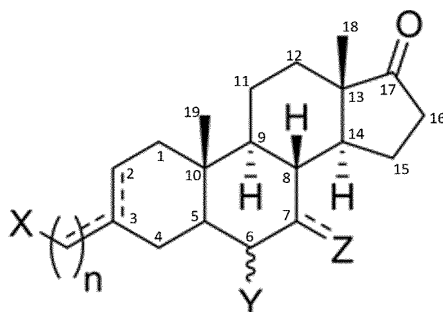


CLAIMS

1. A compound having a formula (**I**)



wherein:

X is selected from the group consisting of a carboxylic acid, carboxylic ester or a bioisoster thereof, primary alcohol, ether, and an amine group, wherein the bioisoster consists of a sulfate, sulfonic acid, phosphate, phosphonate, or a nitrogen-containing etherocyclic ring, and wherein the amine group optionally comprises a primary amine, secondary amine, or a cyclic amine;

n is 1, 2, 3, 4, or 5;

a C3-C1' dashed line represents an optional exocyclic double bond C=C at position C3-C1';

a C2-C3 dashed line represents an optional endocyclic double bond C=C;

Y at C6 is a hydroxyl (OH) in the alpha- or beta-configuration or a hydroxymethyl (CH₂OH) in the alpha-configuration;

Z at C7 is a -H or -OH in an alpha-configuration or a ketone, wherein a dashed line represents an optional carbonyl group (C=O) at Z; or

a pharmaceutically acceptable salt, solvate, or hydrate thereof.

2. The compound of claim 1, wherein X is selected from the group consisting of a carboxylic acid, carboxylic ester, primary amine, secondary amine, and cyclic amine.
3. The compound of claim 1, wherein X is a carboxylic acid or a carboxylic ester.
4. The compound of anyone of claims 1-3, which is selected from the group consisting of:

(E)-4-(6alpha-hydroxy-17-oxoandrostane-3-yliden) butyric acid;
(Z)-4-(6alpha-hydroxy-17-oxoandrostane-3-yliden) butyric acid;
(E)-4-(6beta-hydroxy-17-oxoandrostane-3-yliden) butyric acid;
(Z)-4-(6beta-hydroxy-17-oxoandrostane-3-yliden) butyric acid;
(E)-3-[2-(azetidin-3-yl)ethyliden]-6alpha-hydroxyandrostane-17-one;
(Z)-3-[2-(azetidin-3-yl)ethyliden]-6alpha-hydroxyandrostane-17-one;
(E)-3-(4-aminobutyl)-6alpha-hydroxyandrost-2-ene-17-one hydroiodide;
3-[2-(piperidin-4-yl)ethyl]-6alpha-hydroxyandrost-2-ene-17-one hydroiodide;
(EZ)-3-(4-aminobutyliden)-6alpha-hydroxyandrostane-17-one;
(E)-3-[2-(piperidin-4-yl)ethyliden]-6alpha-hydroxyandrostane-17-one;
(Z)-3-[2-(piperidin-4-yl)ethyliden]-6alpha-hydroxyandrostane-17-one;
3beta-[2-(piperidin-4-yl)ethyl]-6alpha-hydroxyandrostane-17-one;
Ethyl (6alpha-hydroxy-17-ketoandrostane-3beta-yl) acetate;
4-(6alpha-hydroxy-17-oxoandrostane-3-yl) butyric acid;
4-(6beta-hydroxy-17-oxoandrostane-3-yl) butyric acid;
2-(6beta-hydroxy-17-oxoandrostane-3-yl) acetic acid;
4-(6alpha-hydroxy-17-oxoandrostane-3-yl) ethylbutyrate;
4-(6alpha-hydroxy-17-oxoandrostane-3-yl) ethylcaproate;
4-(6beta-hydroxy-17-oxoandrostane-3-yl) caproic acid;

(E,Z)-3-(5-N-methylaminopentyliden]-6alpha-hydroxymethylandrostande-7,17-dione;

(E,Z)-3-[2-(pyrrolidin-3yl)ethyliden]-6alpha-hydroxymethylandrostande-7,17-dione;

(E,Z)-3-[2-(azetidin-2-yl)ethyliden]-6alpha-hydroxymethylandrostande-7,17-dione;

(E,Z)-3-[2-(piperidin-4-yl)ethyliden]-6alpha-hydroxymethylandrostande-7,17-dione;

(E,Z)-3-(5-N-methylaminopentyliden)-6alpha-hydroxymethyl-7alpha-hydroxyandrostande-17-one;

3beta-[2-(azetidin-2-yl)ethyl]-6alpha-hydroxymethylandrostande-7,17-dione;

3beta-[2-(azetidin-2-yl)ethyl]-6alpha-hydroxymethyl-7alpha-hydroxyandrostande-17-one;

3beta-[2-(pyrrolidin-3yl)ethyl]-6alpha-hydroxymethylandrostande-7,17-dione;

3beta-[2-(pyrrolidin-3yl)ethyl]-6alpha-hydroxymethyl-7alpha-hydroxyandrostande-17-one;

3beta-[2-(piperidin-4-yl)ethyl]-6alpha-hydroxymethylandrostande-7,17-dione; and

3beta-[2-(piperidin-4-yl)ethyl]-6alpha-hydroxymethyl-7alpha-hydroxyandrostande-17-one.

5. The compound of anyone of claims 1-3, which is selected from the group consisting of:

(E)-4-(6alpha-hydroxy-17-oxoandrostande-3-yliden) butyric acid;

(Z)-4-(6alpha-hydroxy-17-oxoandrostande-3-yliden) butyric acid;

(E)-4-(6beta-hydroxy-17-oxoandrostande-3-yliden) butyric acid;

(Z)-4-(6beta-hydroxy-17-oxoandrostande-3-yliden) butyric acid;

Ethyl (6alpha-hydroxy-17-ketoandrostande-3beta-yl) acetate;

4-(6alpha-hydroxy-17-oxoandrostande-3-yl) butyric acid;

4-(6beta-hydroxy-17-oxoandrostane-3-yl) butyric acid;

2-(6beta-hydroxy-17-oxoandrostane-3-yl) acetic acid;

4-(6alpha-hydroxy-17-oxoandrostane-3-yl) ethylbutyrate;

4-(6alpha-hydroxy-17-oxoandrostane-3-yl) ethylcaproate; and

4-(6beta-hydroxy-17-oxoandrostane-3-yl) caproic acid.

6. The compound of claim 1, selected from the group consisting of 4-(6alpha-hydroxy-17-oxoandrostane-3-yl) butyric acid and 2-(6beta-hydroxy-17-oxoandrostane-3-yl) acetic acid.

7. The compound of any one of claims 1-6, wherein the pharmaceutically acceptable salt is selected from chloride, bromide, sulfate, phosphate, nitrate, fumarate, succinate, oxalate, malate, tartrate, maleate, citrate, methanesulfate, and benzoate.

8. A pharmaceutical composition comprising one or more of the compounds of any one of claims 1-7, in combination with at least one pharmaceutically acceptable vehicle and/or excipient.

9. A pharmaceutical composition for use in a method for the treatment of heart failure comprising one or more of the compounds of any one of claims 1-7, in combination with at least one pharmaceutically acceptable vehicle and/or excipient.

10. The pharmaceutical composition of claim 8 or 9, formulated for intravenous injection, intramuscular injection, enteral administration, parenteral administration, or inhalation.

11. The pharmaceutical composition of claim 8 or 9, formulated for oral administration.

12. The pharmaceutical composition of any one of claims 8-11, administered at a dose of between about 1 mg/kg and about 20 mg/kg, optionally, the dose is between about 1 mg/kg and about 10 mg/kg.

13. The pharmaceutical composition of any one of claims 8-12, further comprising one or more additional therapeutically active ingredients selected from the group consisting of CE inhibitors, AIRBs, diuretics, Ca²⁺ channel blockers, β -blockers, digitalis, NO donors, vasodilators, SERCA2a stimulators, neprilysin (NEP) inhibitors, myosin filament

activators, recombinant relaxin-2 mediators, recombinant NP protein, activators of the soluble guanylate cyclase (sGC), and beta-arrestin ligand of angiotensin II receptor.

14. A compound of any one of claims 1-7 for use as a medicament.
15. A compound of any one of claims 1-7 for use for the treatment of heart failure.