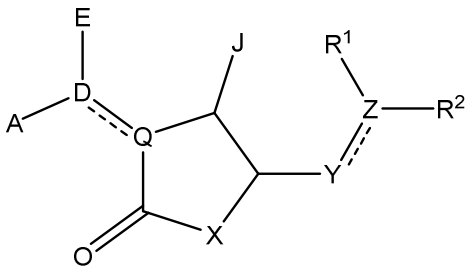
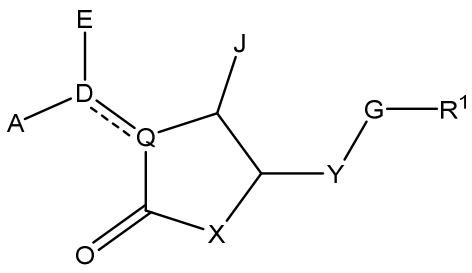
CLAIMS

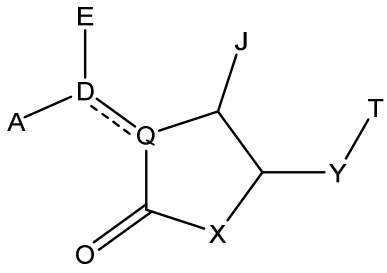
1. A compound of formula I, II, or III, or a pharmaceutically acceptable salt thereof,



(I)



(II)



(III)

wherein

------ represents a carbon–carbon single bond or a carbon–carbon double bond;

X is selected from O, NH, CH_2;

Y is selected from CH, CH_2;

Z is selected from C, N;

G is selected from O;

T is selected from SH;

One of R^1 and R^2 is H, and then R^1 is selected from alkenyl, cycloalkyl or $-CH_2-R^3$, and R^2 is selected from alkyl, alkenyl, cycloalkyl, aryl or $-CH_2-R^3$, wherein for R^1, R^3 is selected from aryl (C2–12), cycloalkyl, heteroaryl, $-R^4-R^5$, and for R^2, R^3 is selected from cycloalkyl, heteroaryl, and $-R^4-R^5$; wherein R^4 is selected from alkyl, alkenyl; wherein R^5 is

selected from aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted gama-lactone;

Q is selected from C, CH;

D is selected from C, CH;

One of A and E is H and the other is selected from OH, SH, aryl, C3-C5 or C7-C12 alkyl, alkenyl, R^6-R^7, wherein R^6 is selected from alkyl, alkenyl, and R^7 is selected from substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted gama-lactone;

J is selected from H, OH, SH, NH_2, halogen;

wherein the compound is not nitenin, dihydronitenin nor their respective enantiomers and stereoisomers, wherein aryl refers to a monovalent aromatic hydrocarbon radical comprising 6-20 carbon atoms (C6-C20) that is derived by removing a hydrogen atom from an aromatic ring; alkyl refers to a saturated monovalent hydrocarbon radical comprising one to four carbon atoms (C1-C4) and may be linear or cyclic; heteroaryl refers to a monovalent aromatic radical comprising 5 to 20 atoms, one or more 5-, 6-, or 7-membered rings, and one or more heteroatoms independently chosen from nitrogen, oxygen, phosphorous, and sulfur; cycloalkyl is a cyclic alkyl; and alkenyl refers to a monovalent hydrocarbon radical comprising four to eight carbon atoms (C4-C8) with at least one site of unsaturation.

2. The compounds of formula II according to claim 1, wherein

X is O;

Y is CH_2;

G is O;

R^1 is H;

J is H;

Q is C;

D is C;

E is H;

A is $-R^6-R^7$; wherein R^6 is alkyl and R^7 is heteroaryl.

3. The compounds of formula II according to claim 1, wherein

X is O;

Y is CH_2;

G is O;

R^1 is H;

J is H;

Q is C;

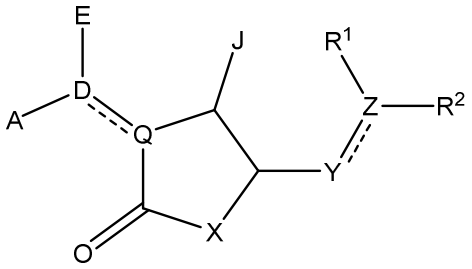
D is C;

E is $-R^6-R^7$; wherein R^6 is alkyl and R^7 is heteroaryl;

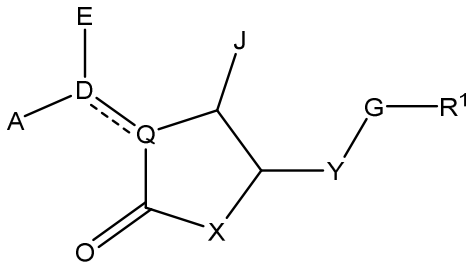
A is H.

4. The compounds of formula I, II and III, according to claim 1, or a pharmaceutically acceptable salt thereof, wherein R^7 is not furan-3-yl.

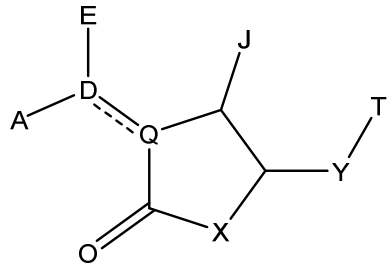
5. A pharmaceutical composition comprising one or more compounds of formula I, II and III, or a pharmaceutically acceptable salt thereof, and a pharmacologically acceptable diluent or carrier



(I)



(II)



(III)

wherein

------ represents a carbon–carbon single bond or a carbon–carbon double bond;

X is selected from O, NH, CH_2;

Y is selected from CH, CH_2;

Z is selected from C, N;

G is selected from O, S;

T is selected from SH;

One of R^1 and R^2 is H, and then R^1 is selected from alkenyl, cycloalkyl or $-CH_2-R^3$ or R^2 is selected from alkyl, alkenyl, cycloalkyl, aryl or $-CH_2-R^3$, wherein for R^1, R^3 is selected from aryl (C2–C12), cycloalkyl, heteroaryl, $-R^4-R^5$ and for R^2, R^3 is selected from cycloalkyl, heteroaryl, and $-R^4-R^5$; wherein R^4 is selected from alkyl, alkenyl; wherein R^5 is selected from aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted gamma–lactone;

Q is selected from C, CH;

D is selected from C, CH, CH_2;

One of A and E is H and the other is selected from H, OH, SH, aryl, C3–C5 or C7–C12 alkyl, alkenyl, R^6-R^7, wherein R^6 is selected from alkyl, alkenyl, and R^7 is selected from alkyl, alkenyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted gama–lactone;

J is selected from H, OH, SH, NH_2, halogen; wherein aryl refers to a monovalent aromatic hydrocarbon radical comprising 6–20 carbon atoms (C6–C20) that is derived by

removing a hydrogen atom from an aromatic ring; alkyl refers to a saturated monovalent hydrocarbon radical comprising one to four carbon atoms (C1–C4) and may be linear or cyclic; heteroaryl refers to a monovalent aromatic radical comprising 5 to 20 atoms, one or more 5–, 6–, or 7–membered rings, and one or more heteroatoms independently chosen from nitrogen, oxygen, phosphorous, and sulfur; cycloalkyl is a cyclic alkyl; and alkenyl refers to a monovalent hydrocarbon radical comprising four to eight carbon atoms (C4–C8) with at least one site of unsaturation.

6. The pharmaceutical composition according to claim 5, wherein;

X is O;

Y is CH;

Z is C;

R1 is alkyl;

R2 is $-CH_2-R^3$; wherein R^3 is $-R^4-R^5$; wherein R^4 is alkyl and R5 is heteroaryl;

Q is C;

D is C;

A is $-R^6-R^7$; wherein R^6 is alkyl and R^7 is heteroaryl;

E is H; and

J is H.

7. The pharmaceutical composition according to claim 5, comprising one or more compounds of formula II wherein;

X is O;

Y is CH_2;

G is O;

R^1 is H;

J is H;

Q is C;

D is C;

E is H;
A is $-R^6-R^7$; wherein R^6 is alkyl and R^7 is heteroaryl.

8. The pharmaceutical composition according to claim 5, comprising one or more compounds of formula II, wherein;
X is O;
Y is CH_2;
G is O;
R^1 is H;
J is H;
Q is C;
D is C;
E is $-R^6-R^7$; wherein R^6 is alkyl and R^7 is heteroaryl;
A is H.

9. The composition according to any of claims 5 through 8, for use in the treatment, prevention or reduction of pain in an individual in need thereof.

10. The composition according to any of claims 5 through 8, for use in the treatment of at least one of the following acute and chronic pain types: neuropathic pain, nociceptive pain , psychogenic or somatogenic pain, diabetic neuropathic pain, post-herpetic pain, low-back pain, radiculopathy pain, musculoskeletal pain, post-operative and post-traumatic pain, phantom pain, surgical pain, wound associated pain, chemotherapy-induced peripheral neuropathic pain, short-term/acute or long-term/chronic inflammatory pain, rheumatic pain, arthritic pain, pain associated with osteoarthritis, myofascial pain, migraine, orofacial chronic pain, trigeminal neuralgia, pain associated with cancer, pain associated with fibromyalgia, hyperalgesia syndromes, pain associated with infections, HIV related pain, sprains and strains, hyperalgesia, somatogenic pain, psychogenic pain,

heat induced pain, physical pain, nociceptive pain, rheumatic pain, headache, pelvic pain, bladder pain, myofascial, vascular pain, migraine wound, wound associated pain, arthritic pain, somatic visceral pain, phantom pain, radiculopathy, lumbar pain, visceral pain, bowel pain, and pain associated with osteoarthritis.

11. The composition according to any of claims 5 through 8, for use in the treatment of autoimmune disorders.

12. The composition according any of claims 5 through 8, for use in the treatment of diabetes and insulin resistance syndromes.

13. The composition according to any of claims 5 through 8, for use as antiepileptic and antiseizures agents.

14. The composition according to any of claims 5 through 8, wherein the compound is to be administered in a therapeutically effective dose between 0.0018 and 1.8mg/kg.

15. The composition, or use of anyone of claims 5 through 14, wherein the compound is a compound of formula I, wherein
X is O;
Y is CH;
Z is C;
R^1 is alkyl;
R^2 is $-CH_2-R^3$; wherein R^3 is $-R^4-R^5$; wherein R^4 is alkyl and R^5 is heteroaryl;
Q is C;
D is C;
A is $-R^6-R^7$; wherein R^6 is alkyl and R^7 is heteroaryl;
E is H; and
J is H.

16. The compound of anyone of claims 1 through 4, wherein the compound is isolated or synthetically produced.

17. The composition of anyone of claims 5 through 15, wherein the compound is nitenin or dihydronitenin.