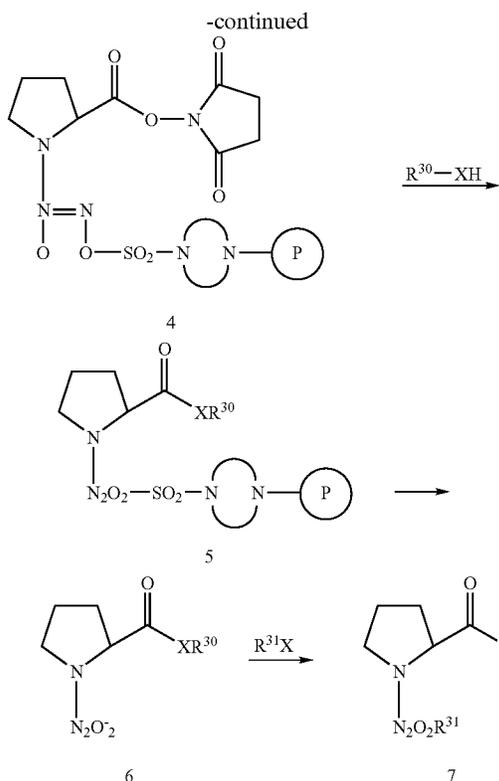


45

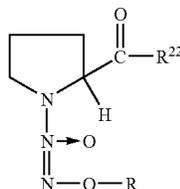


All publications, patents and patent applications, cited herein are hereby incorporated by reference to the same extent as if each publication were individually and specifically indicated to be incorporated by reference and were set forth in its entirety herein.

While this invention has been described with emphasis upon preferred embodiments, it will be obvious to those of ordinary skill in the art that the preferred embodiments may be varied. It is intended that the invention may be practiced otherwise than as specifically described herein. Accordingly, this invention includes all modifications encompassed within the spirit and scope of the appended claims.

What is claimed is:

1. A compound having the formula:



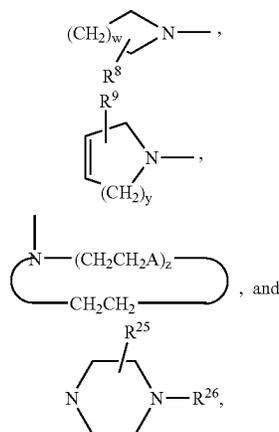
wherein R is a C<sub>1-12</sub> straight chain alkyl, a C<sub>3-12</sub> branched chain alkyl, a C<sub>2-12</sub> straight chain or a C<sub>3-12</sub> branched chain olefinic, a C<sub>1-12</sub> acyl, sulfonyl, carboxamido, a glycosyl group, a C<sub>1-30</sub> aryl group or a group of the formula —(CH<sub>2</sub>)<sub>n</sub>—ON=N(O)NR<sup>28</sup>R<sup>29</sup>, wherein n is an integer of 2–8, and R<sup>28</sup> and R<sup>29</sup> are independently a C<sub>1-12</sub> straight chain alkyl, a C<sub>3-12</sub> branched chain alkyl, or a C<sub>2-12</sub> straight chain or a C<sub>3-12</sub> branched chain olefinic, or R<sup>28</sup> and R<sup>29</sup>, together with the nitrogen atom to which they are bonded, form a heterocyclic group selected from the group consisting of a pyrrolidino, a piperidino, a piperazino and a morpholino group; and R<sup>22</sup> is hydrogen, hydroxyl, OM, wherein M is a cation, a halo, X<sup>1</sup>R<sup>23</sup>R<sup>24</sup>, wherein X<sup>1</sup> is O, N or S, and R<sup>23</sup>

46

and R<sup>24</sup> are independently a C<sub>1-24</sub> alkyl, a C<sub>3-24</sub> cycloalkyl, a C<sub>2-24</sub> olefinic, a C<sub>3-30</sub> aryl, or a heterocyclic group, and, when X<sup>1</sup> is O or S, there is no R<sup>24</sup>.

2. The compound of claim 1, wherein R is substituted with a hydroxy, halo, acyloxy, alkoxy, acylthio or benzyl.

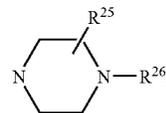
3. The compound of claim 1, wherein, when X<sup>1</sup> is nitrogen, R<sup>23</sup> and R<sup>24</sup>, together with the nitrogen to which they are bonded, form a heterocyclic ring selected from the group consisting of:



wherein A is O, N or S, w is 1–12, y is 1 or 2, z is 1–5, R<sup>8</sup>, R<sup>9</sup>, R<sup>25</sup>, and R<sup>26</sup> are hydrogen, a C<sub>1-8</sub> straight chain alkyl, a C<sub>3-8</sub> branched chain alkyl, a C<sub>3-8</sub> cycloalkyl, or a C<sub>3-30</sub> aryl.

4. The compound of claim 1, wherein the aryl is selected from the group consisting of an acridine, an anthracene, a benzene, a benzofuran, a benzothiophene, a benzoxazole, a benzopyrazole, a benzothiazole, a carbazole, a chlorophyll, a cinnoline, a furan, an imidazole, an indole, an isobenzofuran, an isoindole, an isoxazole, an isothiazole, an isoquinoline, a naphthalene, an oxazole, a phenanthrene, a phenanthridine, a phenothiazine, a phenoxazine, a phthalimide, a phthalazine, a phthalocyanine, a porphyrin, a pteridine, a purine, a pyrazine, a pyrazole, a pyridazine, a pyridine, a pyrimidine, a pyrrocoline, a pyrrole, a quinolizinium ion, a quinoline, a quinoxaline, a quinoxaline, a sydnone, a tetrazole, a thiazole, a thiophene, a thyroxine, a triazine, and a triazole.

5. The compound of claim 3, wherein, when X<sup>1</sup> is nitrogen and R<sup>23</sup> and R<sup>24</sup>, together with the nitrogen to which they are bonded, form the heterocyclic ring



R<sup>25</sup> is hydrogen, a C<sub>1-8</sub> straight chain alkyl, a C<sub>3-8</sub> branched chain alkyl, a C<sub>3-8</sub> cycloalkyl or a C<sub>3-30</sub> aryl, R<sup>26</sup> is hydrogen, a C<sub>1-8</sub> alkyl, a C<sub>3-30</sub> aryl, or C(O)—YR<sup>27</sup>, wherein Y is sulfur, oxygen or nitrogen and R<sup>27</sup> is CH<sub>2</sub>OCH<sub>3</sub>, vinyl, a C<sub>1-9</sub> straight chain alkyl, a C<sub>3-6</sub> branched chain alkyl, a C<sub>3-8</sub> cycloalkyl, polyethylene glycol, a polysaccharide, a peptide or a protein.

6. A composition comprising a compound of claim 1 and a carrier.

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