or selected from the group consisting of artemorin, amarogentin, azathioprine or campor and agonistic derivatives or structurally related agonists thereof for hTAS2R4.

2. The method of claim 1 wherein the potential antagonist of step (1) is a compound structurally related to absinthin, artemorin, amarogentin, arglabin, azathioprine, azepinon, benzoin, brucine, camphor, cascarillin, chlorhexidine, N,N'-diethylthiourea, herbolid A, isohumulone, noscapine, papaverin, parthenolid, picrotoxinin, arborescin or (-)-a-thujon.

~~3. A method for isolating an agonist of hTAS2R14 or hTAS2R4 bitter taste receptor activity, wherein the bitter taste receptor is encoded by a polynucleotide selected from the group consisting of:~~

~~(a) polynucleotide encoding at least the mature form of the polypeptide having the amino acid sequence as shown in SEQ ID NO: 2 or 6;~~

~~(b) polynucleotide having the coding nucleotide sequence as shown in SEQ ID NO: 1 or 5 encoding at least the mature form of the polypeptide;~~

~~(d) polynucleotide encoding a fragment or derivative of a polypeptide encoded by a polynucleotide of any one of (a) to (b), wherein in said derivative one or more amino acid residues are conservatively substituted compared to said polypeptide, and said fragment or derivative has hTAS2R14 and hTAS2R4 bitter taste receptor activity, respectively;~~

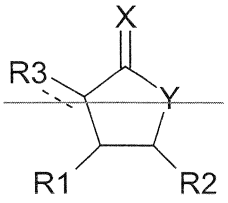
~~(d) polynucleotide which is an ortholog of the polynucleotide sequences shown in SEQ ID NO: 1 or 5 encoding at least the mature form of the corresponding bitter taste receptor;~~

~~(e) polynucleotide which encodes a polypeptide having hTAS2R14 or hTAS2R4 bitter taste receptor activity, and where said polypeptide is at least 80% identical to a polypeptide as shown in SEQ ID NO: 2 and 6, respectively;~~

~~comprising the steps:~~

~~(1) contacting a bitter taste receptor encoded by said polynucleotide or a host cell genetically engineered with said polynucleotide or with a vector containing said polynucleotide to express said bitter taste receptor with a potential agonist~~

~~that is structurally related to absinthin, artemorin, arglabin, azathioprine, azepinon, benzoin, brucine, camphor, chlorhexidine, N,N'-diethylthiourea, herbolid A, isohumulone, noscapine, or parthenolid for hTAS2R14 has a structure according to formula (I)~~



~~(I)~~

~~wherein~~

~~R^1 and R^2 together form a cycloalkyl, heterocycloalkyl, an alicyclic system, aryl, or heteroaryl, optionally substituted;~~

~~R^3 is H, OH, alkyl, alkenyl, alkoxy, alkoxyalkyl, cycloalkyl, heterocyloalkyl, alicyclic system, aryl, or heteroaryl; optionally substituted;~~

~~X is O or S;~~

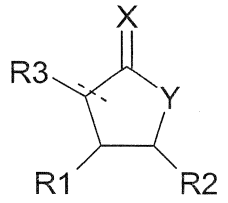
~~Y is O or NH or S; and~~

~~the dashed bond is present or not;~~

~~or that is structurally related to artemorin, amarogentin, azathioprine or campor for hTAS2R4; and~~

~~(2) determining whether the potential agonist induces bitter taste receptor activity.~~

43. The method of claim 2 ~~or 3~~, wherein the ~~potential agonist or~~ potential antagonist structurally related to absinthin, arglabin, arborescin, artemorin, noscapine, or parthenolide has a structure according to formula (I)



(I)

wherein

R^1 and R^2 together form a cycloalkyl, heterocycloalkyl, an alicyclic system, aryl, or heteroaryl, optionally substituted;

R^3 is H, OH, alkyl, alkenyl, alkoxy, alkoxyalkyl, cycloalkyl, heterocyloalkyl, alicyclic system, aryl, or heteroaryl; optionally substituted;

X is O or S;

Y is O or NH or S; and

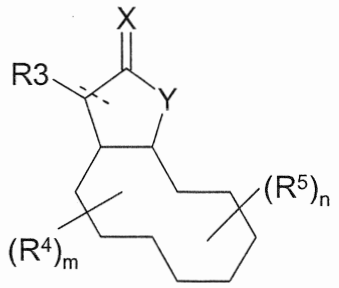
the dashed bond is present or not.

54. The method of claim 43, wherein;

(i) the cycloalkyl is selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, cyclodecyl, spiro[3,3]heptyl, spiro[3,4]octyl, spiro[4,3]octyl, spiro[3,5]nonyl, spiro[5,3]nonyl, spiro[3,6]decyl, spiro[6,3]decyl, spiro[4,5]decyl, spiro[5,4]decyl, bicyclo[4.1.0]heptyl, bicyclo[3.2.0]heptyl, bicyclo[2.2.1]heptyl, bicyclo[2.2.2]octyl, bicyclo[5.1.0]octyl, bicyclo[4.2.0]octyl, bicyclo[5.3.0]decyl, bicyclo[5.3.0]decenyl, octahydro-

quinoxalinyl, quinazolinyl, 1,2,3-benzotriazinyl, and 1,2,4-benzotriazinyl; optionally substituted.

65. The method of claim 3~~–4~~ or 4~~–5~~, wherein the ~~potential agonist or~~ potential antagonist structurally related to artemorin or parthenolide has a structure according to formula (II)



(II),

wherein

R^3 is H, OH, alkyl, alkenyl, alkoxy, or alkoxyalkyl; optionally substituted;

R^4 is in each instance independently selected from the group consisting of halogen, $-NO_2$, -CN, $-OR^6$, $-NR^6R^7$, $-COOR^6$, $-CONR^6R^7$, $-NR^8COR^9$, $-NR^8COR^9$, $-NR^8CONR^6R^7$, $-NR^9SO_2A$, $-COR^6$, $-SO_2NR^6R^7$, $-OOCR^8$, $-CR^8R^9OH$, R^8OH, and -A;

R^5 is in each instance independently selected from the group consisting of halogen, $-NO_2$, -CN, $-OR^6$, $-NR^6R^7$, $-COOR^6$, $-CONR^6R^7$, $-NR^8COR^9$, $-NR^8COR^9$, $-NR^8CONR^6R^7$, $-NR^9SO_2A$, $-COR^6$, $-SO_2NR^6R^7$, $-OOCR^8$, $-CR^8R^9OH$, R^8OH, and -A;

R^6 and R^7 is each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, and aralkyl or together form a heteroaryl, or heterocycloalkyl; optionally substituted;

R^8 and R^9 is each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, heterocycloalkyl, alkoxy, aryl, aralkyl, heteroaryl, and $-NR^6R^7$; optionally substituted;

A is selected from the group consisting of alkyl, alkenyl, cycloalkyl, alkoxy, alkoxyalkyl, heterocycloalkyl, an alicyclic system, aryl and heteroaryl; optionally substituted;

m is an integer from 0 to 6;

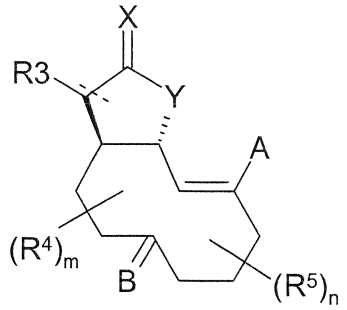
n is an integer from 0 to 8;

X is O or S;

Y is O or NH or S; and

the cyclodecyl may contain one, two or three double bonds and the dashed bond is present or not.

76. The method according to claim 65, wherein the ~~potential agonist or~~ potential antagonist has a structure according to formula (III)



(III),

wherein

R^3 is H, OH, alkyl, alkenyl, alkoxy, or alkoxyalkyl; optionally substituted;

R^4 is in each instance independently selected from the group consisting of halogen, $-NO_2$, -CN, $-OR^6$, $-NR^6R^7$, $-COOR^6$, $-CONR^6R^7$, $-NR^8COR^9$, $-NR^8COR^9$, $-NR^8CONR^6R^7$, $-NR^9SO_2A$, $-COR^6$, $-SO_2NR^6R^7$, $-OOCR^8$, $-CR^8R^9OH$, R^8OH, and -A;

R^5 is in each instance independently selected from the group consisting of halogen, $-NO_2$, -CN, $-OR^6$, $-NR^6R^7$, $-COOR^6$, $-CONR^6R^7$, $-NR^8COR^9$, $-NR^8COR^9$, $-NR^8CONR^6R^7$, $-NR^9SO_2A$, $-COR^6$, $-SO_2NR^6R^7$, $-OOCR^8$, $-CR^8R^9OH$, R^8OH, and -A;

R^6 and R^7 is each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, heterocycloalkyl, aryl, heteroaryl, and aralkyl or together form a heteroaryl, or heterocycloalkyl; optionally substituted;

R^8 and R^9 is each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, heterocycloalkyl, alkoxy, aryl, aralkyl, heteroaryl, and $-NR^6R^7$; optionally substituted;

A is selected from the group consisting of alkyl, alkenyl, cycloalkyl, alkoxy, alkoxyalkyl, heterocycloalkyl, an alicyclic system, aryl and heteroaryl; optionally substituted;

B is selected from the group consisting of alkyl, alkenyl, cycloalkyl, alkoxyalkyl, heterocycloalkyl, an alicyclic system; optionally substituted;

m is an integer from 0 to 4;
n is an integer from 0 to 6;
X is O or S;
Y is O or NH or S; and
the dashed bond is present or not.

~~87~~. ~~The method according to claims 3 to 7, wherein the identified potential agonist stimulates the activity of hTAS2R14 or hTAS2R4 to at least 50% of the activity elicited by absinthin, artemorin, arglabin, azathioprine, azepinon, benzoin, brucine, camphor, chlorhexidine, N,N'-diethylthiourea, herbolid A, isohumulone, noscapine, or parthenolid for hTAS2R14; or by artemorin, amarogentin, azathioprine or campor for hTAS2R4 at the same molar concentration.~~

98. The method according to claims 1, 2 or ~~4~~ 3 to ~~7~~6, wherein the identified potential antagonist reduces the activity of hTAS2R14 or hTAS2R4 stimulated by by absinthin, artemorin, arglabin, azathioprine, azepinon, benzoin, brucine, camphor, chlorhexidine, N,N'-diethylthiourea, herbolid A, isohumulone, noscapine, or parthenolid for hTAS2R14; or by artemorin, amarogentin, azathioprine or campor for hTAS2R4 at least by 10% at the same molar concentration.

~~10. A method for the production of a modified agonist of hTAS2R14 or hTAS2R4, wherein an agonist identified in a method according to claims 3 to 8 is modified by the addition or exchange of at least one substituent.~~

~~11. The method according to claim 10, wherein a modified agonist is selected that stimulates the activity of hTAS2R14 or hTAS2R4 at least as good as the identified agonist at the same molar concentration.~~

~~12~~9. A method for the production of a modified antagonist of hTAS2R14 or hTAS2R4, wherein an antagonist identified in a method according to claims 1, 2 or ~~4~~3 to ~~7~~6 is modified by the addition or exchange of at least one substituent.

~~13~~10. The method according to claim ~~12~~9, wherein a modified antagonist is selected that reduces the activity of hTAS2R14 or hTAS2R4 stimulated by absinthin, artemorin, arglabin, azathioprine, azepinon, benzoin, brucine, camphor, chlorhexidine, N,N'-diethylthiourea, herbolid A, isohumulone, noscapine, or, parthenolid for hTAS2R14 or by artemorin, amarogentin, azathioprine or campor for hTAS2R4 at least as good as the identified antagonist at the same molar concentration.

~~14~~11. A method for the production of food, a food precursor material or additive employed in the production of foodstuff comprising the step of admixing the ~~agonist or~~ antagonist isolated by the method of claims 1 to ~~9~~8 or the modified ~~agonist or~~ antagonist produced according to the method of claims ~~10~~9 to ~~13~~10 with foodstuff, a food precursor material or additive employed in the production of foodstuff.

~~15. A method for the production of an animal repellent, precursor material or additive employed in the production of an animal repellent comprising the step of admixing the agonist isolated according to the method of claims 3 to 8, the modified agonist produced according to the method of claims 10 or 11 with an animal repellent or any precursor material or additive employed in the production of an animal repellent.~~

~~16~~12. A method for the production of a nutraceutical or pharmaceutical composition comprising the step of admixing the antagonist isolated by the method of claims 1, 2, ~~4~~3 to ~~7~~6, or ~~9~~8, or the modified antagonist produced according to the method of claims ~~12~~9 or ~~13~~10 with an active agent and optionally with pharmaceutically acceptable carrier and/or adjuvants, in a pharmaceutically acceptable form.

~~17~~13. A foodstuff, any foodstuff precursor material or additive employed in the production of foodstuff producible according to claim ~~14~~11.

~~18. An animal repellent any precursor material or additive employed in the production of an animal repellent producible according to claim 15.~~

~~19~~14. A nutraceutical or pharmaceutical composition producible according to claim ~~16~~12, comprising at least one nutraceutically or pharmaceutically active agent, an optional pharmaceutically acceptable carrier and/or adjuvants.

~~20. Use of a bitter taste receptor agonist isolated by the method of claims 3 to 8 or of a modified agonist producible according to the method of claims 10 or 11 to enhance bitter taste.~~

~~21~~15. Use of a bitter taste receptor antagonist isolated by the method of claims 1, 2, ~~4~~3 to ~~7~~6, or of a modified antagonist producible according to the method of claims ~~12~~9 or ~~13~~10 to suppress bitter taste.