

WHAT IS CLAIMED IS:

1. Use of an acetylated hydroxy containing naturally occurring amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof in the manufacture of a medicament for reducing platelet aggregation, wherein said hydroxy containing naturally occurring amino acid has one or more hydroxy groups on the side chain thereof, and wherein at least one of the hydroxy groups on the side chain of the hydroxy containing naturally occurring amino acid is acetylated.
2. Use according to Claim 1 wherein the acetylated hydroxy containing naturally occurring amino acid is prepared by reacting a naturally occurring amino acid having a hydroxy group on the side chain thereof or a pharmaceutically acceptable salt thereof, or acylating derivative thereof with acetic acid or derivative thereof under effective acetylation reaction conditions.
3. Use according to Claim 1 wherein the acetylated hydroxy containing naturally occurring amino acid is substantially enantiomerically pure.
4. Use according to Claim 1 wherein the acetylated hydroxy containing naturally occurring amino acid is substantially pure.
5. Use according to Claim 1 wherein the acetylated hydroxy containing naturally occurring amino acid is in the L configuration.
6. Use according to Claims 1 or 5 wherein the acetylated hydroxy containing naturally occurring amino acid is a α -amino acid.

7. Use according to any one of Claims 1 or 5 or 6 wherein the acetylated hydroxy containing naturally occurring amino acid is an alpha amino acid in the L-configuration.
8. Use according to Claim 1 wherein the acetylated hydroxy containing naturally occurring amino acid is O-acetyl-L-HydroxyProline.
9. Use according to Claim 1 wherein the acetylated hydroxy containing naturally occurring amino acid is O-acetyl-L-Threonine.
10. Use according to Claim 1 wherein the acetylated hydroxy containing naturally occurring amino acids is O-acetyl-L-serine.
11. Use according to Claim 1 wherein the acetylated hydroxy amino acid is O-acetyl-L-tyrosine.
12. Use according to Claim 1 wherein the acetylated hydroxy containing amino acid is O-Acetyl-L-Carnitine.
13. Use according to Claim 1 wherein a combination of two or more acetylated hydroxy containing naturally occurring amino acids are administered to said mammal.
14. Use of an acetylated hydroxy containing naturally occurring amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof in the manufacture of a medicament for treating a condition resulting from or caused by excessive platelet aggregation, wherein said hydroxy containing naturally occurring amino acid has one or more hydroxy groups on the side chain thereof, and wherein at least one of the hydroxy groups on the side chain of the hydroxy containing naturally occurring amino acid is acetylated.
15. Use according to Claim 14 wherein the condition is a vascular disease, a coronary disease or a peripheral vascular disease.

16. Use according to Claim 14 wherein the condition is a stroke, heart attack or thromboembolism or ischemia.
17. Use according to any one of Claims 14-16 wherein the acetylated hydroxy containing amino acid is a α -amino acid.
18. Use according to any one of Claims 14-17 wherein the acetylated hydroxy containing amino acid is in the L-configuration.
19. Use according to any one of Claims 14-18 wherein the acetylated hydroxy containing amino acid is a α -amino acid in the L-configuration.
20. Use according to Claim 14 wherein the acetylated hydroxy containing amino acid is administered parenterally, transdermally, orally, buccally, vaginally, intravenously, rectally, or subcutaneously.
21. Use according to Claim 14 wherein the acetylated hydroxy containing amino acid is O-acetyl-L-HydroxyProline, O-Acetyl-L-Threonine, O-Acetyl -L-Carnitine, O-L-Acetyl-Serine or O-L-Acetyl-Tyrosine.
22. Use according to Claim 14 wherein a combination of two or more acetylated hydroxy containing naturally occurring amino acids are administered to said mammal.
23. A pharmaceutical composition comprising an anti-platelet inhibiting effective amount of an acetylated hydroxy containing naturally occurring amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof and a pharmaceutical carrier therefor, wherein said hydroxy containing naturally occurring amino acid has one or more hydroxy groups on the side chain thereof and wherein at least one of the hydroxy groups on the side chain of said hydroxy containing naturally occurring amino acid is

acetylated, and wherein the acetylated hydroxy containing naturally occurring amino acid is not O-Acetyl-L-Carnitine.

24. The pharmaceutical composition according to Claim 23 wherein the acetylated hydroxy containing naturally occurring amino acid is substantially pure.

25. The pharmaceutical composition according to Claim 23 or 24 wherein the acetylated amino acid is substantially enantiomerically pure.

26. The pharmaceutical composition according to any one of Claims 23-25 wherein the acetylated hydroxy containing naturally occurring amino acid is an alpha amino acid.

27. The pharmaceutical composition according to any one of Claims 23-26 wherein the acetylated hydroxy containing naturally occurring amino acid is in the L-configuration.

28. The pharmaceutical composition according to any one of Claims 25-27 wherein the acetylated hydroxy containing naturally occurring amino acid is O-acetyl-L-HydroxyProline, O-Acetyl-L-Threonine, O-Acetyl-L-serine or O-Acetyl-L-Tyrosine.

29. The pharmaceutical composition according to any one of Claims 23-28 wherein an additional anti-platelet drug is additionally present.

30. The pharmaceutical composition according to Claim 29 wherein the additional anti-platelet drug is aspirin, clopidogrel, dipyridamole or ticlopidine.

31. A peptide comprised of from 2-6 amino acid residues, which may be the same or different and wherein each has a hydroxyl group on the side chain and wherein at least one of said hydroxyl groups is acetylated or pharmaceutically acceptable salt thereof or Zwitterion thereof.

32. The peptide according to Claim 31 in which two of the hydroxyl groups on the side chain is acetylated.
33. The peptide according to Claim 31 containing 3-6 amino acid residues where at least three of the hydroxyl groups in the side chain are acetylated.
34. The peptide according to Claim 31 having 4-6 amino acid residues wherein at least four of the hydroxyl groups on the side chain are acetylated.
35. The peptide according to Claim 31 having 5-6 amino acid residues wherein at least five of the hydroxyl groups on the side chain are acetylated.
36. The peptide according to Claim 31 wherein all of the hydroxyl groups on the side chain are acetylated.
37. The peptide according to Claim 31, which is a dipeptide, wherein each of the amino acids from which it is formed is a monoacetylated amino acid and wherein the acetyl group is esterified to each of the hydroxy groups on the side chain of each amino acid.
38. The peptide of any one of Claims 31-37, which is substantially enantiomerically pure.
39. The peptide of any one of Claims 31-38, which is substantially pure.
40. The peptide of any one of Claims 31-39 where each of the amino acids in the peptides is in the L configuration.
41. The peptide of any one of Claims 31-40 wherein at least one of the amino acids is a α amino acid.

42. The peptide of Claim 31 where the acetylated hydroxy containing naturally occurring amino acid in the peptide are independently acetylated serine, acetylated hydroxyproline, acetylated threonine or an acetylated tyrosine or acetyl carnitine.

43. The peptide of Claim 37 wherein the dipeptide is O-Acetyl Ser-O-Acetyl Ser, O-Acetyl Ser-O-Acetyl Thr, O-Acetyl-Ser-O-Acetyl Tyr, O-Acetyl Ser-O-Acetyl Hyp, O-Acetyl-Ser-O-Acetyl Car, O-Acetyl-Thr-O-Acetyl-Thr, O-Acetyl-Thr-O-Acetyl-Tyr, O-Acetyl-Thr-O-Acetyl-Ser, O-Acetyl-Thr-O-Acetyl-Hyp, O-Acetyl-Thr-O-Acetyl-Car, O-Acetyl Tyr-O-Acetyl Tyr, O-Acetyl-Tyr-O-Acetyl Hyp, O-Acetyl-Tyr-O-Acetyl-Ser, O-Acetyl-Tyr-O-Acetyl-Thr, O-Acetyl-Tyr-O-Acetyl-Car, O-Acetyl-Hyp-O-Acetyl-Hyp, O-Acetyl Hyp-O-Acetyl Car, O-Acetyl Hyp-O-Acetyl-Thr, O-Acetyl Hyp-O-Acetyl Tyr, O-Acetyl Hyp-O-Acetyl Ser-, O-Acetyl Car-O-Acetyl-Ser, O-Acetyl-Car-O-Acetyl-Hyp, O-Acetyl-Car-O-Acetyl-Car, O-Acetyl-Car-O-Acetyl-Thr, O-Acetyl-Car-O-Acetyl-Tyr, when Ser is Serine, Tyr is Tyrosine, Car is Carnitine, Thr is Threonine and Hyp is hydroxyproline.

44. The peptide of Claim 43 wherein the dipeptide is O-Acetyl-Hyp-O-Acetyl Ser, O-Acetyl Hyp-O-acetyl Thr, O-acetyl Hyp-O-acetyl-Tyr, O-acetyl-Hyp-O-Acetyl Hyp, or O-Acetyl Car-O-Acetyl Hyp.

45. The peptide of Claim 43 wherein the dipeptide is O-Acetyl Thr O-Acetyl Ser, O-Acetyl Thr O-Acetyl Hyp, O-Acetyl Thr - O-Acetyl Tyr, O-Acetyl Thr-O-Acetyl Thr, or O-Acetyl Car-O-Acetyl-Thr.

46. The peptide according to Claim 43 which is O-Acetyl Ser- O-Acetyl-Ser, O-Acetyl Ser O-Acetyl Tyr, O-Acetyl Ser-O-Acetyl Thr, O-Acetyl Ser-O-Acetyl Hyp, or O-Acetyl Ser-O-Acetyl Car.

47. The peptide according to Claim 43, which is O-Acetyl-Tyr-O-Acetyl Tyr, or O-acetyl Car-O-Acetyl Tyr.
48. The peptide according to Claim 43 which is O-Acetyl-Car-O-Acetyl-Tyr, O-Acetyl-Car-O-Acetyl Ser, O-Acetyl Car-O-Acetyl Thr, or O-Acetyl-Car-O-acetyl-Car or O-Acetyl Car-O-Acetyl Hyp.
49. A pharmaceutical composition comprising an anti-platelet effective amount of the peptide of any one of Claims 43-48 and a pharmaceutical carrier therefor.
50. Use of the peptide of any one of Claims 43-48 in the manufacture of a medicament for reducing platelet aggregation.
51. Use of the peptide of any one of Claims 43-48 in the manufacture of a medicament for treating a condition resulting from or caused by excessive platelet aggregation.
52. Use according to Claim 51 wherein the condition is a vascular disease, a coronary disease or a peripheral vascular disease.
53. Use according to Claim 51 wherein the condition is a stroke, heart attack thromboembolism, or ischemia.
54. Use according to Claim 51 wherein the peptide is administered parenterally, transdermally, orally, buccally, vaginally, rectally, or intravenously or subcutaneously.
55. The pharmaceutical composition according to Claim 49 wherein an additional anti-platelet drug is additionally present.
56. The pharmaceutical composition according to Claim 55 wherein the additional anti-platelet drug is aspirin, clopidogrel, dipyridamole or ticlopidine.

57. A nutritional composition comprising an effective amount of an acetylated hydroxy containing naturally occurring amino acids or pharmaceutically acceptable salt thereof or Zwitterion thereof and a nutritionally acceptable carrier therefor, wherein said hydroxy containing naturally occurring amino acid has one or more hydroxy groups on the side chain thereof and wherein at least one of the hydroxy groups in the side chain of the hydroxy containing naturally occurring amino acid is acetylated, and wherein the acetylated hydroxy containing naturally occurring amino acid is not O-Acetyl-L-Carnitine.

58. A nutritional composition comprising an effective amount of the peptide of Claim 31 or Zwitterion thereof or pharmaceutically acceptable salt thereof and a nutritionally acceptable carrier therefor.

59. The pharmaceutical composition according to Claim 49 wherein the peptide is comprised of amino acids in the L-configuration.

60. The method according to Claim 50 wherein the peptide is comprised of amino acids in the L-configuration.

61. The pharmaceutical composition according to Claim 49 wherein the peptide is O-Acetyl Ser-O-Acetyl Ser, O-Acetyl Ser-O Acetyl Thr, O-Acetyl-Ser-O-Acetyl Tyr, O-Acetyl Ser-O-Acetyl Hyp, O-Acetyl-Ser-O-Acetyl Car, O-Acetyl-Thr-O-Acetyl-Thr, O-Acetyl-Thr-O-Acetyl-Tyr, O-Acetyl-Thr-O-Acetyl-Ser, O-Acetyl-Thr-O-Acetyl-Hyp, O-Acetyl-Thr-O-Acetyl-Car, O-Acetyl Tyr-O-Acetyl-Tyr, O-Acetyl-Tyr-O-Acetyl Hyp, O-Acetyl-Tyr-O-Acetyl-Ser, O-Acetyl-Tyr-O-Acetyl-Thr, O-Acetyl-Tyr-O-Acetyl-Car, O-Acetyl-Hyp-O-Acetyl-Hyp, O-Acetyl-Hyp-O Acetyl-Car, O-Acetyl-Hyp-O-Acetyl Thr, O-Acetyl Hyp-O-Acetyl Tyr, O-Acetyl-Hyp-O-Acetyl Ser-, O-Acetyl Car-O-Acetyl Ser,

O-Acetyl-Car-O-Acetyl Hyp, O-Acetyl-Car-O-Acetyl-Car, O-Acetyl-Car-O-Acetyl-Thr, O-Acetyl-Car-O-Acetyl-Tyr, when Ser is Serine, Tyr is Tyrosine, Car is Carnitine, Thr is Threonine and Hyp is hydroxyproline.

62. The nutritional composition according to Claim 58 wherein the peptide is O-Acetyl-Ser-O-Acetyl-Ser, O-Acetyl Ser-O Acetyl-Thr, O-Acetyl-Ser-O-Acetyl-Tyr, O-Acetyl Ser-O-Acetyl-Hyp, O-Acetyl-Ser-O-Acetyl-Car, O-Acetyl-Thr-O-Acetyl-Thr, O-Acetyl-Thr-O-Acetyl-Tyr, O-Acetyl-Thr-O-Acetyl-Ser, O-Acetyl-Thr-O-Acetyl-Hyp, O-Acetyl-Thr-O-Acetyl-Car, O-Acetyl Tyr-O-Acetyl Tyr, O-Acetyl-Tyr-O-Acetyl Hyp, O-Acetyl-Tyr-O-Acetyl-Ser, O-Acetyl-Tyr-O-Acetyl-Thr, O-Acetyl-Tyr-O-Acetyl-Car, O-Acetyl-Hyp-O-Acetyl-Hyp, O-Acetyl-Hyp-O Acetyl-Car, O-Acetyl-Hyp-O-Acetyl-Thr, O-Acetyl Hyp-O-Acetyl-Tyr, O-Acetyl Hyp-O-Acetyl Ser, O-Acetyl Car-O-Acetyl Ser, O-Acetyl-Car-O-Acetyl-Hyp, O-Acetyl-Car-O-Acetyl-Car, O-Acetyl-Car-O-Acetyl-Thr, O-Acetyl-Car-O-Acetyl-Tyr, when Ser is Serine, Tyr is Tyrosine, Car is Carnitine, Thr is Threonine and Hyp is hydroxyproline.

63. The pharmaceutical composition according to Claim 61 wherein the peptide is O-Acetyl-Hyp-O-Acetyl-Ser, O-Acetyl-Hyp-O-Acetyl-Thr, O-Acetyl-Hyp-O-Acetyl-Tyrs-O-Acetyl-Hyp-O-Acetyl-Hyp, O-Acetyl-Hyp-O-Acetyl-Car, O-Acetyl-O-Acetyl-Hyp O-Acetyl-Thr-O-Acetyl-Hyp, or O-Acetyl-Car-O-Acetyl-Hyp, diacetyl Car-Hyp, wherein Hyp is hydroxyl proline.

64. Use according to Claim 50 wherein the peptide is, O-Acetyl-Hyp-O-Acetyl-Ser, O-Acetyl-Hyp-O-Acetyl-Thr, O-Acetyl-Hyp-O-Acetyl-Tyrs-O-Acetyl-Hyp-O-Acetyl-Hyp, O-Acetyl-Hyp-O-Acetyl-Car, O-Acetyl-O-Acetyl-Hyp O-Acetyl-Thr-O-Acetyl-

Hyp, or O-Acetyl-Car-O-Acetyl-Hyp, diacetyl Car-Hyp, wherein Hyp is hydroxyl proline.

65. Use of an acetylated hydroxy containing amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof for the manufacture of a medicament for enhancing the cardiovascular health in a mammal, wherein said hydroxy containing naturally occurring amino acid has one or more hydroxy groups on the side chain thereof, and wherein at least one of the hydroxy groups on the side chain on the hydroxy containing naturally occurring amino acid is acetylated.

66. Use of a peptide according to any one of Claims 31-48 for the manufacture of a medicament for enhancing the cardiovascular health of a mammal.

67. A pharmaceutical composition comprising a pharmaceutically effective amount of a combination of 2-6 amino acids and a pharmaceutically acceptable carrier therefor, wherein at least one of the amino acids is an acetylated hydroxy containing naturally occurring amino acid or pharmaceutically acceptable salt or Zwitterion thereof, said hydroxy containing naturally occurring amino acid has one or more hydroxy groups on the side chain thereof and at least one hydroxy groups on the side chain of said hydroxy containing naturally occurring amino acids is acetylated, and the remaining amino acids are hydroxy containing naturally occurring amino acid or pharmaceutically acceptable salts or Zwitterion thereof.

68. The pharmaceutical composition according to Claim 67 in which each amino acid is present in an amount ranging from about 0.1 to about 1000 mg and the total amount of the combined mixture does not exceed 10,000 mg per dosage form.

69. A nutritional composition comprised of a nutritionally effective combination of 2-6 amino acids, and nutritionally acceptable carrier therefor, of which at least one amino acid is an acetylated hydroxy containing naturally occurring amino acid, or pharmaceutically acceptable salts thereof or Zwitterions thereof wherein said hydroxy containing naturally occurring amino acid has one or more hydroxy groups on the side chain thereof, and at least one of the hydroxy groups on the side chain of the hydroxy containing naturally occurring amino acid is acetylated, and the remaining amino acids are hydroxy containing naturally occurring amino acids, or acceptable salts or Zwitterions thereof.

70. The nutritional composition according to Claim 69 where each amino acid is present in a range of about 0.1mg to about 1000mg and the total amount of the combined mixture does not exceed 10,000 mg per dosage form.

71. Use of a compound which is an acetylated hydroxy amino acid or acetylated hydroxy peptide or pharmaceutically acceptable salt of said compound or Zwitterion of said compound for the manufacture of a medicament for reducing platelet aggregation, said compound having an acetylated hydroxy group on said such chain and being comprised of 1-6 amino acids.

72. Use of a compound which is an acetylated hydroxy amino acid or acetylated hydroxy peptide or pharmaceutically acceptable salt of said compound or Zwitterion of said compound for treating a condition resulting from or caused by excessive platelet aggregation, said compound having an acetylated hydroxy group on the side chain and being comprised of 1-6 amino acids.

73. Use according to Claim 72 wherein the condition is a vascular disease, a coronary disease or peripheral vascular disease.

74. Use according to Claim 72 wherein the condition is a stroke, heart attack, Thromboembolism or ischemia.

WHAT IS CLAIMED IS:

1. A pharmaceutical composition for reducing platelet aggregation comprising an effective amount of an acetylated hydroxy containing amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof and a pharmaceutical carrier therefor, wherein said hydroxy containing amino acid is selected from the group consisting of O-acetyl-L-hydroxyproline, O-acetyl-L-threonine, O-acetyl-L-tyrosine, O-acetyl-L-serine and combination thereof.
2. The pharmaceutical composition according to Claim 1 wherein the acetylated hydroxy containing amino acid is enantiomerically purified.
3. The pharmaceutical composition according to Claim 1 wherein the acetylated hydroxy containing amino acid is purified.
4. The pharmaceutical composition according to Claim 1 wherein the acetylated hydroxy containing amino acid is O-acetyl-L-HydroxyProline.
5. The pharmaceutical composition according to Claim 1 wherein the acetylated hydroxy containing amino acid is O-acetyl-L-Threonine.
6. The pharmaceutical composition according to Claim 1 wherein the acetylated hydroxy containing amino acid is O-acetyl-L-serine.
7. The pharmaceutical composition according to Claim 1 wherein the acetylated hydroxy containing amino acid is O-acetyl-L-tyrosine.
8. The pharmaceutical composition according to Claim 1 wherein a combination of two or more acetylated hydroxy containing amino acids is present in the composition.
9. The pharmaceutical composition according to claim 1, wherein an additional anti-platelet drug is present.
10. The pharmaceutical composition according to claim 9, wherein the additional platelet drug is aspirin, clopidogrel, dipyridamole or ticlopidine.
11. A nutritional composition for reducing platelet aggregation comprising an effective amount of an acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof and a nutritionally acceptable carrier therefor, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein said hydroxy containing amino acid is O-acetyl-L-hydroxyproline.

12. A nutritional composition for reducing platelet aggregation comprising an effective amount of an acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof and a nutritionally acceptable carrier therefor, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein said hydroxy containing amino acid is O-acetyl -L-threonine.

13. A nutritional composition for reducing platelet aggregation comprising an effective amount of an acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof and a nutritionally acceptable carrier therefor, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein said hydroxy containing amino acid is O-acetyl -L-tyrosine.

14. A nutritional composition for reducing platelet aggregation comprising an effective amount of an acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof and a nutritionally acceptable carrier therefor, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein said hydroxy containing amino acid is selected from the group consisting of O-acetyl-L-hydroxyproline, O-acetyl -L-threonine, O-acetyl -L-tyrosine, O-acetyl-L-serine and combination thereof, wherein a combination of two or more acetylated hydroxy containing amino acid is present in the composition.

15. A food or beverage or aqueous liquid for reducing platelet aggregation comprised of an anti-platelet effective amount of an acetylated hydroxy containing amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein said hydroxy containing amino acid is O-acetyl-L-hydroxyproline.

16. A food or beverage or aqueous liquid for reducing platelet aggregation comprised of an anti-platelet effective amount of an acetylated hydroxy containing amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein said hydroxy containing amino acid is O-acetyl -L-threonine.

17. A food or beverage or aqueous liquid for reducing platelet aggregation comprised of an anti-platelet effective amount of an acetylated hydroxy containing amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein the acetylated hydroxy containing amino acid is O-acetyl-L-threonine.

18. A food or beverage or aqueous liquid for reducing platelet aggregation comprised of an anti-platelet effective amount of an acetylated hydroxy containing amino acid or pharmaceutically acceptable salt thereof or Zwitterion thereof, said acetylated hydroxy containing amino acid or nutritionally acceptable salt thereof or Zwitterion thereof being present for reducing platelet aggregation, wherein said hydroxy containing amino acid is selected from the group consisting of O-acetyl-L-hydroxyproline, O-acetyl -L-threonine, O-acetyl-L-tyrosine, O-acetyl-L-serine and a combination thereof, wherein a combination of two or more acetylated hydroxy containing amino acids is present in the composition.