Claims

1. A SPINK2 mutant peptide that inhibits the protease activity of active human KLK5, wherein the peptide comprises: (i) the amino acid sequence set forth in any one of SEQ ID Nos: 6, 8, 10, 12, 14, 16, 18, and 20; or (ii) the amino acid sequence consisting of amino acids 4 to 66 of the amino acid sequence set forth in any one of SEQ ID Nos: 34, 40 and 48.

2. A conjugate comprising the peptide according to claim 1, wherein the peptide has at least one moiety attached to the peptide.

3. The conjugate according to claim 2, wherein the at least one moiety comprises a second peptide that is not the SPINK2 mutant.

4. The conjugate according to claim 3, wherein the second peptide is located on the amino terminal side of the SPINK2 mutant.

5. The conjugate according to claim 3, wherein the second peptide is located on the carboxyl terminal side of the SPINK2 mutant.

6. The conjugate according to claim 5, wherein the second peptide is an antibody or a fragment thereof and comprises one or more Fc regions.

7. The conjugate according to claim 6, wherein each Fc region is an Fc region of human immunoglobulin, or a fragment thereof.

8. The conjugate according to claim 6, wherein each Fc region is an Fc region of IgG1, IgG2, IgG3, IgG4, IgM, IgAl, IgA2, IgD, or IgE, or a fragment thereof.

9. The conjugate according to claim 6, wherein each Fc region is an Fc region of human IgG1, or a fragment thereof.

10. The conjugate according to claim 9, wherein each Fc region of human IgG1 comprises the amino acid sequence set forth in SEQ ID NO: 87.

11. The conjugate according to claim 6, wherein each Fc region is a wild type or a mutant Fc region.

12. The conjugate according to claim 2, wherein the conjugate comprises one or more aspartic acids and/or glutamic acids added to the amino terminus thereof.

13. The conjugate according to claim 3, wherein the SPINK2 mutant and the second peptide are linked to each other via a linker.

14. The conjugate according to claim 13, wherein the linker is a third peptide that is not the SPINK2 mutant or the second peptide.

15. A pharmaceutical composition comprising the peptide according to claim 1.

16. The pharmaceutical composition according to claim 15, further comprising an additional pharmaceutical product.

17. A pharmaceutical composition comprising the conjugate according to claim 2.

18. The pharmaceutical composition according to claim 17, further comprising an additional pharmaceutical product.

19. The conjugate according to claim 2, wherein the conjugate comprises:

(a) a peptide having an amino acid sequence set forth in any one of SEQ ID Nos: 34,36,38,40,42,44,46,48,50,52,54,56,58,60, and 96; or

(b) a peptide having an amino acid sequence formed by the deletion of one amino acid from the amino acid sequence according to (a);

wherein the conjugate inhibits the protease activity of KLK5.

20. A conjugate comprising a peptide having the amino acid sequence set forth in SEQ ID No: 34or the amino acid sequence formed by the deletion of one amino acid from the amino acid sequence set forth in SEQ ID No: 34.

21. A composition comprising the conjugate according to claim 20.

22. The composition according to claim 21, wherein the composition is a pharmaceutical composition.

23. A conjugate comprising a peptide having the amino acid sequence set forth in SEQ ID No: 36 or the amino acid sequence formed by the deletion of one amino acid from the amino acid sequence set forth in SEQ ID No: 36.

24. A composition comprising the conjugate according to claim 23.

25. The composition according to claim 24, wherein the composition is a pharmaceutical composition.

26. A conjugate comprising a peptide having the amino acid sequence set forth in SEQ ID No: 38or the amino acid sequence formed by the deletion of one amino acid from the amino acid sequence set forth in SEQ ID No: 38.

27. A composition comprising the conjugate according to claim 26.

28. The composition according to claim 27, wherein the composition is a pharmaceutical composition.

29. The conjugate according to claim 6, wherein each Fc region is a mutant Fc region.