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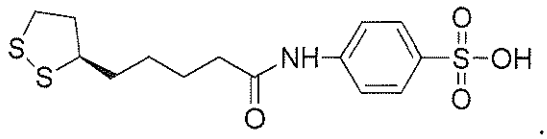
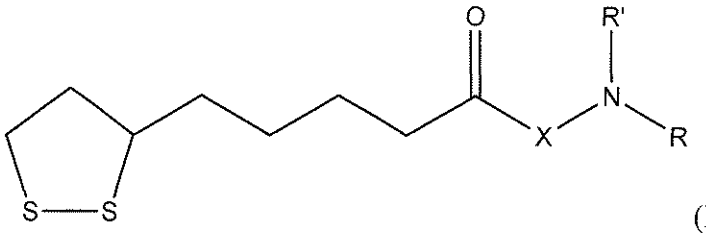


19. A composition, comprising a pharmaceutically acceptable carrier or diluent and one or more compounds of any one of Claims 1 to 18, or a pharmaceutically acceptable salt or prodrug thereof.

20. Use of an effective amount of the composition of Claim 19~~A method for~~ in the manufacture of a medicament for treating an ischemic injury or an ischemia-reperfusion injury in a subject in need thereof~~, comprising administering to the subject an effective amount of the composition of Claim 19~~.

21. ~~A method of treating ischemic injury or ischemia-reperfusion injury in a subject in need thereof, comprising administering to a subject~~Use of an effective amount of a compound represented by Structural Formula (Ia):

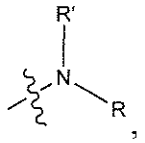


(Ia),

or a pharmaceutically acceptable salt or prodrug thereof, wherein:

R is (C_1-C_{18})alkyl, (C_6-C_{18})aryl or (C_6-C_{18})aryl(C_1-C_{18})alkyl and is substituted with at least one acidic substituent selected from the group consisting of -CO_2H, -SO_3H, -PO_3H_2, -OSO_3H, -OPO_3H_2, -$B(OH)_2$ and -NHOH, wherein the aryl of the (C_6-C_{18})aryl or (C_6-C_{18})aryl(C_1-C_{18})alkyl is optionally further substituted with one or more substituents selected

from the group consisting of hydroxy, halo, (C_1-C_3)alkyl, halo(C_1-C_3)alkyl, cyano, nitro, (C_1-C_3)alkoxy and thio(C_1-C_3)alkyl;
R' is hydrogen or (C_1-C_{18})alkyl, wherein (C_1-C_{18})alkyl is optionally substituted with one or more acidic substituents selected from the group consisting of $-CO_2H$, $-SO_3H$, $-PO_3H_2$, $-OSO_3H$, $-OPO_3H_2$, $-B(OH)_2$ and -NHOH; and

X is absent or is an amino acid, wherein the amino acid is oriented to form an amide linkage with ,

provided that the compound of Structural Formula (Ia) is not *N*-lipoyl-glutamylalanine, *N*-lipoyl-aspartylglycine, *N*-lipoyl-glutamylglycine or 5-(5-(1,2-dithiolan-3-yl)pentanamido)-2-hydroxybenzoic acid

in the manufacture of a medicament for treating ischemic injury or ischemia-reperfusion injury in a subject in need thereof.

22. The ~~method~~ use of Claim 21, wherein the compound is an (R)-lipoyl stereoisomer of a compound represented by Structural Formula (Ia), or a pharmaceutically acceptable salt or prodrug thereof, substantially separated from the (S)-lipoyl stereoisomer(s), or a pharmaceutically acceptable salt or prodrug thereof.

23. The ~~method~~ use of Claim 21 or 22, wherein R is (C_1-C_3)alkyl.

24. The ~~method~~ use of Claim 21 or 22, wherein R is (C_6)aryl.

25. The use~~method~~ of Claim 21 or 22, wherein R is (C_6)aryl(C_1-C_3)alkyl.

26. The use~~method~~ of any one of Claims 21 to 25, wherein X is an amino acid and R' is hydrogen, or a pharmaceutically acceptable salt or prodrug thereof.

27. The use~~method~~ of any one of Claims 21 to 26, wherein X is aspartic acid, tyrosine, glutamic acid or alanine, or a pharmaceutically acceptable salt or prodrug thereof.

28. The use~~method~~ of any one of Claims 21 to 27, wherein R is $(C_1\text{-}C_3)$alkyl substituted with one or two acidic substituents each independently selected from $-CO_2H$, $-SO_3H$, $-PO_3H_2$, $-OSO_3H$ and $-OPO_3H_2$, or a pharmaceutically acceptable salt or prodrug thereof.

29. The use~~method~~ of Claim 21 or 22, wherein X is absent and R' is hydrogen, or a pharmaceutically acceptable salt or prodrug thereof.

30. The use~~method~~ of Claim 29, wherein R is $(C_1\text{-}C_3)$alkyl substituted with one or two acidic substituents each independently selected from $-CO_2H$, $-SO_3H$, $-PO_3H_2$, $-OSO_3H$ and $-OPO_3H_2$, or a pharmaceutically acceptable salt or prodrug thereof.

31. The use~~method~~ of Claim 29, wherein R is (C_6)aryl$(C_1\text{-}C_3)$alkyl substituted with one or two acidic substituents each independently selected from $-CO_2H$, $-SO_3H$, $-PO_3H_2$, $-OSO_3H$ and $-OPO_3H_2$, and wherein aryl is optionally substituted with halo or hydroxy, or a pharmaceutically acceptable salt or prodrug thereof.

32. The use~~method~~ of Claim 29, wherein R is (C_2)alkyl substituted with one or two acidic substituents each independently selected from $-CO_2H$, $-SO_3H$, $-PO_3H_2$, $-OSO_3H$ and $-OPO_3H_2$, or a pharmaceutically acceptable salt or prodrug thereof.

33. The use~~method~~ of Claim 29, wherein R is (C_6)aryl substituted with one acidic substituent selected from $-CO_2H$, $-SO_3H$, $-PO_3H_2$, $-OSO_3H$ and $-OPO_3H_2$, or a pharmaceutically acceptable salt or prodrug thereof.

34. The use~~method~~ of Claim 21 or 22, wherein R□ is (C_1-C_3)alkyl.

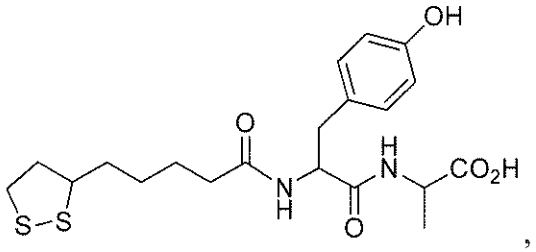
35. The use~~method~~ of Claim 21, 22, 23 or 34, wherein X is absent and R and R□ are each (C_1-C_3)alkyl substituted with one acidic substituent selected from -CO_2H, -SO_3H, -PO_3H_2, -OSO_3H and -OPO_3H_2.

36. The use~~method~~ of any one of Claims 21 to 35, wherein the pharmaceutically acceptable salt comprises a monovalent cation or a divalent cation.

37. The use~~method~~ of any one of Claims 21 to 35, wherein the pharmaceutically acceptable salt comprises an amine.

38. The use~~method~~ of any one of Claims 21 to 35, wherein the pharmaceutically acceptable salt comprises lysine.

39. The use~~method~~ of Claim 21 or 22, wherein the compound is represented by one of the following structural formulas:



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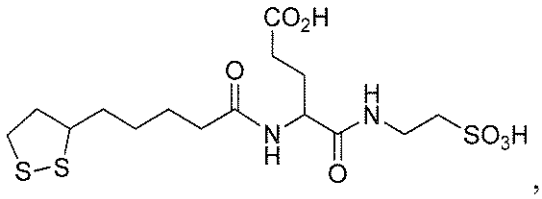

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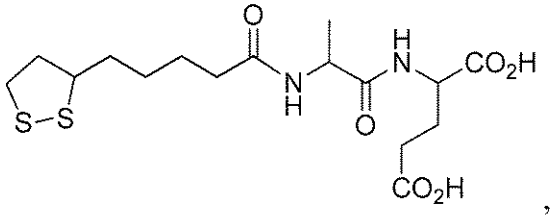

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40. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemia-reperfusion injury is selected from the group consisting of a cerebrovascular ischemia-reperfusion injury, a renal ischemia-reperfusion injury, a hepatic ischemia-reperfusion injury, an ischemia-reperfusion cardiomyopathy, a cutaneous ischemia-reperfusion injury, a bowel ischemia-reperfusion injury, an intestinal ischemia-reperfusion injury, a gastric ischemia-reperfusion injury, a pulmonary ischemia-reperfusion injury, a pancreatic ischemia-reperfusion injury, a skeletal muscle ischemia-reperfusion injury, an abdominal muscle ischemia-reperfusion injury, a limb ischemia-reperfusion injury, ischemia-reperfusion colitis, a mesenteric ischemia-reperfusion injury and a silent ischemia-reperfusion injury.

41. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemic injury is a myocardial ischemic injury.

42. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemic injury is consequent to an ischemia selected from the group consisting of a cardiovascular ischemia, a cerebrovascular ischemia, a renal ischemia, a hepatic ischemia, a ischemia-reperfusion cardiomyopathy, a cutaneous ischemia, a bowel ischemia, an intestinal ischemia, a gastric ischemia, a pulmonary ischemia, a pancreatic ischemia, a skeletal muscle ischemia, an abdominal muscle ischemia, a limb ischemia, an ischemia-reperfusion colitis, a mesenteric ischemia and a silent ischemia.

43. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemia-reperfusion injury is a myocardial ischemia-reperfusion injury.

44. The use~~method~~ of Claim 43, wherein the myocardial ischemia-reperfusion injury is consequent to a myocardial infarction.

45. The use~~method~~ of Claim 44, wherein the myocardial infarction is an acute myocardial infarction.

46. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemia-reperfusion injury is a cerebral ischemia-reperfusion injury.

47. The use~~method~~ of Claim 46, wherein the cerebral ischemia-reperfusion injury is consequent to a stroke.

48. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemic injury or ischemia-reperfusion injury includes peri-operative cardiac damage.

49. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemia-reperfusion injury is a renal ischemia-reperfusion injury.

50. The use~~method~~ of any one of Claims 21 to 39, wherein the ischemic injury or ischemia-reperfusion injury is consequent to a therapeutic intervention.

51. The use~~method~~ of any one of Claims 21 to 39, wherein the therapeutic intervention is selected from the group consisting of a coronary artery bypass graft surgery, a coronary angioplasty surgery, a transplant surgery and a cardiopulmonary bypass surgery.

52. The use~~method~~ of any one of Claims 21 to 39, wherein the subject is a human.

53. The use~~method~~ of any one of Claims 21 to 39, wherein the compound or pharmaceutically acceptable salt thereof is to be administered to the subject orally.

54. The use~~method~~ of any one of Claims 21 to 39, wherein the compound or pharmaceutically acceptable salt thereof is to be administered to the subject intravenously.