AMENDED CLAIMS (CLEAN COPY)

1. A compound having the formula of:

X-Y-Z (I)

wherein

(a) X is a moiety derived from a pharmacologically active organic base or acid;

(b) Z is a moiety derived from a pharmacologically active organic acid; and

(c) Y a covalent bond or a linker,

wherein at least

X is a moiety derived from berberine, or a derivative or analog thereof, or L-carnitine, or a derivative or analog thereof; or metformin, or a derivative or analog thereof; or unsaturated fatty acid, or a derivative or analog thereof; and

Z is a moiety derived from ursodeoxycholic acid, or eicosapentaenoic acid, or docosahexaenoic acid, or rhein, or R-(+)-α-lipoic acid, or ursolic acid, or corosolic acid, or hydroxycitric acid, or cinnamic acid, or cholic acid, or oleanolic acid, or salicylic acid, or betulinic acid, or chlorogenic acid, or caffeic acid, or bassic acid, or acetyl L-carnitine, or S-allyl cysteine sulphoxide, or S-methyl cysteine sulfoxide, or pantothenic acid, or ascorbic acid, or retinoic acid, or nicotinic acid, or biotin, or a derivative or analog thereof.

2. The compound of claim 1, wherein the linker comprises an amide bond or an ester bond.

3. The compound of claim 1, wherein Z is moiety derived from ursodeoxycholic acid, or a derivative or analog thereof selected from Table 1.

4. The compound of claim 1, wherein X is a moiety derived from berberine, or a derivative or analog thereof selected from Table 3.

5. The compound of claim 1, wherein X is a moiety derived from L-carnitine, or a derivative or analog thereof selected from Table 4.

6. The compound of claim 1, wherein X is a moiety derived from metformin, or a derivative or analog thereof selected from Table 5.

7. The compound of claim 1, wherein X is a moiety derived from unsaturated fatty acid, or a derivative or analog thereof selected from Table 6.

8. The compound of claim 1, wherein X is a moiety derived from berberine, or a derivative or analog thereof, and Z is selected from a bile acid, or a derivative or analog thereof, a fatty acid, or a derivative or analog thereof, rhein or a derivative or analog thereof, R-(+)-α-lipoic acid, or a derivative or analog thereof.

9. The compound of claim 1, wherein X is a moiety derived from berberine, or a derivative or analog thereof, and Z is ursolic acid or corosolic acid or a derivative or analog thereof, or hydroxycitric acid or a derivative or analog thereof.

10. The compound of claim 1, wherein X is a moiety derived from berberine, or a derivative or analog thereof, and Z is a moiety selected from a pharmacologically active organic acid from Table 2.

11. The compound of claim 1, wherein X is a moiety derived from L-carnitine, or a derivative or analog thereof, and Z is a bile acid, or a derivative or analog thereof, a fatty acid, or a derivative or analog thereof, or rhein or a derivative or analog thereof, or R-(+)-α-lipoic acid, or a derivative or analog thereof.

12. The compound of claim 1, wherein Z is a moiety derived from ursodeoxycholic acid and X is a moiety derived from berberine.

13. The compound of claim 1, wherein Z is a moiety derived from ursodeoxycholic acid and X is a moiety derived from one of L-carnitine, metformin, coptisine, palmatine and jatrorrhizine.

14. The compound of claim 1, wherein Z is a moiety derived from ursodeoxycholic acid, or a derivative or analog thereof, and X is a moiety derived from an unsaturated fatty acid.

15. A pharmaceutical composition comprising an amount of a compound having the formula of:

X-Y-Z (I)

wherein

(a) X is a moiety derived from a pharmacologically active organic base or acid;

(b) Z is a moiety derived from a pharmacologically active organic acid; and

(c) Y a covalent bond or a linker,

wherein at least

X is a moiety derived from berberine, or a derivative or analog thereof, or L-carnitine, or a derivative or analog thereof; or metformin, or a derivative or analog thereof; or unsaturated fatty acid, or a derivative or analog thereof; and

Z is a moiety derived from ursodeoxycholic acid, or eicosapentaenoic acid, or docosahexaenoic acid, or rhein, or R-(+)-α-lipoic acid, or ursolic acid, or corosolic acid, or hydroxycitric acid, or cinnamic acid, or cholic acid, or oleanolic acid, or salicylic acid, or betulinic acid, or chlorogenic acid, or caffeic acid, or bassic acid, or acetyl L-carnitine, or S-allyl cysteine sulphoxide, or S-methyl cysteine sulfoxide, or pantothenic acid, or ascorbic acid, or retinoic acid, or nicotinic acid, or biotin, or a derivative or analog thereof, effective to treat, prevent, or reduce one or more diseases or disorders selected from liver diseases or disorders, diabetes, diabetic complications, pre-diabetes, dyslipidemia, obesity, metabolic syndromes, muscle atrophy, inflammation, and cancers or a related disease or disorder thereof in a mammal including a human, and a pharmaceutically acceptable excipient, carrier, or diluent.

16. The pharmaceutical composition of claim 15, wherein the disease or disorder is selected from non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), cholestatic liver diseases or graft-versus-host disease of the liver.

17. The pharmaceutical composition of claim 15, wherein the disease or disorder is selected from diabetes, diabetic complications and pre-diabetes.

18. The pharmaceutical composition of claim 15, wherein the disease or disorder is dyslipidemia.

19. The pharmaceutical composition of claim 15, wherein the disease or disorder is obesity.

20. The pharmaceutical composition of claim 15, wherein the disease or disorder is metabolic syndromes.

21. The pharmaceutical composition of claim 15, wherein the disease or disorder is muscle atrophy.

22. The pharmaceutical composition of claim 15, wherein the disease or disorder is inflammation.

23. The pharmaceutical composition of claim 15, wherein the disease or disorder is cancer.

24. 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 a compound having the formula of:

X-Y-Z (I)

wherein

(a) X is a moiety derived from a pharmacologically active organic base or acid;

(b) Z is a moiety derived from a pharmacologically active organic acid; and

(c) Y a covalent bond or a linker,

wherein at least

X is a moiety derived from berberine, or a derivative or analog thereof, or L-carnitine, or a derivative or analog thereof; or metformin, or a derivative or analog

thereof, or unsaturated fatty acid, or a derivative or analog thereof, and

Z is a moiety derived from ursodeoxycholic acid, or eicosapentaenoic acid, or docosahexaenoic acid, or rhein, or R-(+)-α-lipoic acid, or ursolic acid, or corosolic acid, or hydroxycitric acid, or cinnamic acid, or cholic acid, or oleanolic acid, or salicylic acid, or betulinic acid, or chlorogenic acid, or caffeic acid, or bassic acid, or acetyl L-carnitine, or S-allyl cysteine sulphoxide, or S-methyl cysteine sulfoxide, or pantothenic acid, or ascorbic acid, or retinoic acid, or nicotinic acid, or biotin, or a derivative or analog thereof, effective to treat, prevent, or reduce one or more diseases or disorders selected from liver diseases or disorders, diabetes, diabetic complications, pre-diabetes, dyslipidemia, obesity, metabolic syndromes, muscle atrophy, inflammation, and cancers, or a related disease or disorder thereof in a mammal, including a human, and a pharmaceutically acceptable excipient, carrier, or diluent.