Claims

1. A multi-specific antibody molecule comprising or consisting of:

   a) a polypeptide chain of formula **(I):**
   V_H-CH_1-X-V_1; and

   b) a polypeptide chain of formula **(II):**
   V_L-C_L-Y-V_2;
   wherein:

   V_H represents a heavy chain variable domain;

   CH_1 represents a domain of a heavy chain constant region, for example domain 1 thereof;

   X represents a bond or linker;

   Y represents a bond or linker;

   V_1 represents a dsscFv;

   V_L represents a light chain variable domain;

   C_L represents a domain from a light chain constant region, such as Ckappa;

   V_2 represents a dsscFv;

   wherein each of V_H/V_L, V_1, and V_2 forms an antigen binding site, and
   wherein only one of V_H/V_L, V_1 or V_2 has specificity for a serum carrier protein.

2. A multi-specific antibody molecule according to claim 1, wherein the serum carrier protein is selected from the list consisting of albumin, thyroxine-binding protein, transthyretin, α1-acid glycoprotein, transferrin, and fibrinogen.

3. A multi-specific antibody molecule according to claim 1 or 2, wherein the serum carrier protein is human serum albumin and wherein said V_H/V_L or V_1 or V_2 having specificity for a serum carrier protein forms an albumin binding site.

4. A multi-specific antibody molecule according to claim 3, wherein the albumin binding site comprises SEQ ID NO: 71 for CDRH1, SEQ ID NO: 72 for CDRH2, SEQ ID NO: 73 for CDRH3, SEQ ID NO: 74 for CDRL1, SEQ ID NO: 75 for CDRL2 and SEQ ID NO: 76 for CDRL3; or a heavy chain variable domain selected from SEQ ID NO: 77 and SEQ ID NO: 78 and a light chain variable domain selected from SEQ ID NO: 79 and SEQ ID NO: 80.

5. A multi-specific antibody molecule according to claim 4, wherein the 6 CDRs of SEQ ID NO: 71 to SEQ ID NO: 76, or the variable domains of SEQ ID NO: 77 to SEQ ID NO: 80 are in the position V_H/V_L or V_1 or V_2.

6. A multi-specific antibody molecule according to claim 4 or 5, wherein the heavy chain variable domain of SEQ ID NO: 78 and the light chain variable domain of SEQ ID NO: 80 are in the position V_2 and wherein the light chain variable domain or the heavy chain variable domain of V_2 is attached to Y, for example through a peptide bond.

7. A multi-specific antibody molecule according to any one of claims 1 to 6, wherein the antibody molecule is capable of selectively binding two or more different antigens of interest.

8. A multi-specific antibody molecule according to any one of claims 1 to 7, wherein the light chain and heavy chain variable domains of V_1 and/or the light chain and heavy chain variable domains of V_2 are linked by a disulfide bond between two engineered cysteine residues, wherein the position of the pair of cysteine residues is V_H44 and V_L100 (numbering according to Kabat).

9. A multi-specific antibody molecule according to any one of claims 1 to 8, wherein X and/or Y is a peptide linker, for example SEQ ID NO: 1, 2, 69 and 70.

10. A polynucleotide encoding a multi-specific antibody molecule according to any one of claims 1 to 9.

11. A vector comprising a polynucleotide defined in claim 10.

12. A host cell comprising a polynucleotide or vector of claim 10 or 11 respectively.

13. A host cell comprising two vectors, the first vector comprising a polynucleotide encoding a polypeptide chain of formula (I) of a multi-specific antibody molecule according to any one of claims 1 to 9, and the second vector comprising a polynucleotide encoding a polypeptide chain of formula (II) of said multi-specific antibody molecule.

14. A process comprising expressing a multi-specific antibody molecule from a host cell defined in claim 12 or claim 13.

15. A pharmaceutical composition comprising a multi-specific antibody molecule according to any one of claims 1 to 9 and at least one excipient.

16. A multi-specific antibody molecule according to any one of claims 1 to 9 or a pharmaceutical composition according to claim 15 for use in treatment.