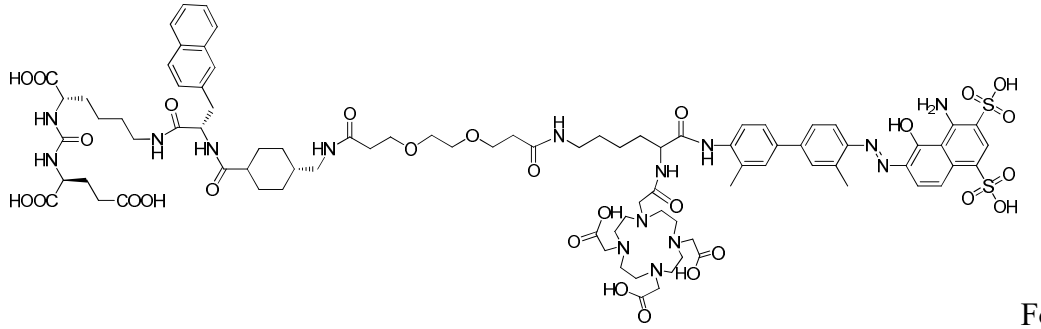
Claims

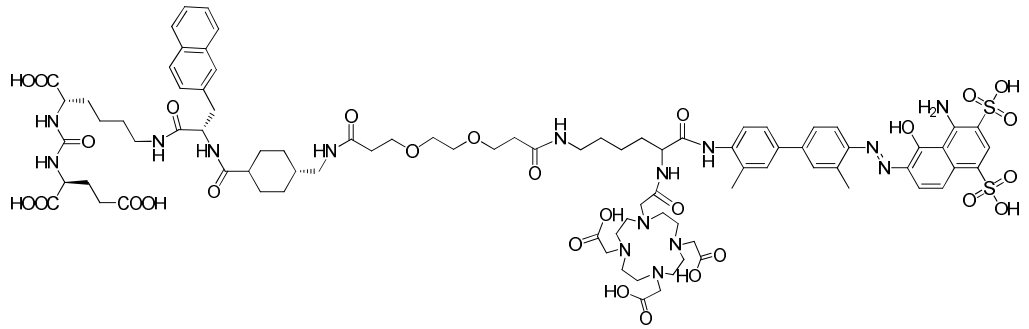
1. A compound targeting prostate specific membrane antigen or a pharmaceutically available salt thereof, wherein the molecular structure of the compound targeting prostate specific membrane antigen is shown in Formula (II-1):



Formula (II-1).

2. A method for preparing a compound targeting prostate specific membrane antigen, comprising the following steps:

introducing a Boc protective group to one end of 4,4'-diamino-3,3'-dimethyl biphenyl, followed by a reaction with 4,6-diamino-5-hydroxy-1,3-naphthalenedisulfonic acid to prepare a truncated Evans Blue derivative; removing the Boc protective group, followed by an amide condensation reaction with Nα- Fmoc-Nε-Boc-L-lysine; next, removing the Boc protective group under the action of TFA, followed by an amide condensation reaction with COOH-PEG_2-COOH and a reaction with PSMA-617 under the presence of EDC and NHS; then removing an Fmoc protective group using piperazine; and finally, carrying out a reaction with DOTA-NHS to obtain a compound having the following structure shown in Formula (II-1):



Formula (II-1).

3. A radiolabeled compound targeting prostate specific membrane antigen, wherein the compound is a complex obtained by using the compound shown in Formula (I) according to claim 1 as a ligand and labeling the ligand with a radionuclide.

4. The radiolabeled compound according to claim 3, wherein the radionuclide is any one of ^{177}Lu, ^{90}Y, ^{18}F, ^{64}Cu, ^{68}Ga, ^{62}Cu, ^{67}Cu, ^{86}Y, ^{89}Zr, ^{99m}Tc, ^{89}Sr, ^{153}Sm, ^{149}Tb, ^{161}Tb, ^{186}Re, ^{188}Re,

^{212}Pb, ^{213}Bi, ^{223}Ra, ^{225}Ac, ^{226}Th, ^{227}Th, ^{131}I, ^{211}At, or ^{111}In.

5. The radiolabeled compound according to claim 3, wherein the radionuclide is ^{68}Ga, ^{177}Lu, or ^{90}Y.

6. A method for preparing a radiolabeled compound targeting prostate specific membrane antigen, wherein the method comprises the following steps: dissolving the compound shown in Formula (II-1) according to claim 1 in a buffer solution or deionized water; and adding a radionuclide solution to a resulting solution for a reaction under closed conditions for 5-40 min to produce a radionuclide labeled complex;

or the method comprises the following steps: dissolving an appropriate amount of the compound shown in Formula (II-1) according to claim 1 in a buffer solution or deionized water; treating the obtained solution to aseptic filtration, followed by loading into a container, freeze-drying and sealing with a stopper to obtain a freeze-dried medicine box; and then adding an appropriate amount of an acetic acid solution or a buffer solution to the freeze-dried medicine box for dissolution, and adding a corresponding radionuclide solution for a reaction under closed conditions for 5-40 min to produce a radionuclide labeled complex.

7. A pharmaceutical composition, comprising the compound according to claims 1 or a radiolabeled compound targeting prostate specific membrane antigen according to any one of claim 3-5 and a pharmaceutically acceptable carrier.

8. The composition according to claim 7, wherein the pharmaceutically acceptable carrier is selected from an adhesive, a buffer, a colorant, a diluent, a disintegrator, an emulsifier, a flavoring agent, a flow aid, a lubricant, a preservative, a stabilizer, a surfactant, a tabletting agent, a wetting agent, or a combination thereof.