15 more types of a sugar selected from the group consisting of the following formulas (a') to (f'):

[0011]

[Chemical Formula 1]

cyanide to a concentration of 5 mM in a nitrogen atmosphere, were added to a solution obtained by dissolving 0.29 mg (0.15 μ mol) of an azide derivative represented by the aforementioned formula (c) (GlyTech, Inc.) in 20 μ L of DMSO.

5 The resulting reaction solution was heated to 70°C followed by confirming the reaction product by HPLC. After the initially added aldehyde compound was consumed, the reaction solution was cooled to room temperature followed by diluting by adding 44 μ L of DMSO and 88 μ L of water.

10 Next, 88 μ L (5.0 nmol) of the HL750-HSA stock solution synthesized in Production Example 1 were added followed by mixing well to prepare a reaction solution. The resulting reaction solution was allowed to react by incubating while gently stirring overnight at 37°C in an air atmosphere to

15 synthesize Complex 2c. After filtering the resulting reaction product with the Amicon 10K, the reaction product was washed three times with water. Subsequently, the reaction solution was filtered with a Durapore PVDF membrane (0.45 μ m) followed by diluting to 100 μ L with

20 water to prepare a Complex 2c solution. As a result of

analyzing by MALDI-TOF MS, the average mass of the synthesized Complex 2c was 92.6 kDa and 9.1 molecules of N-linked sugar chain (aldehyde compound represented by formula (1c)) were bound per molecule thereof.

5 [0068]

[Example 4]

HL750-HSA bound with the N-linked sugar chain represented by formula (d') (GlcNAc-HLF-HSA, to be referred to as "Complex 2d") was synthesized.

10 [0069]

<Synthesis of Aldehyde Compound represented by Formula (1d)>

30 μ L (0.15 μ mol) of a solution of the aldehyde compound represented by formula (1), obtained by dissolving
15 in methyl cyanide to a concentration of 5 mM in a nitrogen atmosphere, were added to a solution obtained by dissolving 0.24 mg (0.15 μ mol) of an azide derivative of an N-linked sugar chain having a sugar chain represented by formula (d') (azide derivative represented by the following formula (d),
20 GlyTech, Inc.) in 20

2f") was synthesized.

[0077]

<Synthesis of Aldehyde Compound represented by Formula (1f)>

5 30 μ L (0.15 μ mol) of a solution of the aldehyde compound represented by formula (1), obtained by dissolving in methyl cyanide to a concentration of 5 mM in a nitrogen atmosphere, were added to a solution obtained by dissolving 0.28 mg (0.15 μ mol) of an azide derivative of an N-linked
10 sugar chain having a sugar chain represented by formula (f') (azide derivative represented by the following formula (f), GlyTech, Inc.) in 20 μ L of DMSO. The resulting reaction solution was heated to 70°C followed by confirming the reaction product by HPLC. After the initially added
15 aldehyde compound was consumed, the reaction solution was cooled to room temperature to synthesize the aldehyde compound represented by the following formula (1f). The synthesized aldehyde compound represented by formula (1f) was able to be detected by ESI-TOF MS (detected value of
20 $C_{103}H_{143}N_{11}O_{53}$ $[M-2H]^{-2}/2$: 1189.9316, calculated value: 1189.9344).

allowed to react by incubating while stirring gently overnight at 37°C in an air atmosphere to synthesize an intermediate in which the N-linked sugar chain represented by formula (a') was bound to HL750-HSA. A 0.5 µL aliquot
5 of this reaction solution was removed, purified with the Amicon 10K and washed twice with water, and as a result of analyzing by MALDI-TOF MS, the average mass of the synthesized intermediate was 87.1 kDa and 5.3 molecules of the N-linked sugar chain represented by formula (a')
10 (aldehyde compound represented by formula (1a)) were bound per molecule thereof.

[0085]

Next, 14.2 µL (52 nmol, 10.4 eq) of the stock solution (3.8 mM) of the aldehyde compound represented by formula
15 (1c) prepared in Example 3 were mixed with 215 µL (5.0 nmol) of the remaining reaction solution to prepare a reaction solution. The resulting reaction solution was allowed to react by incubating while gently stirring overnight at 37°C in an air atmosphere to synthesize
20 Complex 2h in which the N-linked sugar