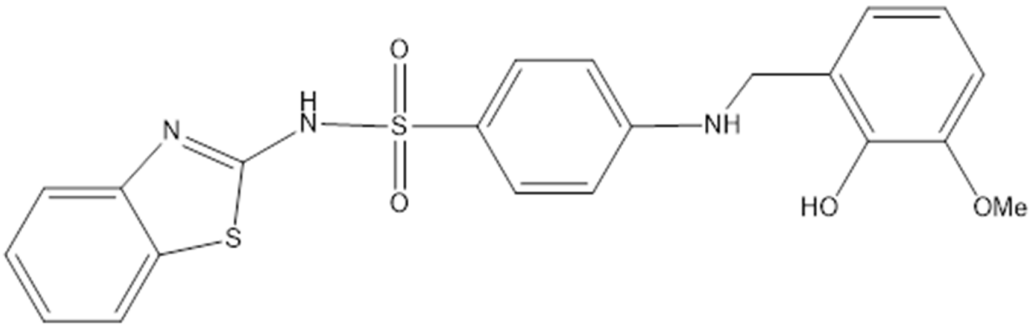
CLAIMS

What is claimed is:

1. An aqueous pharmaceutical formulation comprising:

Compound 1 having the structure:



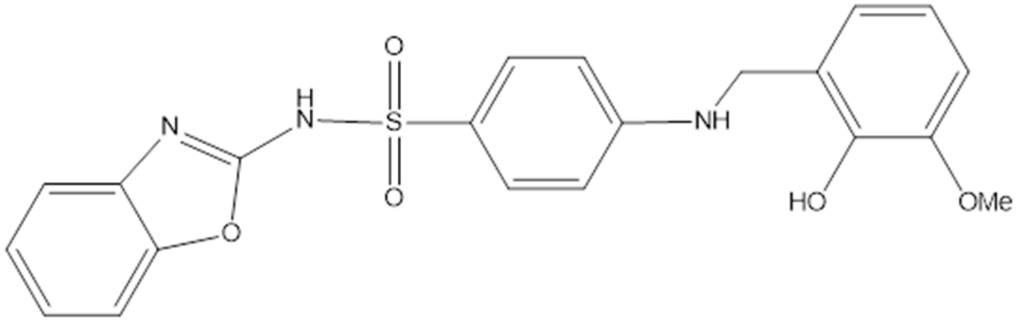
or a pharmaceutically acceptable salt thereof; and

2-hydroxypropyl-β-cyclodextrin (HP-β-CD) in an amount of between about 1% w/v and 50% w/v,

wherein the formulation has a pH of between about 6.0 and 10.

2. An aqueous pharmaceutical formulation comprising:

Compound 2 having the structure:



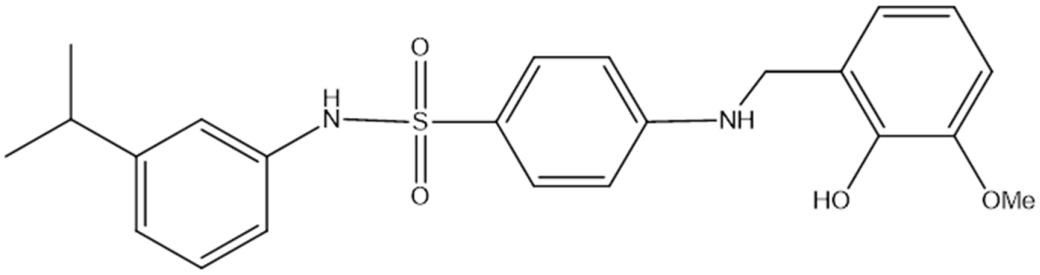
or a pharmaceutically acceptable salt thereof, or diastereomers thereof; and

2-hydroxypropyl-β-cyclodextrin (HP-β-CD) in an amount of between about 1% w/v and 50% w/v,

wherein the formulation has a pH of between about 6.0 and 10.

3. An aqueous pharmaceutical formulation comprising:

Compound 3 having the structure:



or a pharmaceutically acceptable salt thereof, or diastereomers thereof; and

2-hydroxypropyl-β-cyclodextrin (HP-β-CD) in an amount of between about 1% w/v and 50% w/v,

wherein the formulation has a pH of between about 6.0 and 10.

4. The aqueous pharmaceutical formulation of any one of claims 1-3, wherein the 2-hydroxypropyl-β-cyclodextrin (HP-β-CD) is (a) in an amount between about 5%-15%, 10%-20%, 15%-25%, 25%-40%, 35%-45%, or 45%-50% w/v, or (b) in an amount of about 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45%, or 50% w/v, optionally in an amount of about 25% w/v.

5. The aqueous pharmaceutical formulation of any one of claims 1-4, wherein Compound 1, Compound 2, or Compound 3 is in an amount between about 1 mg/mL to about 100 mg/mL, optionally wherein Compound 1, Compound 2, or Compound 3 is in an amount between about 10-90 mg/mL, 50-100 mg/mL, 20-50 mg/mL, or 35-95 mg/mL, or optionally wherein the amount of Compound 1, Compound 2, or Compound 3 is 15 mg/mL.

6. The aqueous pharmaceutical formulation of any one of claims 1-5, wherein the formulation has (a) a pH in the range of 8.0 to 9.5, optionally wherein the pH is in the range of 8.4 to 8.7, or (b) a pH in the range of about 7.0 to about 9.0.

7. The aqueous pharmaceutical formulation of any one of claims 1-6, wherein the formulation further comprises a pharmaceutically acceptable carrier, additive, excipient, preservative, solvent, buffer, or a mixture thereof.

8. The aqueous pharmaceutical formulation of any one of claims 1-7, wherein the formulation is suitable for parenteral administration, wherein the parenteral administration is subcutaneous injection, intravenous injection, intramuscular injection, intraperitoneal injection, infusion techniques, or a combination thereof, optionally wherein the parenteral administration is via intravenous injection.

9. Use of an aqueous pharmaceutical formulation of any one of claims 1-8, in the manufacture of a medicament for treating or preventing a 12-LOX mediated disease and/or disorder.

10. The use of claim 9, wherein the 12-LOX mediated disease and/or disorder is selected from the group consisting of: type 1 diabetes, type 2 diabetes, diabetic kidney disease, diabetic nerve disease, cardiovascular disease, Alzheimer's disease, Non-Alcoholic steatohepatitis, platelet hemostasis, skin diseases, heparin-induced thrombocytopenia, thrombosis, lupus, and cancer.

11. The use of claim 9 or 10, wherein the aqueous pharmaceutical formulation is to be administered to the subject by infusion.

12. The use of claim 11, wherein the infusion comprises infusing between about 1 mg and 1,000 mg of Compound 1 over 30 minutes to 24 hours, optionally wherein the infusion is for about 1, 2, 3, 4, or 5 hours, further optionally wherein about 10 mg to 1,000 mg of Compound 1 is infused.

13. The use of any one of claims 9-12, wherein the infusion is repeated over between about 1 and 14 days, optionally wherein the infusion is repeated over 14 days.

14. The use of claim 9 or 10, wherein the formulation is to be administered by a bolus injection.

15. A method of making the pharmaceutical formulation of any of one claims 1-8, comprising:

(a) dissolving hydroxypropyl-β-cyclodextrin (HP-β-CD) in water to obtain a clear HP-β-CD solution;

(b) adding sodium hydroxide to the HP-β-CD solution while stirring to obtain a basic HP-β-CD solution of between about 9.5 and 12;

(c) adding the Compound 1, Compound 2 or Compound 3 slowly under agitation;

(d) optionally adding additional sodium hydroxide while stirring;

(e) stirring for at least 10 minutes followed by at least 10 minutes of sonication at least three times until the Compound 1, Compound 2 or Compound 3 is dissolved; and

(f) adding hydrochloric acid while stirring to result in a solution with a pH in a range from 8.4 to 8.7,

(g) q.s. to final volume with water.