Claims

[1] A monoclonal antibody or antibody fragment thereof against vascular endothelial lipase that recognizes at least one amino acid from position 50 to position 100 of the amino acid sequence of SEQ ID NO: 1 and inhibits the enzymatic activity of vascular endothelial lipase.

[2] The monoclonal antibody or antibody fragment thereof of claim 1, which recognizes at least one amino acid selected from arginine at position 50, glutamic acid at position 60, histidine at position 61, tyrosine at position 65 and asparagine at position 100 of the amino acid sequence of SEQ ID NO: 1.

[3] The monoclonal antibody or antibody fragment thereof of claim 1, which recognizes at least tyrosine at position 65 of the amino acid sequence of SEQ ID NO: 1.

[4] The monoclonal antibody or antibody fragment thereof of claim 3, which recognizes at least one amino acid selected from arginine at position 50, asparagine at position 52, arginine at position 54, aspartic acid at position 58, glutamic acid at position 60, histidine at position 61, glycine at position 63 and asparagine at position 100 of the amino acid sequence of SEQ ID NO: 1.

[5] A monoclonal antibody or antibody fragment thereof against vascular endothelial lipase that recognizes at least one amino acid selected from histidine at position 220, threonine at position 221, aspartic acid at position 240, tyrosine at position 242, proline at position 243, asparagine at position 244, glycine at position 246, glutamine at position 249, proline at position 250 and glycine at position 251 of the amino acid sequence of SEQ ID NO: 1, and inhibits the enzymatic activity of vascular endothelial lipase.

[6] The monoclonal antibody or antibody fragment thereof of claim 5, which recognizes all amino acids of histidine at position 220, threonine at position 221, aspartic acid at position 240, tyrosine at position 242, proline at position 243, asparagine at position 244, glycine at position 246, glutamine at position 249, proline at position 250, glycine at position 251 of the amino acid sequence of SEQ ID NO: 1.

[7] A monoclonal antibody or antibody fragment thereof against vascular endothelial lipases selected from the group of:

1) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 10 as CDR1, the amino acid sequence of SEQ ID NO: 11 as CDR2 and the amino acid sequence of SEQ ID NO: 12 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 14 as CDR1, the amino acid sequence of SEQ ID NO: 15 as CDR2 and the amino acid sequence of SEQ ID NO: 16 as CDR3;

2) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 18 as CDR1, the amino acid sequence of SEQ ID NO: 19 as CDR2 and the amino acid sequence of SEQ ID NO: 20 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 22 as CDR1, the amino acid sequence of SEQ ID NO: 23 as CDR2 and the amino acid sequence of SEQ ID NO: 24 as CDR3;

3) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 26 as CDR1, the amino acid sequence of SEQ ID NO: 27 as CDR2 and the amino acid sequence of SEQ ID NO: 28 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 30 as CDR1, the amino acid sequence of SEQ ID NO: 31 as CDR2 and the amino acid sequence of SEQ ID NO: 32 as CDR3;

4) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 34 as CDR1, the amino acid sequence of SEQ ID NO: 35 as CDR2 and the amino acid sequence of SEQ ID NO: 36 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 38 as CDR1, the amino acid sequence of SEQ ID NO: 39 as CDR2 and the amino acid sequence of SEQ ID NO: 40 as CDR3;

5) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 42 as CDR1, the amino acid sequence of SEQ ID NO: 43 as CDR2 and the amino acid sequence of SEQ ID NO: 44 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 46 as CDR1, the amino acid sequence of SEQ ID NO: 47 as CDR2 and the amino acid sequence of SEQ ID NO: 48 as CDR3;

6) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 50 as CDR1, the amino acid sequence of SEQ ID NO: 51 as CDR2 and the amino acid sequence of SEQ ID NO: 52 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 54 as CDR1, the amino acid sequence of SEQ ID NO: 55 as CDR2 and the amino acid sequence of SEQ ID NO: 56 as CDR3;

7) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 58 as CDR1, the amino acid sequence of SEQ ID NO: 59 as CDR2 and the amino acid sequence of SEQ ID NO: 60 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 62 as CDR1, the amino acid sequence of SEQ ID NO: 63 as CDR2 and the amino acid sequence of SEQ ID NO: 64 as CDR3;

8) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 66 as CDR1, the amino acid sequence of SEQ ID NO: 67 as CDR2 and the amino acid sequence of SEQ ID NO: 68 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 70 as CDR1, the amino acid sequence of SEQ ID NO: 71 as CDR2 and the amino acid sequence of SEQ ID NO: 72 as CDR3;

9) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 74 as CDR1, the amino acid sequence of SEQ ID NO: 75 as CDR2 and the amino acid sequence of SEQ ID NO: 76 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 78 as CDR1, the amino acid sequence of SEQ ID NO: 79 as CDR2 and the amino acid sequence of SEQ ID NO: 80 as CDR3;

10) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 82 as CDR1, the amino acid sequence of SEQ ID NO: 83 as CDR2 and the amino acid sequence of SEQ ID NO: 84 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 86 as CDR1, the amino acid sequence of SEQ ID NO: 87 as CDR2 and the amino acid sequence of SEQ ID NO: 88 as CDR3;

11) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 90 as CDR1, the amino acid sequence of SEQ ID NO: 91 as CDR2 and the amino acid sequence of SEQ ID NO: 92 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO:

94 as CDR1, the amino acid sequence of SEQ ID NO: 95 as CDR2 and the amino acid sequence of SEQ ID NO: 96 as CDR3; and

12) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 100 as CDR1, the amino acid sequence of SEQ ID NO: 101 as CDR2 and the amino acid sequence of SEQ ID NO: 102 as CDR3 and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 104 as CDR1, the amino acid sequence of SEQ ID NO: 105 as CDR2 and the amino acid sequence of SEQ ID NO: 106 as CDR3.

[8] A monoclonal antibody or antibody fragment thereof against vascular endothelial lipases selected from the group of:

1) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 9, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 13;

2) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 17, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 21;

3) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 25, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO:

29;

4) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 33, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 37;

5) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 41, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 45;

6) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 49, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 53;

7) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 57, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 61;

8) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 65, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO:

69;

9) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 73, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 77;

10) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 81, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 85;

11) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 89, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 93; and

12) a monoclonal antibody or antibody fragment thereof, having

a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 99, and

a light chain variable region comprising the amino acid sequence of SEQ ID NO: 103.

[9] A pharmaceutical composition for use in treating or preventing a disease related to vascular endothelial lipase, comprising a monoclonal antibody or antibody fragment thereof of any one of claims 1 to 8.

[10] The pharmaceutical composition of claim 9, wherein the disease related to vascular endothelial lipase is dyslipidemia.