

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
27 April 2006 (27.04.2006)

PCT

(10) International Publication Number  
WO 2006/042391 A3

(51) International Patent Classification:

A61K 36/22 (2006.01)

(21) International Application Number:

PCT/BR2005/000221

(22) International Filing Date: 21 October 2005 (21.10.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

PI040.6040-7 21 October 2004 (21.10.2004) BR

(71) Applicants (for all designated States except US):

UNIVERSIDADE FEDERAL DO RIO DE JANEIRO-UFRJ [BR/BR]; Av. Brigadeiro Trompowski, Cidade Universitária, CEP-21044-020 Ilha do Fundão, RJ (BR). FUNDAÇÃO UNIVERSIDADE DE BRASÍLIA-FUB [BR/BR]; Campus Universitário Darcy Ribeiro, Brasília-DF (BR). UNIÃO BRASILENSE DE EDUCAÇÃO E CULTURA-UBEC [BR/BR]; SMPW Quadra 05, Conjunto 13 Lote 08, Núcleo Bandeirante, Brasília, Distrito Federal (BR).

(72) Inventor: GARCIA, Sheila; Rua Monsenhor Magaldi, CEP-21940-400 Jardim Guanabara (BR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SOARES

ROMEIRO, Luis Antônio [BR/BR]; Av. Parque das Aguas Claras, QD 105, n9 2465/101, CEP: 71.906-500 - Águas Claras, Norte Taguatim a - Distrito Federal (BR). CÂNDIDA DA SILVA, Viviane [BR/BR]; Rua Canande, QD 07, Lote 13, CEP: 74.860-060 - Parque Acalanto, Goiânia - Goiás (BR). MÁRCIA MURTA, Maria [BR/BR]; Condomínio Mansões Colorado, Conjunto 0, casa 41, CEP: 73070-030, Sobradinho - Distrito Federal (BR). GOUVAN CAVALCANTE, Magalhães [BR/BR]; SQN 215, Bloco K, apte 402, CEP: 70874-110 - Asa Norte, Brasília - DF (BR). LIMA LOGRADO, Lucio Paulo [BR/BR]; SQN 116, Bloco F, apte 2602, CEP: 70773-010 - Asa Norte, Brasília - DF (BR). DOS SANTOS, Maria Lucilia [BR/BR]; SQN 214, Bloco F, apte 201, CEP: 70910-900 - Asa Norte, Brasília - DF (BR). SABIONI RESCK, Inês [BR/BR]; Área Octagonal Sul 04, Bloco C, apte 514, CEP: 70660-043 - Octogonal, Brasília - DF (BR). DE ARAÚJO MOURA, Emeli [BR/BR]; Rua Pereira da Silva, 492/1803, CEP: 22221-140 - Laranjeiras, Rio de Janeiro - RJ (BR). DELLAMORA-ORTIZ, Gisela Maria [BR/BR]; Rua Muiatuca, 65/304, CEP: 21921-680

- Jardim Carioca, Ilha do Governador - RJ (BR). DA COSTA LEITÃO, Álvaro Augusto [BR/BR]; Rua dom Emanuel Gomes, 520/301, CEP: 21940-350 - Ilha do Governador, Rio de Janeiro - RJ (BR). SANTOS DA SILVA, Célia [BR/BR]; Rua das Laranjeiras, 427/402, CEP: 22240-005 - Laranjeiras, Rio de Janeiro - RJ (BR). FARIA DE FREITAS, Zaida Maria [BR/BR]; Rua Antônio Paes de Sande, 61/102, CEP: 21940-300 - Una do Governador, Rio de Janeiro - RJ (BR). PEREIRA DOS SANTOS, Elisabete [BR/BR]; Rua Aureliano Pimentel, 437, CEP: 21931-300 - Ilha do Governador, Rio de Janeiro - RJ (BR).

(74) Agent: ATEM FRANCISCHETTI, Bernardo; Praça Floriano, 19/28° Andar, CEP-20031-050 Cinelândia, Rio de Janeiro - RJ (BR).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— with international search report

— with amended claims

(88) Date of publication of the international search report:

1 June 2006

Date of publication of the amended claims: 27 July 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PHOTOPROTECTIVE PHENOL DERIVATIVES OBTAINED FROM CASHEW NUT-SHELL LIQUID

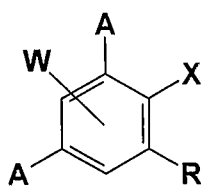
(57) Abstract: The molecules capable of absorbing ultraviolet radiation from the cashew nut shell liquid changes are the object of the present invention; it is also described the compositions responsible for protecting the surfaces and chemical processes for the referred molecules production.

WO 2006/042391 A3

### AMENDED CLAIMS

received by the International Bureau on 12 May 2006 (12.05.2006)

- 5 1. Composition for the photoprotection of surfaces characterized by comprising at least one compound of formula (I)



(I)

- 10 where **R** is alkyl, alkenil, octyl, pentadecyl, 1-[(*E*)-1-pentadecenyl, 1-[(*Z*)-8-pentadecenyl, 1-[(8*Z*,11*Z*)-8,11-pentadecadienyl, 1-[(8*Z*,11*Z*)-8,11,14-pentadecatrienyl, cycloalkyl, alkoxy, **B**-alkoxy, **B**-sulfanyl, **B**-sulfonyl, **B**-sulfinyl, **B**-sulfonates, **B**-sulfonamides, **B**-amino, **B**-carbamoyl, **B**-halides, **B**-carboalkoxy, **B**-carbothioalkoxy, *N,N*-**B**-carbamoyl, **B**-trihaloalkane, **B**-ciano, **B**-nitro, **B**-azido, **B**-amines, **B**-amides, halides, carboalkoxy, carbothioalkoxy,
- 15 *N,N*-disubstituted-carbamoyl, trihaloalkane, ciano, nitro, azido or  $C_8OR_2$ ;  
**B** is hydrogen, alkyl, alkenyl, cicloalkyl, cicloalkenyl or aryl;  
**X** is hydrogen, carboxyl, alkylcarboxyl, alkenylcarboxyl, alkylcarboxylate, alkenylcarboxylate, carbothioate, carbodithioate, carboalkoxy, carbamoyl, formyl, alkylcarbonyl, arylcarbonyl, (*E*)-2-propenoic acid, (*2E,4E*)-2,4-pentadienoic acid, sulfonic acid, (*E*)-1-ethene-1-sulphonic, (*1E,3E*)-1,3-butadiene-1-sulfonic acid and its homo-derivated or its alkylic, phenolic, benzylic or cinnamic esters, lactones, amides, lactames and imides, **W**-benzoyl;
- 20 **A** is hydrogen or **R**<sub>1</sub>;  
**R**<sub>1</sub> is hydrogen, hydroxyl, alkyl, cycloalkyl; phenyl, furyl, thiophenyl, pyridinyl, pyrimidinyl, pyrrolyl, thiazolyl, **W**-quinazolyl, **W**-isoquinolyl, **W**-benzimidazolyl,

**W**-benzoxazolyl, **W**-benzothiazolyl, acyl, acetyl, **W**-cinnamoyl, chrotyl, **W**-benzoyl, alkoxy, cycloalkoxy, **B**-alkoxy, **B**-sulfanyl, **B**-sulfonyl, **B**-sulfinyl, **B**-sulfonates, **B**-sulfonamides, **B**-amino, **B**-carbamoyl, **B**-halides, **B**-carboalkoxy, **B**-carbothioalkoxy, N,N-**B**-carbamoyl, **B**-trihaloalkane, **B**-ciano, nitro-**B**, azido-  
5 **B**, N,N-di-**B**-carbamoyl, trihaloalkane;  
**B** is hydrogen, alkyl, alkenyl, cicloalkyl, cicloalkenyl or aryl;  
**W** is hydrogen, *ortho*-hydroxyl, *ortho*-alkyl, *ortho*-cycloalkyl, *ortho*-alkoxy, *ortho*-cycloalkoxy, *ortho*-sulfanyl, *ortho*-aryloxy, *ortho*-sulfones, *ortho*-sulfides, *ortho*-sulfinyl, *ortho*-sulfonates, *ortho*-sulfonamides, *ortho*-amine, *ortho*-amide, *ortho*-  
10 halides, *ortho*-carboalkoxy, *ortho*-carbothioalkoxy, *ortho*-carbamoyl, *ortho*-trihaloalkane, *ortho*-ciano, *ortho*-nitro, *ortho*-acyl, *ortho*-acetyl, *ortho*-benzoyl, *ortho*-4-alkyloxybenzoyl, *ortho*-4-alkoxybenzoyl, *ortho*-4-methoxybenzoyl, *ortho*-4-dimethylaminobenzoyl, *ortho*-cinnamoyl, *ortho*-4-alkyloxycinnamoyl, *ortho*-4-methoxycinnamoyl, *ortho*-3-(4-methoxyphenyl)-3-oxo-propanoyl, *ortho*-3-(4-  
15 alkoxyphenyl)-3-oxo-propanoyl, *ortho*-3-(4-phenoxyphenyl)-3-oxo-propanoyl, *ortho*-3-(4-aminophenyl)-3-oxo-propanoyl, *ortho*-3-(4-carbamoylphenyl)-3-oxo-propanoyl, *ortho*-3-(4-methoxyphenyl)-1,3-propanodione, *ortho*-3-(4-alkoxyphenyl)-1,3-propanodione, *ortho*-3-(4-phenoxyphenyl)-1,3-propanodione, *ortho*-3-(4-aminophenyl)-1,3-propanodione, *ortho*-3-(4-carbamoylphenyl)-1,3-  
20 propanodione, *ortho*-2*H*-benzo[d][1,2,3]triazol-2-yl, *meta*-hydroxyl, *meta*-alkyl, *meta*-cycloalkyl, *meta*-alkoxy, *meta*-cycloalkoxy, *meta*-sulfanyl, *meta*-aryloxy, *meta*-sulfones, *meta*-sulfides, *meta*-sulfinyl, *meta*-sulfonates, *meta*-sulfonamides, *meta*-amine, *meta*-amide, *meta*-halides, *meta*-carboalkoxy, *meta*-carbothioalkoxy, *meta*-carbamoyl, *meta*-trihaloalkane, *meta*-ciano, *meta*-  
25 nitro, *meta*-acyl, *meta*-acetyl, *meta*-benzoyl, *meta*-4-alkyloxybenzoyl, *meta*-4-alkoxybenzoyl, *meta*-4-methoxybenzoyl, *meta*-4-dimethylaminobenzoyl, *meta*-cinnamoyl, *meta*-4-alkyloxycinnamoyl, *meta*-4-methoxycinnamoyl, *meta*-3-(4-methoxyphenyl)-3-oxo-propanoyl, *meta*-3-(4-alkoxyphenyl)-3-oxo-propanoyl, *meta*-3-(4-phenoxyphenyl)-3-oxo-propanoyl, *meta*-3-(4-aminophenyl)-3-oxo-  
30 propanoyl, *meta*-3-(4-carbamoylphenyl)-3-oxo-propanoyl, *meta*-3-(4-methoxyphenyl)-1,3-propanodione, *meta*-3-(4-alkoxyphenyl)-1,3-propanodione,

*meta*-3-(4-phenoxyphenyl)-1,3-propanodione, *meta*-3-(4-aminophenyl)-1,3-propanodione, *meta*-3-(4-carbamoylphenyl)-1,3-propanodione, *meta*-2*H*-benzo[d][1,2,3]triazol-2-yl, *para*-hidroxyl, *para*-alkyl, *para*-cycloalkyl, *para*-alkoxyl, *para*-cycloalkoxyl, *para*-sulfanyl, *para*-aryloxyl, *para*-sulfones, *para*-sulfides, *para*-sulfinyl, *para*-sulfonates, *para*-sulfonamides, *para*-amine, *para*-amide, *para*-halides, *para*-carboalkoxyl, *para*-carbothioalkoxyl, *para*-carbamoyl, *para*-trihaloalkane, *para*-ciano, *para*-nitro, *para*-acyl, *para*-acetyl, *para*-benzoyl, *para*-4-alkyloxybenzoyl, *para*-4-alkoxybenzoyl, *para*-4-methoxybenzoyl, *para*-4-dimethylaminobenzoyl, *para*-cinnamoyl, *para*-alkyloxycinnamoyl or *para*-4-methoxycinnamoyl, *para*-3-(4-methoxyphenyl)-3-oxo-propanoyl, *para*-3-(4-alkoxyphenyl)-3-oxo-propanoyl, *para*-3-(4-phenoxyphenyl)-3-oxo-propanoyl, *para*-3-(4-aminophenyl)-3-oxo-propanoyl, *para*-3-(4-carbamoylphenyl)-3-oxo-propanoyl, *para*-3-(4-methoxyphenyl)-1,3-propanodione, *para*-3-(4-alkoxyphenyl)-1,3-propanodione, *para*-3-(4-phenoxyphenyl)-1,3-propanodione, *para*-3-(4-aminophenyl)-1,3-propanodione, *para*-3-(4-carbamoylphenyl)-1,3-propanodione, *para*-2*H*-benzo[d][1,2,3]triazol-2-yl;

**R**<sub>2</sub> is hydrogen, hydroxyl, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkoxyl, **B**-alkoxyl, **B**-sulfanyl, **B**-sulfonyl, **B**-sulfinyl, **B**-sulfonates, **B**-sulfonamides, **B**-amino, **B**-carbamoyl, **B**-halides, **B**-carboalkoxyl, **B**-carbothioalkoxyl, N,N-**B**-carbamoyl, **B**-trihaloalkane, **B**-ciano, nitro-**B**, azido-**B**, alkoxyl, phenyl, furyl, thiophenyl, pyridinyl, pyrimidinyl, pyrrolyl, thiazolyl, **W**-quinazolyl, **W**-isoquinolyl, **W**-benzimidazolyl, **W**-benzoxazolyl, **W**-benzothiazolyl, acyl, acetyl, **W**-cinnamoyl, chrotyl, **W**-benzoyl, N,N-di-**B**-carbamoyl, trihaloalkane;

**B** is hydrogen, alkyl, alkenyl, cicloalkyl, cicloalkenyl or aryl;

25

with the proviso that:

- when **R** is 1-[(8*Z*, 11*Z*)-8,11,14-pentadecatrienyl], **X** is hydrogen, alkylcarboxyl, alkenylcarboxyl, alkylcarboxylate, alkenylcarboxylate, carbothioate, carbodithioate, carboalkoxyl, carbamoyl, formyl, alkylcarbonyl, arylcarbonyl, (*E*)-2-propenoic acid, (*2E,4E*)-2,4-pentadienoic acid, sulfonic acid, (*E*)-1-ethene-1-sulphonic, (*1E,3E*)-1,3-butadiene-1-sulfonic acid and its homo-derived or its

30

alkylic, phenolic, benzylic or cinnamic esters, lactones, amides, lactames and imides, **W**-benzoyl; and

- when **X** and **R** forms a 6-membered heterocyclic ring, **X** is adjacent to an oxygen atom and **R** is C<sub>1</sub>-C<sub>8</sub> alkyl optionally substituted with one carbonyl, hydroxyl, thiol, halide or amine; C<sub>1</sub>-C<sub>8</sub> alkenyl optionally substituted with a carbonyl, hydroxyl, thiol, halide or amine; 8-(1-octanol), 8-(*E*)-7-octen-1-ol, 8-(*E*)-6-ceto-7-octen-1-ol, 8-(1-octanethiol), 8-(*E*)-7-octene-1-thiol, 8-(*E*)-6-ceto-7-octene-1-thiol, 8-(1-octanamine), 8-(*E*)-7-octen-1-amine, 8-(*E*)-6-ceto-7-octen-1-amine.

10

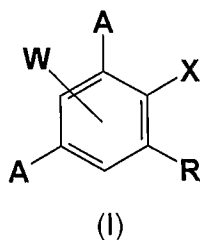
2. Composition, according to claim 1, characterized by the fact that the surface to be protected comprise the skin, hair and/or nails.

3. Composition, according to claim 1 characterized by the fact that the surface to be protected is selected from the group that comprises furniture, equipments, industrial surfaces, residential surfaces, automobiles, plastic surfaces, wood surfaces and combination of the referred surfaces.

4. Composition, according to claim 1, characterized by the fact the referred composition is selected from the group that comprises inks, varnishes and/or similar coverings, plastic compositions and/or a mix of them, cosmetic, pharmaceutical products and/or mixtures thereof.

5. The use of a compound characterized by formula (I)

25



where **R** is alkyl, alkenil, octyl, pentadecyl, 1-[(*E*)-1-pentadecenyl, 1-[(*Z*)-8-pentadecenyl, 1-[(*8Z,11Z*)-8,11-pentadecadienyl, 1-[(*8Z,11Z*)-8,11,14-pentadecatrienyl, cycloalkyl, alkoxy, **B**-alkoxy, **B**-sulfanyl, **B**-sulfonyl, **B**-sulfinyl, **B**-sulfonates, **B**-sulfonamides, **B**-amino, **B**-carbamoyl, **B**-halides, **B**-carboalkoxy, **B**-carbothioalkoxy, N,N-**B**-carbamoyl, **B**-trihaloalkane, **B**-ciano, nitro-**B**, azido-**B**, **B**-amines, **B**-amides, halides, carboalkoxy, carbothioalkoxy, N,N-dissubstituted-carbamoyl, trihaloalkane, ciano, nitro, azido or C<sub>8</sub>OR<sub>2</sub>

**B** is hydrogen, alkyl, alkenyl, cicloalkyl, cicloalkenyl or aryl;

**X** is hydrogen, carboxyl, alkylcarboxyl, alkenylcarboxyl, alkylcarboxylate, alkenylcarboxylate, carbothioate, carbodithioate, carboalkoxy, carbamoyl, formyl, alkylcarbonyl, arylcarbonyl, (*E*)-2-propenoic acid, (*2E,4E*)-2,4-pentadienoic acid, sulfonic acid, (*E*)-1-ethene-1-sulphonic, (*1E,3E*)-1,3-butadiene-1-sulfonic acid and its homo-derivated or its alkylic, phenolic, benzylic or cinnamic esters, lactones, amides, lactames and imides, **W**-benzoyl;

**A** is hydrogen or **R**<sub>1</sub>;

**R**<sub>1</sub> is hydrogen, hydroxyl, alkyl, cycloalkyl; phenyl, furyl, thiophenyl, pyridinyl, pyrimidinyl, pyrrolyl, thiazolyl, **W**-quinazolyl, **W**-isoquinolyl, **W**-benzimidazolyl, **W**-benzoxazolyl, **W**-benzothiazolyl, acyl, acetyl, **W**-cinnamoyl, chrotyl, **W**-benzoyl, alkoxy, cycloalkoxy, **B**-alkoxy, **B**-sulfanyl, **B**-sulfonyl, **B**-sulfinyl, **B**-sulfonates, **B**-sulfonamides, **B**-amino, **B**-carbamoyl, **B**-halides, **B**-carboalkoxy, **B**-carbothioalkoxy, N,N-**B**-carbamoyl, **B**-trihaloalkane, **B**-ciano, nitro-**B**, azido-**B**, N,N-di-**B**-carbamoyl, trihaloalkane;

**B** is hydrogen, alkyl, alkenyl, cicloalkyl, cicloalkenyl or aryl;

**W** is hydrogen, *ortho*-hydroxyl, *ortho*-alkyl, *ortho*-cycloalkyl, *ortho*-alkoxy, *ortho*-cycloalkoxy, *ortho*-sulfanyl, *ortho*-aryloxy, *ortho*-sulfones, *ortho*-sulfides, *ortho*-sulfinyl, *ortho*-sulfonates, *ortho*-sulfonamides, *ortho*-amine, *ortho*-amide, *ortho*-halides, *ortho*-carboalkoxy, *ortho*-carbothioalkoxy, *ortho*-carbamoyl, *ortho*-trihaloalkane, *ortho*-ciano, *ortho*-nitro, *ortho*-acyl, *ortho*-acetyl, *ortho*-benzoyl, *ortho*-4-alkyloxybenzoyl, *ortho*-4-alkoxybenzoyl, *ortho*-4-methoxybenzoyl, *ortho*-4-dimethylaminobenzoyl, *ortho*-cinnamoyl, *ortho*-4-alkyloxycinnamoyl, *ortho*-4-methoxycinnamoyl, *ortho*-3-(4-methoxyphenyl)-3-oxo-propanoyl, *ortho*-3-(4-

alkoxyphenyl)-3-oxo-propanoyl, *ortho*-3-(4-phenoxyphenyl)-3-oxo-propanoyl,  
*ortho*-3-(4-aminophenyl)-3-oxo-propanoyl, *ortho*-3-(4-carbamoylphenyl)-3-oxo-  
propanoyl, *ortho*-3-(4-methoxyphenyl)-1,3-propanodione, *ortho*-3-(4-  
alkoxyphenyl)-1,3-propanodione, *ortho*-3-(4-phenoxyphenyl)-1,3-propanodione,  
5 *ortho*-3-(4-aminophenyl)-1,3-propanodione, *ortho*-3-(4-carbamoylphenyl)-1,3-  
propanodione, *ortho*-2*H*-benzo[d][1,2,3]triazol-2-yl, *meta*-hydroxyl, *meta*-alkyl,  
*meta*-cycloalkyl, *meta*-alkoxyl, *meta*-cycloalkoxyl, *meta*-sulfanyl, *meta*-aryloxyl,  
*meta*-sulfones, *meta*-sulfides, *meta*-sulfinyl, *meta*-sulfonates, *meta*-  
sulfonamides, *meta*-amine, *meta*-amide, *meta*-halides, *meta*-carboalkoxyl,  
10 *meta*-carbothioalkoxyl, *meta*-carbamoyl, *meta*-trihaloalkane, *meta*-ciano, *meta*-  
nitro, *meta*-acyl, *meta*-acetyl, *meta*-benzoyl, *meta*-4-alkyloxybenzoyl, *meta*-4-  
alkoxybenzoyl, *meta*-4-methoxybenzoyl, *meta*-4-dimethylaminobenzoyl, *meta*-  
cinnamoyl, *meta*-4-alkyloxycinnamoyl, *meta*-4-methoxycinnamoyl, *meta*-3-(4-  
methoxyphenyl)-3-oxo-propanoyl, *meta*-3-(4-alkoxyphenyl)-3-oxo-propanoyl,  
15 *meta*-3-(4-phenoxyphenyl)-3-oxo-propanoyl, *meta*-3-(4-aminophenyl)-3-oxo-  
propanoyl, *meta*-3-(4-carbamoylphenyl)-3-oxo-propanoyl, *meta*-3-(4-  
methoxyphenyl)-1,3-propanodione, *meta*-3-(4-alkoxyphenyl)-1,3-propanodione,  
*meta*-3-(4-phenoxyphenyl)-1,3-propanodione, *meta*-3-(4-aminophenyl)-1,3-  
propanodione, *meta*-3-(4-carbamoylphenyl)-1,3-propanodione, *meta*-2*H*-  
20 benzo[d][1,2,3]triazol-2-yl, *para*-hidroxyl, *para*-alkyl, *para*-cycloalkyl, *para*-  
alkoxyl, *para*-cycloalkoxyl, *para*-sulfanyl, *para*-aryloxyl, *para*-sulfones, *para*-  
sulfides, *para*-sulfinyl, *para*-sulfonates, *para*-sulfonamides, *para*-amine, *para*-  
amide, *para*-halides, *para*-carboalkoxyl, *para*-carbothioalkoxyl, *para*-carbamoyl,  
*para*-trihaloalkane, *para*-ciano, *para*-nitro, *para*-acyl, *para*-acetyl, *para*-benzoyl,  
25 *para*-4-alkyloxybenzoyl, *para*-4-alkoxybenzoyl, *para*-4-methoxybenzoyl, *para*-4-  
dimethylaminobenzoyl, *para*-cinnamoyl, *para*-alkyloxycinnamoyl or *para*-4-  
methoxycinnamoyl, *para*-3-(4-methoxyphenyl)-3-oxo-propanoyl, *para*-3-(4-  
alkoxyphenyl)-3-oxo-propanoyl, *para*-3-(4-phenoxyphenyl)-3-oxo-propanoyl,  
*para*-3-(4-aminophenyl)-3-oxo-propanoyl, *para*-3-(4-carbamoylphenyl)-3-oxo-  
30 propanoyl, *para*-3-(4-methoxyphenyl)-1,3-propanodione, *para*-3-(4-  
alkoxyphenyl)-1,3-propanodione, *para*-3-(4-phenoxyphenyl)-1,3-propanodione,

*para*-3-(4-aminophenyl)-1,3-propanodione, *para*-3-(4-carbamoylphenyl)-1,3-propanodione, *para*-2*H*-benzo[d][1,2,3]triazol-2-yl;

**R**<sub>2</sub> is hydrogen, hydroxyl, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkoxyl, **B**-alkoxyl, **B**-sulfanyl, **B**-sulfonyl, **B**-sulfanyl, **B**-sulfonates, **B**-sulfonamides, **B**-amino, **B**-carbamoyl, **B**-halides, **B**-carboalkoxyl, **B**-carbothioalkoxyl, N,N-**B**-carbamoyl, **B**-trihaloalkane, **B**-ciano, nitro-**B**, azido-**B**, alkoxyl, phenyl, furyl, thiophenyl, pyridinyl, pyrimidinyl, pyrrolyl, thiazolyl, **W**-quinazolyl, **W**-isoquinolyl, **W**-benzimidazolyl, **W**-benzoxazolyl, **W**-benzothiazolyl, acyl, acetyl, **W**-cinnamoyl, chrotyl, **W**-benzoyl, N,N-di-**B**-carbamoyl, trihaloalkane; and

**B** is hydrogen, alkyl, alkenyl, cicloalkyl, cicloalkenyl or aryl;

with the proviso that:

- when **R** is 1-[(8*Z*, 11*Z*)-8,11,14-pentadecatrienyl, **X** is hydrogen, alkylcarboxyl, alkenylcarboxyl, alkylcarboxylate, alkenylcarboxylate, carbothioate, carbodithioate, carboalkoxyl, carbamoyl, formyl, alkylcarbonyl, arylcarbonyl, (*E*)-2-propenoic acid, (*2E*, *4E*)-2,4-pentadienoic acid, sulfonic acid, (*E*)-1-ethene-1-sulphonic, (*1E*, *3E*)-1,3-butadiene-1-sulfonic acid and its homo-derivated or its alkylic, phenolic, benzylic or cinnamic esters, lactones, amides, lactames and imides, **W**-benzoyl; and

- when **X** and **R** forms a 6-membered heterocyclic ring, **X** is adjacent to an oxygen atom and **R** is C<sub>1</sub>-C<sub>8</sub> alkyl optionally substituted with one carbonyl, hydroxyl, thiol, halide or amine; C<sub>1</sub>-C<sub>8</sub> alkenyl optionally substituted with a carbonyl, hydroxyl, thiol, halide or amine; 8-(1-octanol), 8-(*E*)-7-octen-1-ol, 8-(*E*)-6-ceto-7-octen-1-ol, 8-(1-octanethiol), 8-(*E*)-7-octene-1-thiol, 8-(*E*)-6-ceto-7-octene-1-thiol, 8-(1-octanamine), 8-(*E*)-7-octen-1-amine, 8-(*E*)-6-ceto-7-octen-1-amine,

in the preparation of compositions capable of absorbing ultraviolet radiation.

6. The use, according to claim 5, characterized by the fact that said compound absorbs radiation in the wavelength range from about 200 nm to about 400 nm.



7. The use, according to claim 5, characterized by the fact that said compound absorbs radiation in the wavelength range from about 200 nm to about 280 nm.

5

8. The use, according to claim 5, characterized by the fact that said compound absorbs radiation in the wavelength range from about 280 nm to about 320 nm.

10

9. The use, according to claim 5, characterized by the fact that said compound absorbs radiation in the wavelength range from about 320 nm to about 400 nm.

15

10. The use, according to claim 5, characterized by the fact that said compound absorbs radiation in the wavelength range from about 280 nm to about 400 nm.