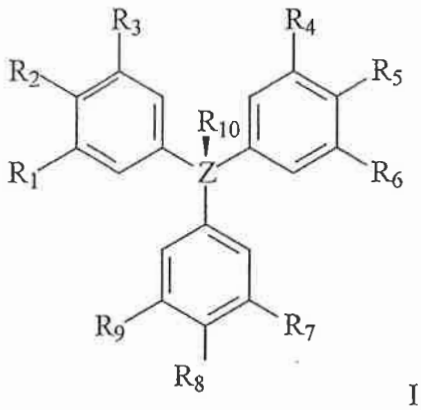
What is claimed is:

1. A method of treating diabetes or diabetes related complications in a subject in need thereof, said method comprising administering to a subject a compound represented by the structure of formula I:



I

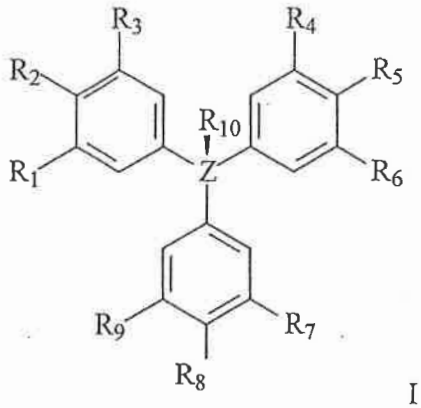
wherein

Z is carbon, nitrogen, phosphor, arsenic, silicon or germanium;

R_1 to R_9 are the same or different, H, D, OH, halogen, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, alkylalkoxy, haloalkyl, alkylhaloalkyl, haloaryl, aryloxy, amino, monoalkylamino, dialkylamino, alkylamido, arylamino, arylamido. alkylthio, arylthio, heterocycloalkyl, alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or R_3, R_4, or R_7, forms a fused cycloalkyl, heterocycloalkyl, aromatic or heteroaromatic ring with the main aromatic ring; and

R_{10} is nothing, H, D, OH, halogen, oxo, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, haloalkyl, haloaryl, cycloalkyl, alkylcycloalkyl, aryloxy, monoalkylamino, dialkylamino, alkylamido, arylamino, arylamido, alkylthio, arylthio, heterocycloalkyl, alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or its isomer, pharmaceutically acceptable salt, pharmaceutical product, hydrate, N-oxide, crystal or any combination thereof.

2. A method of reducing circulating glucose levels, reducing insulin resistance, stimulating or increasing insulin sensitivity, stimulating or increasing pancreatic beta-cell mass, or stimulating or increasing creatinine clearance in a subject in need thereof, or preventing or reducing renal damage in a diabetic subject in need thereof, said method comprising administering to a subject a compound represented by the structure of formula I:



I

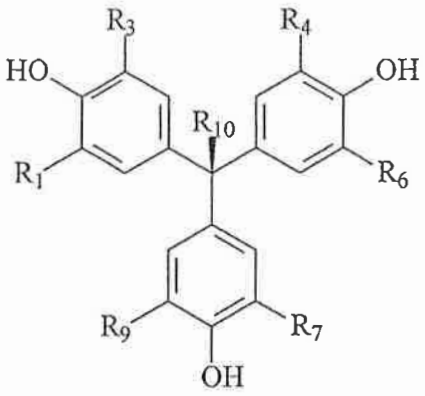
wherein

Z is carbon, nitrogen, phosphor, arsenic, silicon or germanium;

R_1 to R_9 are the same or different, H, D, OH, halogen, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, alkylalkoxy, haloalkyl, alkylhaloalkyl, haloaryl, aryloxy, amino, monoalkylamino, dialkylamino, alkylamido, arylamino, arylamido. alkylthio, arylthio, heterocycloalkyl, alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or R_3, R_4, or R_7, forms a fused cycloalkyl, heterocycloalkyl, aromatic or heteroaromatic ring with the main aromatic ring; and

R_{10} is nothing, H, D, OH, halogen, oxo, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, haloalkyl, haloaryl, cycloalkyl, alkylcycloalkyl, aryloxy, monoalkylamino, dialkylamino, alkylamido, arylamino, arylamido, alkylthio, arylthio, heterocycloalkyl, alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or its isomer, pharmaceutically acceptable salt, pharmaceutical product, hydrate, N-oxide, crystal or any combination thereof.

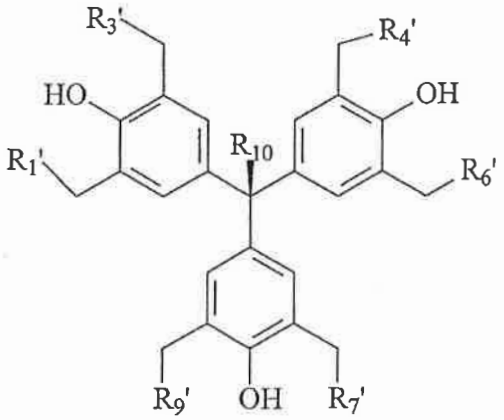
3. The method of claim 1 or 2, wherein said compound is represented by the structure of formula II:



II

wherein R_1, R_3, R_4, R_6, R_7, R_9 and R_{10} are as described above.

4. The method of claim 3, wherein said compound is represented by the structure of formula VI:

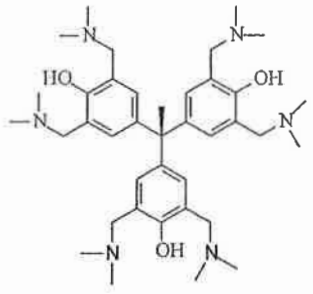


VI

wherein R_1', R_3', R_4', R_6' R_7', and R_9' are the same or different comprising halogen, aryl, alkyl, cycloalkyl, heterocycloalkyl, alkoxy, monoalkylamino, dialkylamino or arylamino; and

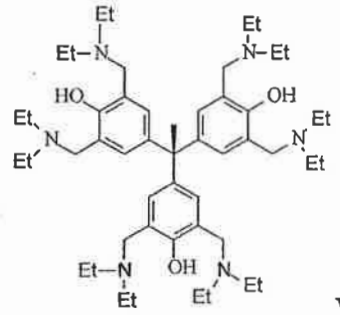
R_{10} is as described above.

5. The method of claim 4, wherein said compound is represented by the structure of formula VII:



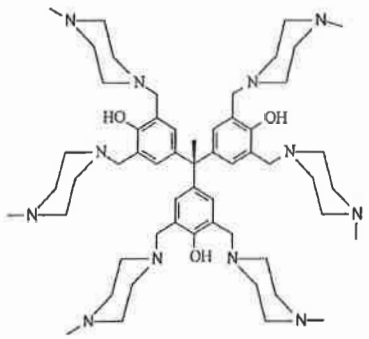
VII

6. The method of claim 4, wherein said compound is represented by the structure of formula VIII:



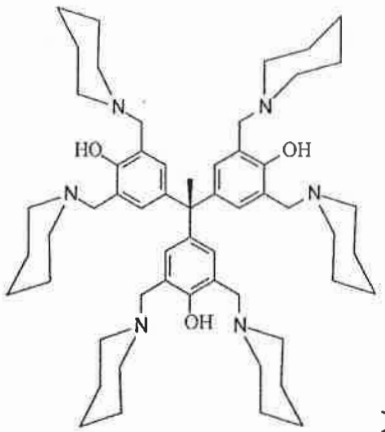
VIII

7. The method of claim 4, wherein said compound is represented by the structure of formula IX:



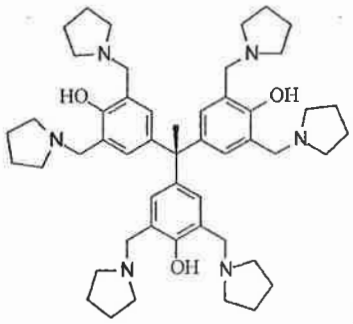
IX

8. The method of claim 4, wherein said compound is represented by the structure of formula X:



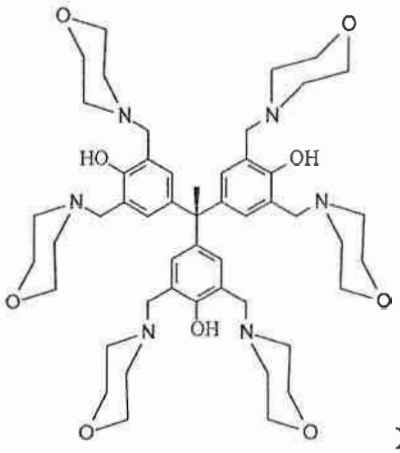
X

9. The method of claim 4, wherein said compound is represented by the structure of formula XI:



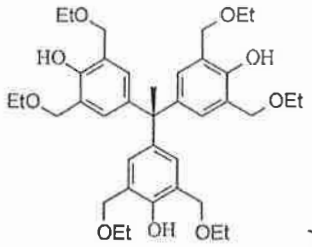
XI

10. The method of claim 4, wherein said compound is represented by the structure of formula XII:



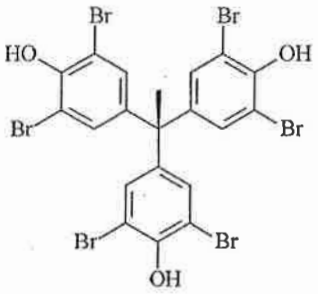
XII

11. The method of claim 4, wherein said compound is represented by the structure of formula XIII:



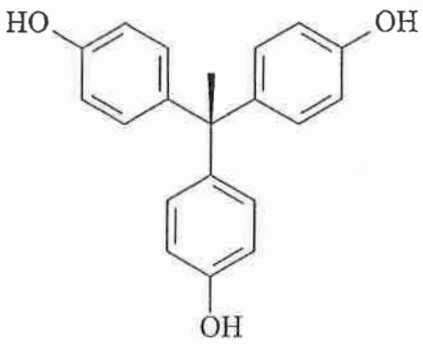
XIII

12. The method of claim 1 or 2, wherein said compound is represented by the structure of formula XIV:



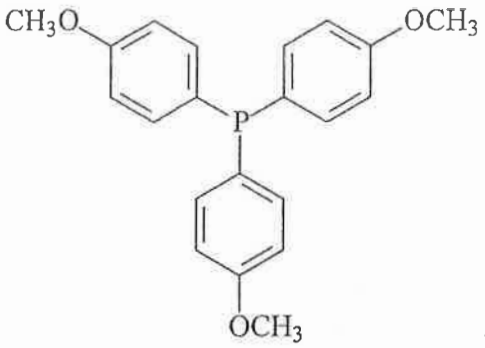
XIV

13. The method of claim 1 or 2, wherein said compound is represented by the structure of formula XV:



XV

14. The method of claim 1 or 2, wherein said compound is represented by the structure of formula XVI:

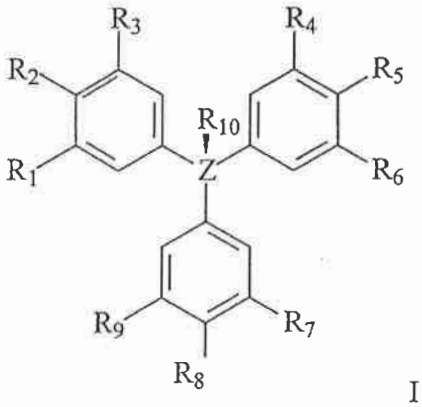


XVI.

15. The method of claim 1 or 2, wherein said subject is administered a second agent, which is useful in the treatment of diabetes or diabetes related complications.

16. The method of claim 1 or 2, wherein said subject is administered a second agent, which is useful in the reduction of circulating glucose levels, reduction of insulin resistance, stimulation or increase of insulin sensitivity, stimulation or increase of pancreatic beta-cell mass, or stimulation or increase of creatinine clearance in a subject, or prevention or reduction of renal disease in said subject.

17. The use of a compound represented by the structure of formula I:



I

wherein

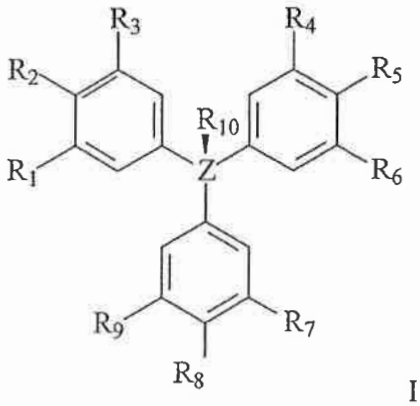
Z is carbon, nitrogen, phosphor, arsenic, silicon or germanium;

R_1 to R_9 are the same or different, H, D, OH, halogen, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, alkylalkoxy, haloalkyl, alkylhaloalkyl, haloaryl, aryloxy, amino, monoalkylamino,

dialkylamino, alkylamido, arylamino, arylamido. alkylthio, arylthio, heterocycloalkyl, alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or R_3, R_4, or R_7, forms a fused cycloalkyl, heterocycloalkyl, aromatic or heteroaromatic ring with the main aromatic ring; and

R_{10} is nothing, H, D, OH, halogen, oxo, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, haloalkyl, haloaryl, cycloalkyl, alkylcycloalkyl, aryloxy, monoalkylamino, dialkylamino, alkylamido, arylamino, arylamido, alkylthio, arylthio, heterocycloalkyl, alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or its isomer, pharmaceutically acceptable salt, pharmaceutical product, hydrate, N-oxide, crystal or any combination thereof, in the manufacture of a medicament for use in treating diabetes or diabetes related complications in a subject in need thereof.

18. The use of a compound represented by the structure of formula I:



I

wherein

Z is carbon, nitrogen, phosphor, arsenic, silicon or germanium;

R_1 to R_9 are the same or different, H, D, OH, halogen, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, alkylalkoxy, haloalkyl, alkylhaloalkyl, haloaryl, aryloxy, amino, monoalkylamino, dialkylamino, alkylamido, arylamino, arylamido. alkylthio, arylthio, heterocycloalkyl,

alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or R_3, R_4, or R_7, forms a fused cycloalkyl, heterocycloalkyl, aromatic or heteroaromatic ring with the main aromatic ring; and

R_{10} is nothing, H, D, OH, halogen, oxo, nitro, CN, nitrileamido, amidosulfide, amino, aldehyde, substituted ketone, -COOH, ester, trifluoromethyl, amide, substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, arylalkyl, alkylaryl, arylsulfonyl, arylalkylenesulfonyl, alkoxy, haloalkyl, haloaryl, cycloalkyl, alkylcycloalkyl, aryloxy, monoalkylamino, dialkylamino, alkylamido, arylamino, arylamido, alkylthio, arylthio, heterocycloalkyl, alkylheterocycloalkyl, heterocycloalkylalkyl, heteroaryl, hetroarylalkyl, alkylheteroaryl; or its isomer, pharmaceutically acceptable salt, pharmaceutical product, hydrate, N-oxide, crystal or any combination thereof, in the manufacture of a medicament for use in reducing circulating glucose levels, reducing insulin resistance, stimulating or increasing insulin sensitivity, stimulating or increasing pancreatic beta-cell mass, or stimulating or increasing creatinine clearance in a subject in need thereof, or preventing or reducing renal damage in a diabetic subject in need thereof.

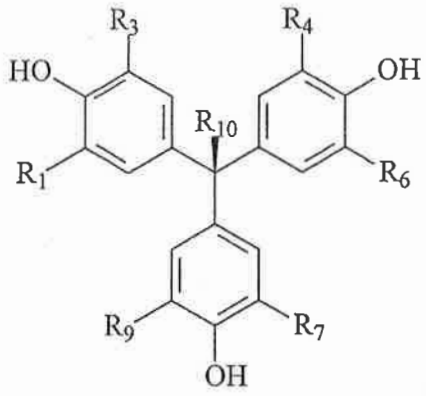
19. The use of claim 17 or 18, wherein said medicament comprises a second agent, which is useful in the treatment of diabetes or diabetes related complications.

20. The use of claim 17 or 18, wherein said medicament is provided to a subject receiving a second agent as adjunct therapy which second agent is useful in the treatment of diabetes or diabetes related complications.

21. The use of claim 17 or 18, wherein said medicament comprises a second agent, which is useful in the reduction of circulating glucose levels, reduction of insulin resistance, stimulation or increase of insulin sensitivity, stimulation or increase of pancreatic beta-cell mass, or stimulation or increase of creatinine clearance in a subject, or prevention or reduction of renal damage.

22. The use of claim 17 or 18, wherein said medicament is provided to a subject receiving a second agent as adjunct therapy which second agent is useful in the reduction of circulating glucose levels, reduction of insulin resistance, stimulation or increase of insulin sensitivity, stimulation or increase of pancreatic beta-cell mass, or stimulation or increase of creatinine clearance in a subject, or prevention or reduction of renal damage.

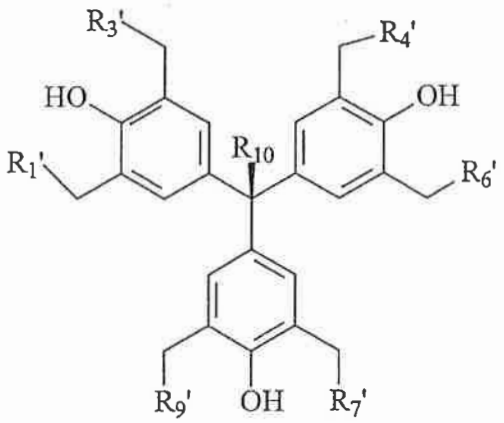
23. The use of claim 17 or 18, wherein said compound is represented by the structure of formula II:



II

wherein R_1, R_3, R_4, R_6, R_7, R_9 and R_{10} are as described above.

24. The use of claim 17 or 18, wherein said compound is represented by the structure of formula VI:

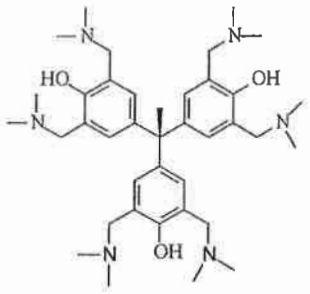


VI

wherein R_1', R_3', R_4', R_6' R_7', and R_9' are the same or different comprising halogen, aryl, alkyl, cycloalkyl, heterocycloalkyl, alkoxy, monoalkylamino, dialkylamino or arylamino; and

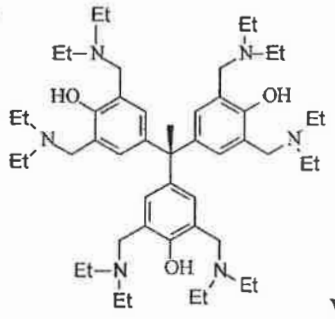
R_{10} is as described above.

25. The use of claim 17 or 18, wherein said compound is represented by the structure of formula VII:



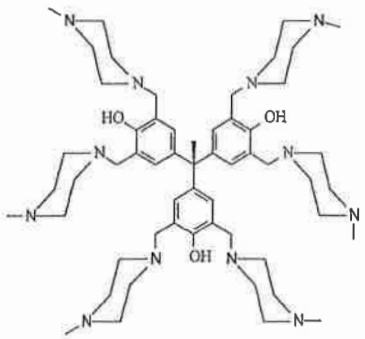
VII

26. The use of claim 17 or 18, wherein said compound is represented by the structure of formula VIII:



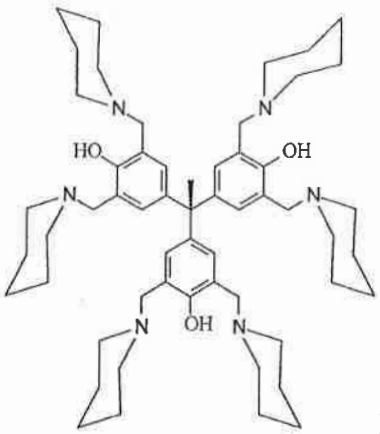
VIII

27. The use of claim 17 or 18, wherein said compound is represented by the structure of formula IX:



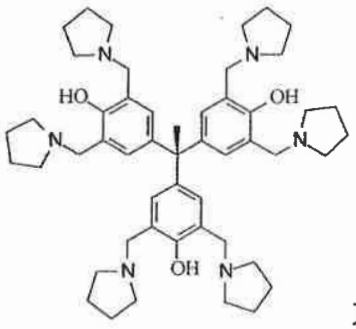
IX

28. The use of claim 17 or 18, wherein said compound is represented by the structure of formula X:



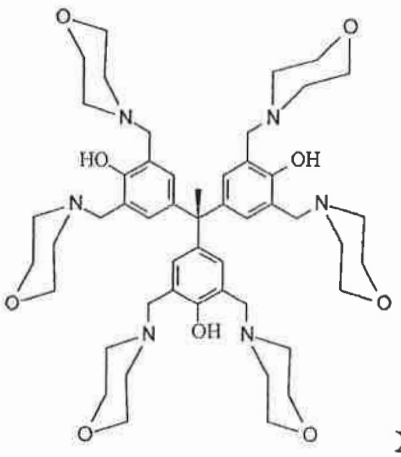
X

29. The use of claim 17 or 18, wherein said compound is represented by the structure of formula XI:



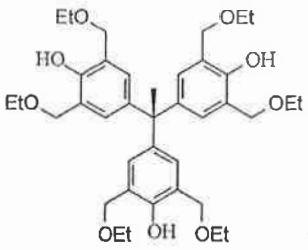
XI

30. The use of claim 17 or 18, wherein said compound is represented by the structure of formula XII:



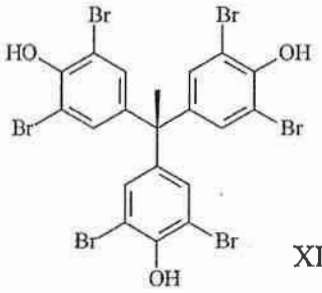
XII

31. The use of claim 17 or 18, wherein said compound is represented by the structure of formula XIII:



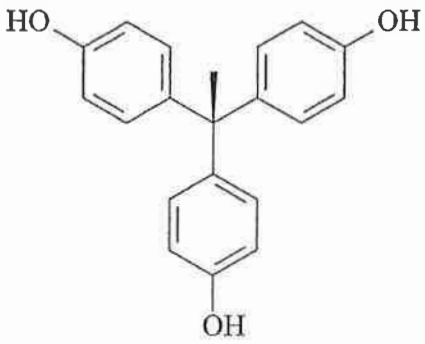
XIII

32. The use of claim 17 or 18, wherein said compound is represented by the structure of formula XIV:



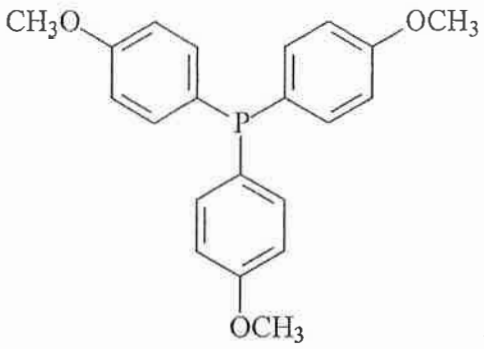
XIV

33. **The use of claim 17 or 18, wherein said compound is represented by the structure of formula XV:**



XV

34. The use of claim 17 or 18, wherein said compound is represented by the structure of formula XVI:



XVI.