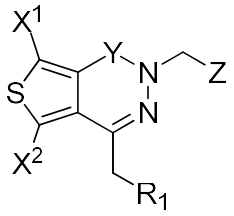
Claims:

1. An aldose reductase inhibitor for use in treating PMM2-CDG in a subject, wherein the aldose reductase inhibitor is a compound of Formula (III):



(III),

or a salt thereof, wherein,

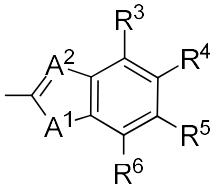
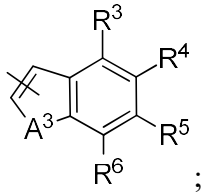
R^1 is CO_2R^2;

R^2 is H, (C_1-C_6)-alkyl, (C_1-C_6)-hydroxyalkyl, or (C_1-C_6)-aminoalkyl;

X^1 is H or halogen;

X^2 is H or halogen;

Y is a bond, C=O, C=S, C=NH, or C=N(C_1-C_4)-alkyl;

Z is  or ;

A^1 is NR^7, O, S or CH_2;

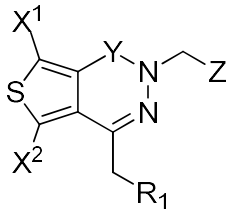
A^2 is N or CH;

A^3 is NR^7, O, or S;

R^3 to R^6 are independently hydrogen, halogen, cyano, acyl, haloalkyl, haloalkoxy, haloalkylthio, trifluoroacetyl, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-alkylsulfinyl, or (C_1-C_4)-alkylsulfonyl; and

R^7 is hydrogen, C_1-C_4 alkyl, or C(O)O-(C_1-C_4)-alkyl.

2. An aldose reductase inhibitor for use in increasing PMM2 enzymatic activity in a subject with PMM2-CDG, wherein the aldose reductase inhibitor is a compound of Formula (III):


(III),

or a salt thereof, wherein,

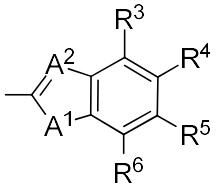
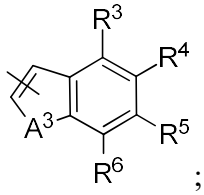
R^1 is CO_2R^2;

R^2 is H, $(C_1\text{-}C_6)$-alkyl, $(C_1\text{-}C_6)$-hydroxyalkyl, or $(C_1\text{-}C_6)$-aminoalkyl;

X^1 is H or halogen;

X^2 is H or halogen;

Y is a bond, C=O, C=S, C=NH, or C=N$(C_1\text{-}C_4)$-alkyl;

Z is  or ;

A^1 is NR^7, O, S or CH_2;

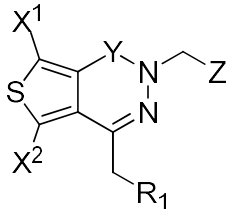
A^2 is N or CH;

A^3 is NR^7, O, or S;

R^3 to R^6 are independently hydrogen, halogen, cyano, acyl, haloalkyl, haloalkoxy, haloalkylthio, trifluoroacetyl, $(C_1\text{-}C_4)$-alkyl, $(C_1\text{-}C_4)$-alkoxy, $(C_1\text{-}C_4)$-alkylthio, $(C_1\text{-}C_4)$-alkylsulfinyl, or $(C_1\text{-}C_4)$-alkylsulfonyl; and

R^7 is hydrogen, $C_1\text{-}C_4$ alkyl, or C(O)O-$(C_1\text{-}C_4)$-alkyl.

3. Use of an aldose reductase inhibitor in the manufacture of a medicament for treating PMM2-CDG in a subject, wherein the aldose reductase inhibitor is a compound of Formula (III):


(III),

or a salt thereof, wherein,

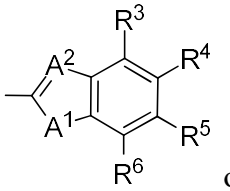
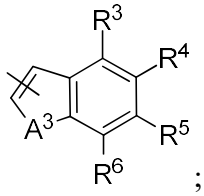
R^1 is CO_2R^2;

R^2 is H, (C_1-C_6)-alkyl, (C_1-C_6)-hydroxyalkyl, or (C_1-C_6)-aminoalkyl;

X^1 is H or halogen;

X^2 is H or halogen;

Y is a bond, C=O, C=S, C=NH, or C=N(C_1-C_4)-alkyl;

Z is  or ;

A^1 is NR^7, O, S or CH_2;

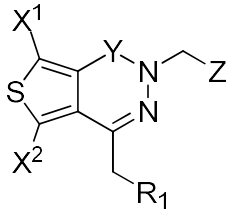
A^2 is N or CH;

A^3 is NR^7, O, or S;

R^3 to R^6 are independently hydrogen, halogen, cyano, acyl, haloalkyl, haloalkoxy, haloalkylthio, trifluoroacetyl, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-alkylsulfinyl, or (C_1-C_4)-alkylsulfonyl; and

R^7 is hydrogen, C_1-C_4 alkyl, or C(O)O-(C_1-C_4)-alkyl.

4. Use of an aldose reductase inhibitor in the manufacture of a medicament for increasing PMM2 enzymatic activity in a subject, wherein the aldose reductase inhibitor is a compound of Formula (III):

 (III),

or a salt thereof, wherein,

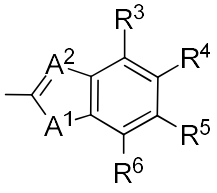
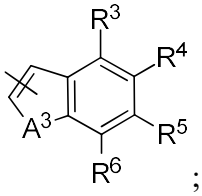
R^1 is CO_2R^2;

R^2 is H, (C_1-C_6)-alkyl, (C_1-C_6)-hydroxyalkyl, or (C_1-C_6)-aminoalkyl;

X^1 is H or halogen;

X^2 is H or halogen;

Y is a bond, C=O, C=S, C=NH, or C=N(C_1-C_4)-alkyl;

Z is  or ;

A^1 is NR^7, O, S or CH_2;

A^2 is N or CH;

A^3 is NR^7, O, or S;

R^3 to R^6 are independently hydrogen, halogen, cyano, acyl, haloalkyl, haloalkoxy, haloalkylthio, trifluoroacetyl, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-alkylsulfinyl, or (C_1-C_4)-alkylsulfonyl; and

R^7 is hydrogen, C_1-C_4 alkyl, or C(O)O-(C_1-C_4)-alkyl.

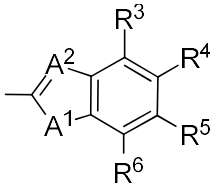
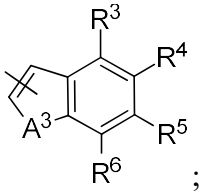
5. The aldose reductase inhibitor or use of any one of claims 1-4, wherein

R^2 is H or (C_1-C_6)-alkyl;

X^1 is H;

X^2 is H;

Y is C=O;

Z is  or ;

A^1 is NR^7, O, S or CH_2;

A^2 is N or CH;

A^3 is NR^7, O, or S;

R^3 through R^6 are independently hydrogen, halogen, cyano, acyl, haloalkyl, haloalkoxy, haloalkylthio, trifluoroacetyl, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-alkylsulfinyl, or (C_1-C_4)-alkylsulfonyl; and

R^7 is hydrogen, C_1-C_4 alkyl, or C(O)O-(C_1-C_4)-alkyl.

6. The aldose reductase inhibitor or use of any one of claims 1-5, wherein:

R^2 is H or (C_1-C_6)-alkyl;

Y is C=O;

A^1 is NR^7, O, or S;

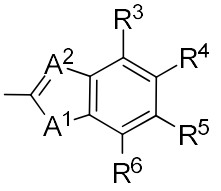
A^2 is N;

A^3 is O, or S; and

R^3 through R^6 are independently hydrogen, halogen, cyano, acyl, haloalkyl, haloalkoxy, haloalkylthio, $(C_1$-$C_4)$-alkyl, $(C_1$-$C_4)$-alkoxy, $(C_1$-$C_4)$-alkylthio, $(C_1$-$C_4)$-alkylsulfinyl, or $(C_1$-$C_4)$-alkylsulfonyl; and

R^7 is hydrogen, C_1-C_4 alkyl, or C(O)O-$(C_1$-$C_4)$-alkyl.

7. The aldose reductase inhibitor or use of any one of claims 1-6, wherein Z is



or a salt thereof.

8. The aldose reductase inhibitor or use of any one of claims 1-7, wherein:

R^2 is H or $(C_1$-$C_6)$-alkyl;

X^1 is H;

X^2 is H;

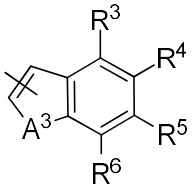
Y is C=O;

A^1 is S;

A^2 is N; and

R^3 through R^6 are independently hydrogen, halogen, or haloalkyl.

9. The aldose reductase inhibitor or use of any one of claims 1-6, wherein Z is



or a pharmaceutically acceptable salt or solvate thereof.

10. The aldose reductase inhibitor or use of claim 9, wherein:

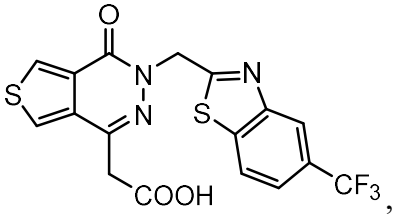
R^2 is hydrogen or (C_1-C_6)-alkyl;

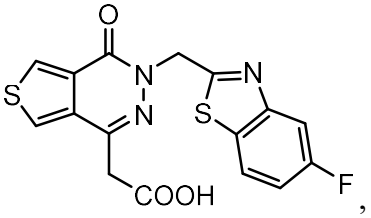
Y is C=O;

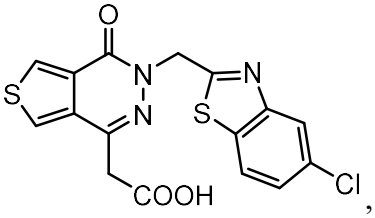
R^3 through R^6 are independently hydrogen, halogen, cyano, acyl, haloalkyl, haloalkoxy, haloalkylthio, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-alkylthio, (C_1-C_4)-alkylsulfinyl, or (C_1-C_4)-alkylsulfonyl; and

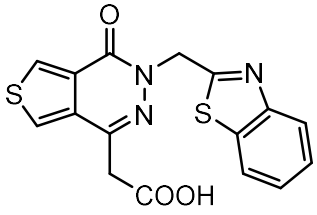
R^7 is hydrogen, C_1-C_4 alkyl, or C(O)O-(C_1-C_4)-alkyl.

11. The aldose reductase inhibitor or use of any one of claims 1-8, wherein the aldose reductase inhibitor is selected from the group consisting of:

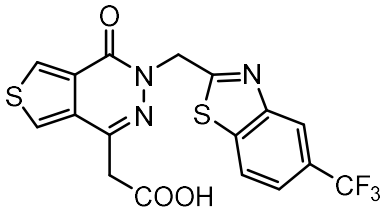


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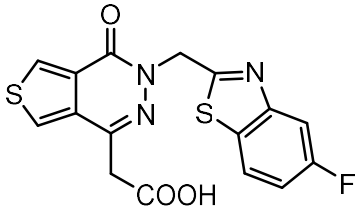
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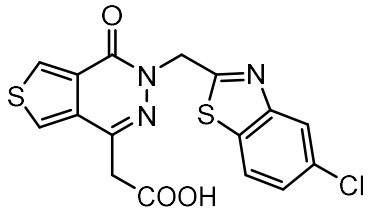
, and salts thereof.

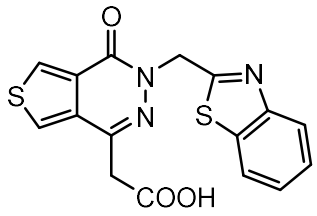
12. The aldose reductase inhibitor or use of any one of claims 1-8 or 11, wherein the aldose reductase inhibitor is


or a salt thereof.

13. The aldose reductase inhibitor or use of any one of claims 1-8 or 11, wherein the aldose reductase inhibitor is


or a salt thereof.

14. The aldose reductase inhibitor or use of any one of claims 1-8 or 11, wherein the aldose reductase inhibitor is  or a salt thereof.

15. The aldose reductase inhibitor or use of any one of claims 1-8 or 11, wherein the aldose reductase inhibitor is  or a salt thereof.

16. The aldose reductase inhibitor or use of any one of claims 1-15, wherein the subject is a human.