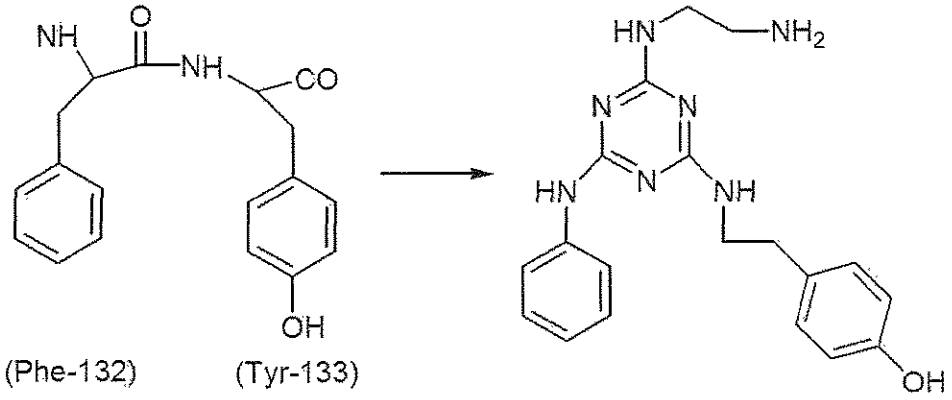

(Phe-132) (Tyr-133)

SUMMARY OF THE DISCLOSURE

[0008] As will be described in Examples to be given hereinafter, however, according to studies conducted by the present inventors, the low molecular weight compound ApA described in Li, R., Dowd, V., Steward, D. J., Burton, S. J., and Lowe, C. R., 1998, Nature Biotechnology, Vol. 16, pp. 190 to 195 exhibited insufficient antibody binding properties and selectivity, thus failing to satisfy the required level, although having sufficient alkali resistance and temporal stability.

[0009] Accordingly, an object of the present disclosure is to provide an antibody-binding polypeptide and an adsorption material, which have excellent antibody binding properties and selectivity and also excellent alkali resistance and temporal stability.

[0010] As a result of extensive studies to solve the foregoing problems, the present inventors have found that an antibody-binding polypeptide as set forth in any one of SEQ ID NOs: 1 to 18 has antibody binding properties and selectivity comparable to protein A, and also exhibits superior alkali resistance and temporal stability. The present disclosure has been completed based on such a finding.

[0009a] In one aspect, there is provided an antibody-binding polypeptide having a sequence homology of 85% or more to a polypeptide as set forth in any one of SEQ ID NOs: 1 to 18.

[0009b] In another aspect, there is provided an antibody-binding polypeptide as set forth in any one of SEQ ID NOs: 1 to 18.

[0009c] In another aspect, there is provided an antibody-binding fusion polypeptide in which 2 to 10 domain units are fused by a covalent bond, taking an antibody-binding polypeptide having a sequence homology of 85% or more to a polypeptide as set forth in any one of SEQ ID NOs: 1 to 18 as one domain unit.

[0009d] In another aspect, there is provided an antibody-binding fusion polypeptide in which 2 to 10 domain units are fused by a covalent bond, taking an antibody-binding polypeptide as set forth in any one of SEQ ID NOs: 1 to 18 as one domain unit.

[0009e] In another aspect, there is provided an adsorption material of an antibody or antibody derivative in which the antibody-binding polypeptide described herein or the antibody-binding fusion polypeptide described herein is immobilized on a water-insoluble carrier.

[0011] Further, the present disclosure provides the following (1) to (13).

(1) An antibody-binding polypeptide as set forth in any one of SEQ ID NOs: 1 to 18.

(2) An antibody-binding polypeptide having a sequence homology of 85% or more to a polypeptide as set forth in any one of SEQ ID NOs: 1 to 18.

(3) An antibody-binding polypeptide in which 1 to 10 amino acid residues are covalently bound to at least one place selected from the N-terminal, the C-terminal, and the amino acid side chain of a polypeptide having a sequence homology of 85% or more to a polypeptide as set forth in any one of SEQ ID NOs: 1 to 18.

(4) An antibody-binding polypeptide in which 1 to 24 ethylene glycol units are covalently bound to at least one place selected from the N-terminal, the C-terminal, and the

(Lys), ornithine (Orn), and cysteine (Cys).

(12) The antibody-binding fusion polypeptide according to any one of (9) to (11), in which the total molecular weight of amino acid residues contained in the domain unit and the linker is 5000 or less.

(13) An adsorption material of an antibody or antibody derivative in which the antibody-binding polypeptide according to any one of (1) to (5) or the antibody-binding fusion polypeptide according to any one of (6) to (12) is immobilized on a water-insoluble carrier.

[0012] According to the present disclosure, it is possible to provide an antibody-binding polypeptide which has excellent antibody binding properties and selectivity and also excellent alkali resistance and temporal stability, and an adsorption material of an antibody or antibody derivative which has excellent antibody binding properties and selectivity and also excellent alkali resistance and temporal stability.

[0013] Further, according to the present disclosure, it is possible to build a more robust production process since washing by an alkali or the like can be enhanced in comparison with protein A.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] In the present invention, amino acids are indicated, as a general rule, using names, abbreviations, or the like adopted by the INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY and INTERNATIONAL UNION OF BIOCHEMISTRY AND MOLECULAR BIOLOGY IUPAC-IUB Joint Commission on Biochemical Nomenclature (JCBN). The amino acid residues are indicated using abbreviations of amino acids from which the corresponding amino acid residues are derived. Note that the amino acid residue includes an N-terminal amino acid (N-terminal residue) and a C-terminal amino acid (C-terminal residue).

Further, unless otherwise indicated, the amino acid sequence (also referred to as "primary structure") of a polypeptide or protein is set forth such that amino acid residues are arranged in one dimension in the direction of N-terminal to C-terminal in order of left to right ends.

[0015] Names and abbreviations (single-letter abbreviations and three-letter abbreviations) of amino acids for which single-letter abbreviations and three-letter abbreviations have been formally accepted are shown in Table 1.

[0016] [Table 1]