AMENDED CLAIMS (CLEAN)

1. A composition comprising:

(a) berberine or a derivative or analog thereof;

(b) one or more pharmacologically active organic acids; and

(c) optionally a pharmaceutically acceptable excipient, carrier, or diluent,

wherein the berberine and the pharmacologically active organic acid are present in amounts that, when administered to a subject, are sufficient to treat, prevent, or reduce one or more diseases or disorders selected from metabolic disorders, atherosclerosis, heart diseases, neurodegenerative diseases, liver diseases, sarcopenia, muscle atrophy, inflammation, and cancer, or a related disease or disorder thereof in a mammal, including a human.

2. A method for treating, reducing, or preventing a metabolic disorder, heart diseases, neurodegenerative diseases, liver diseases comprising

administering to a subject in need thereof a pharmaceutical composition comprising

(a) berberine or a derivative or analog thereof; and

(b) one or more pharmacologically active organic acids, in a therapeutically effective amount, and

(c) optionally a pharmaceutically acceptable excipient, carrier, or diluent.

3. A kit comprising: (i) a first agent of berberine or a derivative or analog thereof; (ii) one or more second agent(s) selected from pharmaceutically active organic acids or natural extracts that comprise pharmaceutically active organic acids; (iii) one or more third agent(s) selected from the group consisting of vitamin D, vitamin C, vitamin E, vitamin B12, vitamin A, benfotiamine, chromium picolinate and vanadium; and (iv) instructions for administering the first agent, the second agent(s) and the third agent(s) to a patient having or at risk of having one or more diseases or disorders selected from metabolic disorders, atherosclerosis, heart diseases, sarcopenia, muscle atrophy, neurodegenerative diseases, liver diseases, and cancer.

4. An acid-base addition salt in substantially pure form, having the formula of:

$$(X^+)_m(U^-)_n \qquad (I)$$

wherein

(a) U^- is an anionic moiety of ursodeoxycholic acid or a derivative or analog thereof;

(b) X^+ is a cationic moiety of a pharmacologically active organic base; and

(c) m and n are integers independently selected from 1, 2, 3, 4, 5 and 6 so as to arrive at a charge neutral salt.

5. The acid-base addition salt of claim 4, wherein the derivative or analog of ursodeoxycholic acid is selected from **Table 3**.

6. The acid-base addition salt of claim 4 or 5, wherein the pharmacologically active organic base is selected from the group consisting of berberine, metformin, carnitine, coptisine, palmatine, jatrorrhizine and other organic base that is generally recognized pharmacologically active for one or more diseases or disorders selected from chronic liver diseases, metabolic diseases or disorders, or a related disease or disorder thereof in a mammal, including a human.

7. The acid-base addition salt of any of claims 4-6, wherein U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of berberine or a derivative or analog thereof, and m = 1 and n = 1.

8. The acid-base addition salt of claim 7, wherein the derivative or analog of berberine is selected from **Table 2**.

9. The acid-base addition salt of any of claims 4-6, wherein U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of metformin or a derivative or analog thereof, and m = 1 and n = 1.

10. The acid-base addition salt of any of claims 4-6, wherein U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of carnitine or a derivative or analog thereof, and m = 1 and n = 1.

11. The acid-base addition salt of any of claims 4-6, wherein U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of coptisine or a derivative or analog thereof, and m = 1 and n = 1.

12. The acid-base addition salt of any of claims 4-6, wherein U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of palmatine or a derivative or analog thereof, and m = 1 and n = 1.

13. The acid-base addition salt of any of claims 4-6, wherein U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of jatrorrhizine or a derivative or analog thereof, and m = 1 and n = 1.

14. A pharmaceutical composition comprising an amount of an acid-base addition salt having the formula of:

$$(X^+)_m(U^-)_n \qquad (I)$$

wherein

(a) U^- is an anionic moiety of ursodeoxycholic acid or a derivative or analog thereof;

(b) X^+ is a cationic moiety of a pharmacologically active organic base; and

(c) m and n are integers independently selected from 1, 2, 3, 4, 5 and 6 so as to arrive at a charge neutral salt,

effective to treat, prevent, or reduce one or more diseases or disorders selected from fatty liver, non-alcoholic fatty liver disease (NAFLD) and non-alcoholic steatohepatitis (NASH), cholestatic liver diseases, graft-versus-host disease of the liver, chronic viral associated liver diseases, alcohol-related liver diseases, metabolic diseases or disorders such as pre-diabetes, diabetes, hyperlipidemia, diabetic dyslipidemia, dyslipidemia in statin-intolerant patients, obesity or a related disease or disorder thereof in a mammal including a human, and a pharmaceutically acceptable excipient, carrier, or diluent.

15. The pharmaceutical composition of claim 14, wherein the disease or disorder is fatty liver, or NASH or NAFLD.

16. The pharmaceutical composition of claim 14, wherein the disease or disorder is cholestatic liver diseases, graft-versus-host disease of the liver, chronic viral associated liver diseases, or alcohol-related liver diseases.

17. The pharmaceutical composition of claim 14, wherein the disease or disorder is pre-

diabetes, diabetes, hyperlipidemia, diabetic dyslipidemia, or dyslipidemia in statin-intolerant patients.

18. The pharmaceutical composition of claim 14, wherein the disease or disorder is obesity.

19. The pharmaceutical composition of any of claims 14-18, wherein the derivative or analog of ursodeoxycholic acid is selected from **Table 3**.

20. The pharmaceutical composition of any of claims 14-19, wherein U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of berberine or a derivative or analog thereof, and m = 1 and n = 1.

21. A method for treating, reducing, or preventing a disease or disorder, comprising

administering to a subject in need thereof a pharmaceutical composition comprising an amount of an acid-base addition salt having the formula of:

$$(X^+)_m(U^-)_n \qquad (I)$$

wherein

(a) U^- is an anionic moiety of ursodeoxycholic acid or a derivative or analog thereof;

(b) X^+ is a cationic moiety of a pharmacologically active organic base; and

(c) m and n are integers independently selected from 1, 2, 3, 4, 5 and 6 so as to arrive at a charge neutral salt,

effective to treat, prevent, or reduce one or more diseases or disorders selected from fatty liver, non-alcoholic fatty liver disease (NAFLD) and non-alcoholic steatohepatitis (NASH), cholestatic liver diseases, graft-versus-host disease of the liver, chronic viral associated liver diseases, alcohol-related liver diseases, metabolic diseases or disorders such as pre-diabetes, diabetes, hyperlipidemia, diabetic dyslipidemia, dyslipidemia in statin-intolerant patients, obesity, or a related disease or disorder thereof in a mammal, including a human, and a pharmaceutically acceptable excipient, carrier, or diluent.

22. The method of claim 21, wherein the disease or disorder is fatty liver, NAFLD or NASH.

23. The method of claim 21, wherein the disease or disorder is cholestatic liver diseases, graft-versus-host disease of the liver, chronic viral associated liver diseases or alcohol-related liver diseases.

24. The method of claim 21, wherein the disease or disorder is pre-diabetes, diabetes or hyperlipidemia, diabetic dyslipidemia, or dyslipidemia in statin-intolerant patients.

25. The method of claim 21 or 22, wherein

U^- is an anionic moiety of ursodeoxycholic acid, X^+ is a cationic moiety of berberine or a derivative or analog thereof, and m = 1 and n = 1, and

the subject suffers from NASH.

26. An acid-base addition salt in substantially pure form, having the formula of:

$$(B^+)_m(Y^-)_n \qquad (II)$$

wherein

(a) B^+ is a cationic moiety of berberine or a derivative or analog thereof;

(b) Y^- is an anionic moiety of a pharmacologically active organic acid; and

(c) m and n are integers independently selected from 1, 2, 3, 4, 5 and 6 so as to arrive at a charge neutral salt.

27. A pharmaceutical composition comprising an amount of an acid-base addition salt having the formula of:

$$(B^+)_m(Y^-)_n \qquad (II)$$

wherein

(a) B^+ is a cationic moiety of berberine or a derivative or analog thereof;

(b) Y^- is an anionic moiety of a pharmacologically active organic acid; and

(c) m and n are integers independently selected from 1, 2, 3, 4, 5 and 6 so as to arrive at a charge neutral salt,

effective to treat, prevent, or reduce one or more diseases or disorders selected from metabolic disorders, atherosclerosis, heart diseases, neurodegenerative diseases, liver diseases, sarcopenia, muscle atrophy, inflammation, and cancer, or a related disease or disorder thereof in a mammal, including a human, and a pharmaceutically acceptable excipient, carrier, or diluent.

28. A method for treating, reducing, or preventing a disease or disorder, comprising

administering to a subject in need thereof a pharmaceutical composition comprising an amount of an acid-base addition salt having the formula of:

$$(B^+)_m(Y^-)_n \qquad (II)$$

wherein

(a) B^+ is a cationic moiety of berberine or a derivative or analog thereof;

(b) X^- is an anionic moiety of a pharmacologically active organic acid; and

(c) m and n are integers independently selected from 1, 2, 3, 4, 5 and 6 so as to arrive at a charge neutral salt,

effective to treat, prevent, or reduce one or more diseases or disorders selected from metabolic disorders, atherosclerosis, heart diseases, neurodegenerative diseases, liver diseases, sarcopenia, muscle atrophy, inflammation, and cancer, or a related disease or disorder thereof in a mammal, including a human, and a pharmaceutically acceptable excipient, carrier, or diluent.