



US 20040242591A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2004/0242591 A1**  
Mehta et al. (43) **Pub. Date: Dec. 2, 2004**(54) **OXAZOLIDINONE DERIVATIVES AS  
POTENTIAL ANTIMICROBIALS**(30) **Foreign Application Priority Data**

Jul. 16, 2001 (WO)..... PCT/IB01/01262

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Rattan**, New Delhi (IN)**Publication Classification**(51) **Int. Cl.<sup>7</sup>** ..... **C07D 413/14**; A61K 31/496(52) **U.S. Cl.** ..... **514/254.02**; 514/326; 544/369;  
546/209

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**Princeton, NJ 08540 (US)****ABSTRACT**

The present invention relates to certain substituted phenyl oxazolidinones and to processes for the synthesis of the same. This invention also relates to pharmaceutical compositions containing the compounds of the present invention as antimicrobials. The compounds are useful antimicrobial agents, effective against a number of human and veterinary pathogens, including gram-positive aerobic bacteria such as multiply-resistant staphylococci, streptococci and enterococci as well as anaerobic organisms such as *Bacteroides* spp. and *Clostridium* spp. species, and acid fast organisms such as *Mycobacterium tuberculosis*, *Mycobacterium avium* and *Mycobacterium* spp.

(21) Appl. No.: **10/483,905**(22) PCT Filed: **Jan. 21, 2002**(86) PCT No.: **PCT/IB02/00167**

## OXAZOLIDINONE DERIVATIVES AS POTENTIAL ANTIMICROBIALS

### FIELD OF THE INVENTION

[0001] The present invention relates to certain substituted phenyl oxazolidinones and to processes for the synthesis of the same. This invention also relates to pharmaceutical compositions containing the compounds of the present invention as antimicrobials. The compounds are useful antimicrobial agents, effective against a number of human and veterinary pathogens, including gram-positive aerobic bacteria such as multiply-resistant staphylococci, streptococci and enterococci as well as anaerobic organisms such as *Bacteroides* spp. and *Clostridium* spp. species, and acid fast organisms such as *Mycobacterium tuberculosis*, *Mycobacterium avium* and *Mycobacterium* spp.,

### BACKGROUND OF THE INVENTION

[0002] Increasing antibacterial resistance in gram positive bacteria has presented a formidable treatment problem. The enterococci, although traditionally non virulent pathogens, have been shown, when associated with Vancomycin resistance, to have an attributable mortality of approximately 40%. *Staphylococcus aureus*, the traditional pathogen of post operative wounds, has been resistant to Penicillin due to production of penicillinases. This resistance was overcome by the development of various penicillinase stable  $\beta$  lactams. But the pathogen responded by synthesizing a modified target penicillin binding protein-2' leading to less affinity for  $\beta$  lactam antibiotics and a phenotype known as Methicillin Resistant *S. aureus* (MRSA). These strains, till recently were susceptible to Vancomycin, which inspite of its various drawbacks, has become the drug of choice for MRSA infections. *Streptococcus pneumoniae* is a major pathogen causing pneumonia, sinusitis and meningitis. Until very recently it was highly susceptible to penicillin. Recently though, different PBP 2' strains with different susceptibility to penicillin have been reported from across the globe.

[0003] Oxazolidinones are a new class of synthetic antimicrobial agents which kill Gram positive pathogens by inhibiting a very early stage of protein synthesis. Oxazolidinones inhibit the formation of ribosomal initiation complex involving 30S and 50S ribosomes leading to prevention of initiation complex formation. Due to their novel mechanism of action, these compounds are active against pathogens resistant to other clinically useful antibiotics.

[0004] WO93/23384 application discloses phenyloxazolidinones containing a substituted diazine moiety and their uses as antimicrobials.

[0005] WO93/09103 application discloses substituted aryl and heteroaryl-phenyl-oxazolidinones useful as antibacterial agents.

[0006] WO90/02744 application discloses 5-indolyl-5 $\beta$ -amidomethyloxazolidinones, 3-(fused ring substituted)phenyl-5 $\beta$ -amidomethyloxazolidinones which are useful as antibacterial agents.

[0007] European Patent Publication 352,781 discloses phenyl and pyridyl substituted phenyl oxazolidinones.

[0008] European Patent Application 312,000 discloses phenylmethyl and pyridinylmethyl substituted phenyl oxazolidinones.

[0009] U.S. Pat. No. 5,254,577 discloses nitrogen heteroaromatic rings attached to phenyloxazolidinone.

[0010] U.S. Pat. Nos. 5,547,950 and 5,700,799 also disclose the phenyl piperazinyl oxazolidinones.

[0011] Other references disclosing various phenyloxazolidinones include U.S. Pat. Nos. 4,801,600 and 4,921,869; Gregory W. A., et al., *J. Med. Chem.*, 32, 1673-81 (1989); Gregory W. A., et al., *J. Med. Chem.*, 33, 2569-78 (1990); Wang C., et al., *Tetrahedron*, 45, 1323-26 (1989); Britteili, et al., *J. Med. Chem.*, 35, 1156 (1992); and *Bio-organic and Medicinal Chemistry Letters*, 9, pp. 2679-2684, 1999; Antibacterial & Antifungal Drug Discovery & Development Summit, Strategic Research Institute, Jun. 28-29, 2001, Amsterdam, The Netherlands; Posters No. 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, and 1834, 40<sup>th</sup> Interscience Conference on Antimicrobial Agents and Chemotherapy, Sep. 17-20, 2000, Toronto, Canada.

### SUMMARY OF THE INVENTION

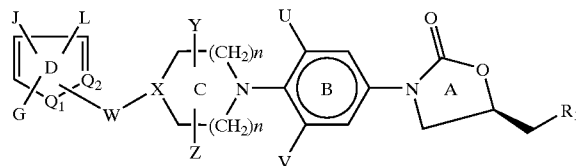
[0012] The objective of this invention is to synthesize, identify and profile oxazolidinone molecules which have good activity against multiply resistant gram positive pathogens like MRSA, VRE and PRSP. Some of these molecules have activity against MDR-TB and MAI strains, while others have significant activity against important anaerobic bacteria.

[0013] The compounds of the present invention are related by their substituted phenyloxazolidinone ring structure in the compounds disclosed to the publications described above except that the subject compounds have a diazine moiety attached to the phenyloxazolidinone which is further substituted by heterocyclic, aryl, substituted aryl, heteroaromatic ring therefore the compounds are unique and have superior antibacterial activity.

[0014] Another object of the present invention is to provide processes for the novel phenyloxazolidinones derivatives that exhibit significantly greater antibacterial activity, than available with the present compounds against multiply resistant gram positive pathogens like MRSA, VRE and PRSP, MDR-TB and MAI strains, in order to provide safe and effective treatment of bacterial infections.

[0015] In order to achieve the above-mentioned objectives and in accordance with the purpose of the invention as embodied and broadly described herein, there is provided a process for the synthesis of novel phenyloxazolidinone derivatives represented by Formula I,

Formula I



[0016] wherein

[0017] ring C is four to eight membered in size or larger which has either two or three carbon atoms

between each nitrogen atoms or ring C is a bridged bicyclic system and is optionally substituted by the substituents Y and Z independently selected from alkyl groups, cycloalkyl groups, fluoro group, carboxylic groups and corresponding esters or amides;

[0018] D is a five membered heterocyclic ring; the preferred heterocyclic rings are furanyl, thienyl, pyrrolyl and pyrazolyl;

[0019]  $Q_1$  is selected from O, S,  $NR_{11}$ ;

[0020]  $Q_2$  is selected from N or O;

[0021] G, J, L are independently selected from H,  $C_{1-6}$  alkyl, F, Cl, Br, I,  $—CN$ ,  $COR_5$ ,  $COOR_5$ ,  $N(R_6, R_7)$ ,  $NHCOC(R_8, R_9)$ ,  $—NHCOOR_5$ ,  $CON(R_6, R_7)$ ,  $CH_2NO_2$ ,  $NO_2$ ,  $CH_2R_8$ ,  $CHR_9$ ,  $—CH=N—OR_{10}$ ,  $—C=CH—R_5$ ,  $OR_5$ ,  $SR_5$ ,  $—C(R_9)=C(R_9)NO_2$ ,  $C_{1-12}$  alkyl substituted with one or more of F, Cl, Br, I,  $OR_4$ ,  $SR_4$ ; wherein  $R_5$  is selected from H,  $C_{1-12}$  alkyl,  $C_{3-12}$  cycloalkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkyl substituted with one or more of F, Cl, Br, I or OH, aryl, heteroaryl;  $R_6$  and  $R_7$  are independently selected from H, optionally substituted  $C_{1-12}$  alkyl,  $C_{3-12}$  cycloalkyl,  $C_{1-6}$  alkoxy;  $R_8$  and  $R_9$  are independently selected from H,  $C_{1-6}$  alkyl, F, Cl, Br, I,  $C_{1-12}$  alkyl substituted with one or more of F, Cl, Br, I,  $OR_5$ ,  $SR_4$ ,  $N(R_6, R_7)$ ;  $R_{10}=H$ , optionally substituted  $C_{1-12}$  alkyl,  $C_{3-12}$  cycloalkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkyl, aryl, heteroaryl; except when W is  $C=O$ ,  $Q_1=S$ ,  $Q_2=C$ , and G, J, L=H;

[0022]  $R_1$  is selected from the group consisting of  $—NHC(=O)R_2$ ,  $N(R_3, R_4)$ ,  $—NR_2C(=S)R_3$ ,  $—NR_2C(=S)SR_3$ , wherein  $R_2$  is hydrogen,  $C_{1-12}$  alkyl,  $C_{3-12}$  cycloalkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkyl substituted with one or more of F, Cl, Br, I or OH;  $R_3$ ,  $R_4$  are independently selected from hydrogen,  $C_{1-12}$  alkyl,  $C_{3-12}$  cycloalkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkyl substituted with one or more of F, Cl, Br, I or OH; preferably  $R_1$  is of the formula  $—NH(C=O)X$  wherein X is  $CH_3$ ,  $CH_2F$ ,  $CHF_2$ ,  $CF_3$ ,  $CH_2Cl$ ,  $CHCl_2$ ,  $CCl_3$ ;

[0023] U and V are independently selected from hydrogen, optionally substituted  $C_{1-6}$  alkyl, F, Cl, Br,  $C_{1-12}$  alkyl substituted with one or more of F, Cl, Br, I, preferably U and V are hydrogen or fluoro;

[0024] X is selected from C, CH,  $CH—S$ ,  $CH—O$  and N;

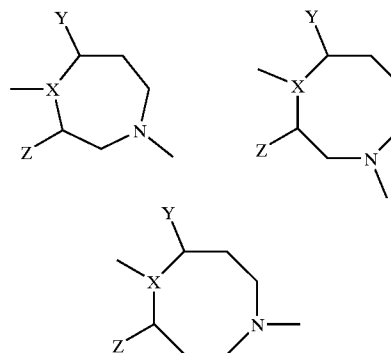
[0025] Y and Z are independently selected from hydrogen,  $C_{1-6}$  alkyl,  $C_{3-12}$  cycloalkyl and  $C_{0-3}$  bridging groups;

[0026] W is selected from the group  $CH_2$ ,  $CO$ ,  $CH_2NH$ ,  $—NHCH_2$ ,  $—CH_2NHCH_2$ ,  $—CH_2—N(R_{11})CH_2—$ ,  $CH_2(R_{11})N—$ ,  $CH(R_{11})$ , S,  $CH_2(CO)$ , NH, O,  $N(R_{11})$ ,  $(CO)CH_2$ ,  $N(R_{11})CON(R_{11})$ ,  $N(R_{11})C(=S)N(R_{11})$ ,  $SO_2$ , SO, wherein  $R_{11}$  is hydrogen, optionally substituted  $C_{1-12}$  alkyl,  $C_{3-12}$  cycloalkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkyl,  $C_{1-6}$  alkylcarbonyl,  $C_{1-6}$  alkylcarboxy, aryl, heteroaryl; and,

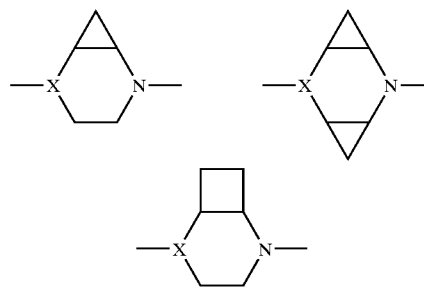
[0027] n is an integer in the range from 0 to 3.

[0028] Preferred compounds of Formula I have  $R_1$  as acetamide or halogen substituted acetamide and the most preferred compounds in this series would be prepared as the optically pure enantiomers having the (S)-configuration according to the Cahn-Ingold-Prelog notation at  $C_5$  of the oxazolidinone ring. The (S)-enantiomer of this series of compounds is preferred since it has two times more antibacterial activity than the corresponding racemic compound. The scope of the Individual isomers end mixture of enantiomers of the structural Formula I are also covered in this invention.

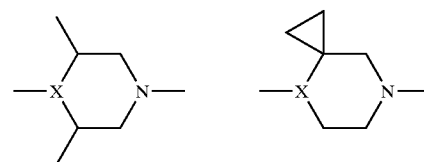
[0029] In the more preferred compounds represented by Formula I ring C may be four to eight membered in size and the larger rings may have either two or three carbons between each nitrogen atom, for example:



[0030] The ring C may be bridged to form a bicyclic system as shown below:



[0031] Ring C is optionally substituted by Y and Z with alkyl groups, cycloalkyl groups, fluoro group, carboxylic and corresponding esters, amides, substituted alkyls or bridging alkyl groups are as shown below.





C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>4</sub>, SR<sub>4</sub>, wherein R<sub>5</sub> is selected from H, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more F, Cl, Br, I or OH, aryl, heteroaryl; R<sub>6</sub> and R<sub>7</sub>, are independently selected from H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy; R<sub>8</sub> and R<sub>9</sub> are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>5</sub>, SR<sub>4</sub>, N(R<sub>6</sub>, R<sub>7</sub>); R<sub>10</sub>=H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, aryl, heteroaryl;

[0041] n is an integer in the range from 0 to 3;

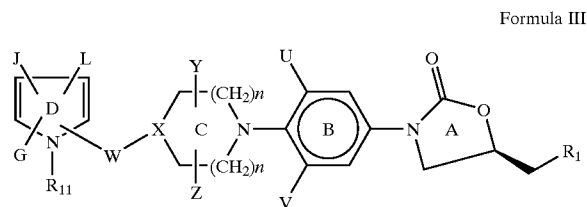
[0042] more preferred G, J and L substitutions are nitro, aldehydes and halides;

[0043] preferably W is selected from the groups consisting of CH<sub>2</sub>, C(=O), C(=O)—C(=O), CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(CH<sub>3</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(CH<sub>3</sub>)N—, CH(CH<sub>3</sub>), S and CH<sub>2</sub>(C=O), —NH. The preferred compounds of Formula II are as follows:

[0044] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-pyrazolecarbonyl-(4-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0045] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-pyrazolecarbonyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0046] Still more preferred compounds of Formula I when Q=NR<sub>11</sub>, and Q<sub>2</sub>=carbon is represented by Formula III



[0047] wherein

[0048] rings C and D are the same as defined before;

[0049] R<sub>1</sub> is selected from the group consisting of —NHC(=O)R<sub>2</sub>; —N(R<sub>3</sub>, R<sub>4</sub>); —NR<sub>2</sub>C(=S)R<sub>3</sub>; —NR<sub>2</sub>C(=S)SR<sub>3</sub> wherein R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> are independently hydrogen, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted one or more F, Cl, Br, I, OH; preferably R<sub>1</sub> is of the formula —NH(C=O)X wherein X is CH<sub>3</sub>, CH<sub>2</sub>F, CHF<sub>2</sub>, CF<sub>3</sub>, CH<sub>2</sub>Cl, CHCl<sub>2</sub>, CCl<sub>3</sub>;

[0050] U and V are independently selected from hydrogen, optionally substituted C<sub>1-6</sub> alkyl, F, Cl, Br, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I; preferably U and V are hydrogen and fluoro;

[0051] Y and Z are independently selected from hydrogen, C<sub>1-6</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>0-3</sub> bridging group.

[0052] X is selected from C, CH, CH—S, CH—O, and N;

[0053] W is independently selected from CH<sub>2</sub>, CO, CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(R<sub>11</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(R<sub>11</sub>)N—, CH(R<sub>11</sub>), S, CH<sub>2</sub>(CO), NH, O, N(R<sub>11</sub>), (CO)CH<sub>2</sub>, N(R<sub>11</sub>)CON(R<sub>11</sub>), N(R<sub>11</sub>)C(=S)N(R<sub>11</sub>), SO<sub>2</sub>, SO, wherein R<sub>11</sub> is hydrogen, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkylcarboxy, aryl, heteroaryl;

[0054] G, J, L are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, —CN, COR<sub>5</sub>, COOR<sub>5</sub>, N(R<sub>6</sub>, R<sub>7</sub>), NHCOC(R<sub>8</sub>, R<sub>9</sub>), NHCOOR<sub>5</sub>, CON(R<sub>6</sub>, R<sub>7</sub>), CH<sub>2</sub>NO<sub>2</sub>, NO<sub>2</sub>, CH<sub>2</sub>R<sub>8</sub>, CHR<sub>9</sub>, —CH=N—OR<sub>10</sub>, —C=CH—R<sub>5</sub>, OR<sub>5</sub>, SR<sub>5</sub>, —C(R<sub>9</sub>)=C(R<sub>9</sub>)NO<sub>2</sub>, C<sub>1-12</sub> alkyl substituted with one or more F, Cl, Br, I, OR<sub>4</sub>, SR<sub>4</sub>; wherein R<sub>5</sub> is selected from H, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more F, Cl, Br, I or OH, aryl, heteroaryl; R<sub>6</sub> and R<sub>7</sub>, are independently selected from H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy; R<sub>8</sub> and R<sub>9</sub> are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>5</sub>, SR<sub>4</sub>, N(R<sub>6</sub>, R<sub>7</sub>); R<sub>10</sub>=H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, aryl, heteroaryl;

[0055] n is an integer in the range from 0 to 3;

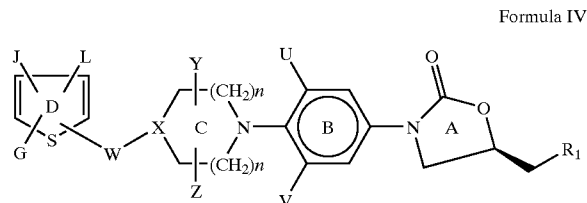
[0056] more preferred G, J and L substitutions are nitro, aldehydes and halides.

[0057] Preferably W is selected from the groups consisting of CH<sub>2</sub>, C(=O), C(=O)—C(=O), CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(CH<sub>3</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(CH<sub>3</sub>)N—, CH(CH<sub>3</sub>), S and CH<sub>2</sub>(C=O), —NH. The preferred compounds of Formula III are as follows:

[0058] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0059] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0060] Still more preferred compounds of Formula I are represented by Formula IV with Q<sub>1</sub>=sulphur and Q<sub>2</sub>=carbon of Formula I,



[0061] wherein

[0062] rings C and D are the same as defined before;

[0063] R<sub>1</sub> is selected from the group consisting of —NHC(=O)R<sub>2</sub>, —N(R<sub>3</sub>, R<sub>4</sub>), —NR<sub>2</sub>C(=S)R<sub>3</sub>,

—NR<sub>2</sub>C(=S)SR<sub>3</sub> wherein R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> are independently hydrogen, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted one or more of F, Cl, Br, I, OH; preferably R<sub>1</sub> is of the formula —NH(C=O)X wherein X is CH<sub>3</sub>, CH<sub>2</sub>F, CHF<sub>2</sub>, CF<sub>3</sub>, CH<sub>2</sub>Cl, CHCl<sub>2</sub>, CCl<sub>3</sub>;

[0064] U and V are independently selected from hydrogen, optionally substituted C<sub>1-6</sub> alkyl, F, Cl, Br, C<sub>1-12</sub> alkyl substituted with one or more F, Cl, Br, I; preferably U and V are hydrogen and fluoro;

[0065] Y and Z are independently selected from hydrogen, C<sub>1-6</sub> alkyl, C<sub>3-12</sub> cycloalkyl C<sub>0-3</sub> bridging group;

[0066] X is selected from C, CH, CH—S, CH—O, and N;

[0067] W is Independently selected from CH<sub>2</sub>, CO, CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(R<sub>11</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(R<sub>11</sub>)N—, CH(R<sub>11</sub>), S, CH<sub>2</sub>(CO), NH, O, N(R<sub>11</sub>), (CO)CH<sub>2</sub>, N(R<sub>11</sub>)CON(R<sub>11</sub>), N(R<sub>11</sub>)C(=S)N(R<sub>11</sub>), SO<sub>2</sub>, SO, wherein R<sub>11</sub> is hydrogen, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkylcarboxy, aryl, heteroaryl;

[0068] G, J, L are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, —CN, COR<sub>5</sub>, COOR<sub>5</sub>, N(R<sub>6</sub>, R<sub>7</sub>), NHCOC(R<sub>8</sub>, R<sub>9</sub>), NHCOOR<sub>5</sub>, CON(R<sub>6</sub>, R<sub>7</sub>), CH<sub>2</sub>NO<sub>2</sub>, NO<sub>2</sub>, CH<sub>2</sub>R<sub>8</sub>, CHR<sub>9</sub>, —CH=N—OR<sub>10</sub>, —C=CH—R<sub>5</sub>, OR<sub>5</sub>, SR<sub>5</sub>, —C(R<sub>9</sub>)=C(R<sub>9</sub>)NO<sub>2</sub>, C<sub>1-12</sub> alkyl substituted with one or more F, Cl, Br, I, OR<sub>4</sub>, SR<sub>4</sub>; wherein R<sub>5</sub> is selected from H, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH, aryl, heteroaryl; R<sub>6</sub> and R<sub>7</sub>, are independently selected from H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy; R<sub>8</sub> and R<sub>9</sub> are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>5</sub>, SR<sub>4</sub>, N(R<sub>6</sub>, R<sub>7</sub>); R<sub>10</sub> is H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, aryl, heteroaryl; except when W=(C=O), Q<sub>1</sub>=S, Q<sub>2</sub>=C, and G, J, L=H;

[0069] n is an integer in the range from 0 to 3.

[0070] More preferred G, J and L substitutions are nitro, aldehydes and halides.

[0071] Preferably W is selected from the groups consisting of CH<sub>2</sub>, C(=O), C(=O)—C(=O), CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(CH<sub>3</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(CH<sub>3</sub>)N—, CH(CH<sub>3</sub>), S and CH<sub>2</sub>(C=O), —NH. The preferred compounds of Formula IV are as follows:

[0072] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen-(4-nitro)-methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0073] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenyl-(5-nitro)-}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0074] (S)-N-[[4-[3-Fluoro-4-[N-1-[4-[1-{2-thiophenyl-(5-nitro)-}ethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide

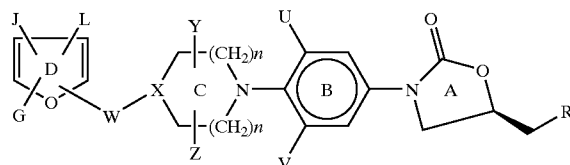
[0075] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-thiophenyl-(5-nitro)-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0076] (S)-N-[[3-[3-Fluoro-4-[4-[N-ethyl-2-thiophenyl-(5-nitro)-]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0077] (S)-N-[[3-[3-Fluoro-4-[N-1,{3-[N-methyl][N-{24-chlorophenyl-(5-nitro)-}]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide.

[0078] Still more preferred compounds of Formula I is represented by Formula V with Q<sub>1</sub>=O, Q<sub>2</sub>=C of Formula II,

Formula V



[0079] wherein

[0080] rings C and D are the same as defined before;

[0081] R<sub>1</sub> is selected from the group consisting of —NHC(=O)R<sub>2</sub>, —N(R<sub>3</sub>, R<sub>4</sub>), —NR<sub>2</sub>C(=S)R<sub>3</sub>, NR<sub>2</sub>C(=S)SR<sub>3</sub> wherein R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> are independently selected from the group consisting of hydrogen, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted one or more F, Cl, Br, I, OH, preferably R<sub>1</sub> is of the formula —NH(C=O)X wherein X is CH<sub>3</sub>, CH<sub>2</sub>F, CHF<sub>2</sub>, CF<sub>3</sub>, CH<sub>2</sub>Cl, CHCl<sub>2</sub>, CCl<sub>3</sub>;

[0082] U and V are independently selected from hydrogen, optionally substituted C<sub>1-6</sub> alkyl, F, Cl, Br, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I; preferably U and V are hydrogen and fluoro;

[0083] Y and Z are independently selected from hydrogen, C<sub>1-6</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>0-3</sub> bridging group;

[0084] X is selected from C, CH, CH—S, CH—O, and N;

[0085] W is Independently selected from the group consisting of CH<sub>2</sub>, CO, CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(R<sub>11</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(R<sub>11</sub>)N—, CH(R<sub>11</sub>), S, CH<sub>2</sub>(CO), NH, O, N(R<sub>11</sub>), (CO)CH<sub>2</sub>, N(R<sub>11</sub>)CON(R<sub>11</sub>), N(R<sub>11</sub>)C(=S)N(R<sub>11</sub>), SO<sub>2</sub>, SO, wherein R<sub>11</sub> is hydrogen, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkylcarboxy, aryl, heteroaryl;

[0086] G, J, L are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, —CN, COR<sub>5</sub>, COOR<sub>5</sub>, N(R<sub>6</sub>, R<sub>7</sub>), NHCOC(R<sub>8</sub>, R<sub>9</sub>), NHCOOR<sub>5</sub>, CON(R<sub>6</sub>, R<sub>7</sub>), CH<sub>2</sub>NO<sub>2</sub>, NO<sub>2</sub>, CH<sub>2</sub>R<sub>8</sub>, CHR<sub>9</sub>, —CH=N—OR<sub>10</sub>, —C=CH—R<sub>5</sub>, OR<sub>5</sub>, SR<sub>5</sub>, —C(R<sub>9</sub>)=C(R<sub>9</sub>)NO<sub>2</sub>, C<sub>1-12</sub> alkyl substituted with one or more F, Cl, Br, I, OR<sub>4</sub>, SR<sub>4</sub>; wherein R<sub>5</sub> is selected from H, C<sub>1-12</sub>

alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH, aryl, heteroaryl; R<sub>6</sub> and R<sub>7</sub>, are independently selected from H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy; R<sub>8</sub> and R<sub>9</sub> are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>5</sub>, SR<sub>4</sub>, N(R<sub>6</sub>, R<sub>7</sub>); R<sub>10</sub>=H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, aryl, heteroaryl;

[0087] n is an integer in the range from 0 to 3.

[0088] More preferred G, J and L substitutions are nitro, aldehydes and halides.

[0089] Preferably W is selected from the groups consisting of CH<sub>2</sub>, C(=O), C(=O)—C(=O), CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(CH<sub>3</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(CH<sub>3</sub>)N—, CH(CH<sub>3</sub>), S and CH<sub>2</sub>(C=O), —NH. The preferred compounds of Formula V are as follows:

[0090] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(3-methyl)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

[0091] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(3-methyl-5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

[0092] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-[1-{2-furyl-(5-nitro)}-1-ethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

[0093] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-difluoroacetamide,

[0094] (S)-N-[[3-[3-Fluoro-4-[4-{N-2-furyl(5-nitro)methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide.

[0095] The compounds of the present invention are useful as antimicrobial agents, effective against a number of human and veterinary pathogens, particularly aerobic Gram-positive bacteria, including multiply-antibiotic resistant staphylococci and streptococci, as well as anaerobic organisms such as *Mycobacterium tuberculosis* and other *mycobacterium* species.

[0096] For preparing pharmaceutical compositions from the compounds described by this invention, inert, pharmaceutically acceptable carriers can be either solid or liquid. Solid form preparations include powders, tablets, dispersible granules, capsules, cachets, suppositories, and ointments. A solid carrier can be one or more substances which may also act as diluents, flavouring agents, solubilizers, lubricants, suspending agents, binders, or tablets disintegrating agents; it can also be as finely divided solid which is in admixture with the finely divided active compound. For the preparation of tablets, the active compound is mixed with carrier having the necessary binding properties in suitable proportions and compacted in the shape and size desired. The powders and tablets preferably contain from about 5 to about 70 percent of the active ingredient. Suitable solid carriers are lactose,

pectin, dextrin, starch, gelatin, tragacanth, low melting wax, cocoa butter, and the like. The term "preparation" is intended to include the formulation of the active compound with encapsulating material as carrier providing a capsule in which the active component (with or without other carriers) is surrounded by carrier, which is thus in association with it. Similarly, capsules can be used as solid dosage forms suitable for oral administration.

[0097] Liquid form preparations include solutions, suspensions, and emulsions. As an example may be mentioned water or water-propylene glycol solutions for parenteral injection. Such solutions are prepared so as to be acceptable to biological systems (isotonicity, pH, etc.). Liquid preparations can also be formulated in solution in aqueous polyethylene glycol solution. Aqueous solutions suitable for oral use can be prepared by dissolving the active component in water and adding suitable colorants, flavours, stabilizing, and thickening agents as desired. Aqueous suspension suitable for oral use can be made by dispersing the finely divided active component in water with viscous material, i.e., natural or synthetic gums, resins, methyl cellulose, sodium carboxymethyl cellulose, and other well-known suspending agents.

[0098] Ointment preparations contain heavy metal salts of a compound of Formula I with a physiologically acceptable carrier. The carrier is desirably a conventional water-dispersible hydrophilic or oil-in-water carrier, particularly a conventional semi-soft or cream-like water dispersible or water soluble, oil-in-water emulsion infected surface with a minimum of discomfort. Suitable compositions may be prepared by merely incorporating or homogeneously admixing finely divided compounds with the hydrophilic carrier or base or ointment.

[0099] Preferably, the pharmaceutical preparation is in unit dosage form. In such form, the preparation is subdivided into unit doses containing appropriate quantities of the active component. The unit dosage form can be a packaged preparation, the package containing discrete capsules, powders in vials or ampoules, and ointments capsule, cachet, tablet, gel, or cream itself or it can be the appropriate number of any of these packaged forms.

[0100] In order to achieve the above mentioned objects in accordance with the purpose of the invention as embodied and broadly described herein, there are provided processes for the synthesis of compounds of Formulae I, II, III, IV and V. Pharmaceutically acceptable non-toxic acid addition salts of the compounds of the present invention of Formulae I, II, III, IV and V may be formed with inorganic or organic acids, by methods well known in the art.

[0101] The present invention also includes within its scope prodrugs of the compounds of Formulae I, II, III, IV and V. In general, such prodrugs will be functional derivatives of these compounds which readily get converted in vivo into defined compounds. Conventional procedures for the selection and preparation of suitable prodrugs are known.

[0102] The invention also includes pharmaceutically acceptable salts, the enantiomers, diastereomers, N-oxides,

polymorphs, pharmaceutically acceptable solvates, prodrugs, metabolites in combination with pharmaceutically acceptable carrier and optionally included excipient.

[0103] Other objects and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by the practice of the invention. The objects and the advantages of the invention may be realized and obtained by means of the mechanism and combination pointed out in the appended claims.

#### DETAILED DESCRIPTION OF THE INVENTION

[0104] The compounds of the present invention may be prepared by following the reaction sequences as depicted in the schemes in the accompanied drawings of which description is defined below

[0105] Mainly seventeen different amines of Formula VI identified as seventeen is different cores, namely

[0106] (S)-N-[[3-[3-Fluoro-4-(N-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core I)

[0107] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-fluoroacetamide (Core II);

[0108] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-difluoroacetamide (Core III)

[0109] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide (Core IV)

[0110] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide (Core V)

[0111] (S)-N-[[3-[3-[3-Fluoro-4-(N-1-homopiperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core VI);

[0112] (S)-N-[[3-[3-Fluoro-4-{N-1-(2-methyl)piperazinyl}phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core VII);

[0113] (S)-N-[[3-[3-Fluoro-4-[N-1-{2,6-dimethyl}-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]-methyl]acetamide (Core VII);

[0114] (S)-N-[[3-[3-Fluoro-4-[N-1-{3-methyl}-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core IX);

[0115] (S)-N-[[3-[3-Fluoro-4-{3-methyl-4-(N-methyl)-aminopiperidine-1-yl}phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core X);

[0116] (S)-N-[[3-[3-Fluoro-4-{N-ethyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XI);

[0117] (S)-N-[[3-[3-Fluoro-4-(4-aminopiperidine-1-yl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XII);

[0118] (S)-N-[[4-[3-Fluoro-4-{N-methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XIII);

[0119] (S)-N-[[3-[3-Fluoro-4-[N-1,3-[N-methylaminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XIV);

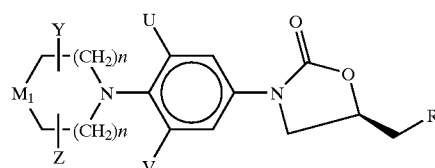
[0120] (S)-N-[[3-[3-Fluoro-4-[N-1(4-N-methyl)-aminomethyl]piperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XV);

[0121] (S)-N[[3-[3-Fluoro-4-(N-1-(3-N-methyl)-aminopiperidinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XVI);

[0122] (S)-N-[[3-[3-Fluoro-4-{N-1-(N-aminomethyl)-3-azabicyclo[3.1.0]hexane}phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XVII)

[0123] were used for analoguing purposes.

[0124] Key intermediate amines for the analogue preparation of compounds of Formula I are represented by Formula VI,



Formula VI

[0125] wherein

[0126] M<sub>1</sub> is NH, NHR<sub>13</sub>, —CH<sub>2</sub>NHR<sub>13</sub>, >C—CH<sub>2</sub>NHR<sub>13</sub>, wherein R<sub>13</sub> is H, ethyl, methyl, isopropyl, acetyl, cyclopropyl, alkoxy, or acetyl and n, R<sub>1</sub> U, V, Y and Z are as defined for Formula I.

[0127] Some amines of Formula VI are already known in the literature and if they have been made for the first time or by a different procedure or variation of known procedure they are described in detail in the experimental section.

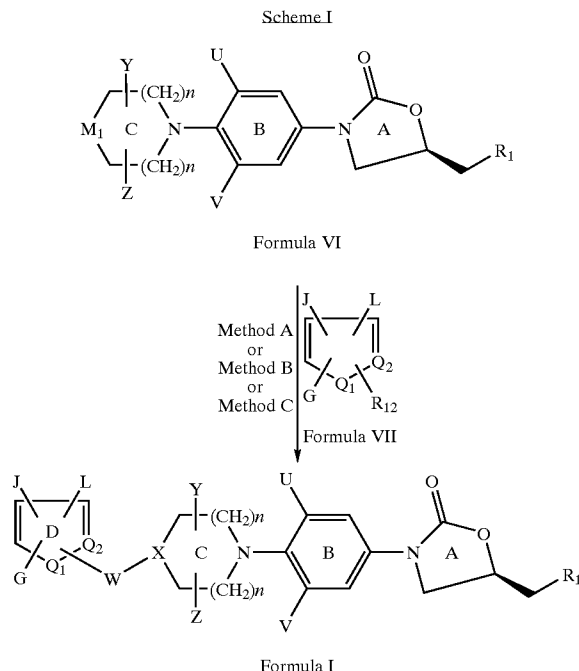
[0128] Optically pure amines of Formula VI could be obtained either by one of asymmetric syntheses methods known in the art or alternatively by resolution from a racemic mixture by selective crystallization of a salt prepared, with an appropriate optically active acid such as



dibenzoyl tartrate or 10-camphorsulfonic acid, followed by treatment with base to afford the optically pure amine.

[0129] Scheme-I

[0130] The compounds of the present invention represented by general Formula I may be prepared by the reaction sequence shown in Scheme I.



[0131] In Scheme I, the heteroaromatic group with the corresponding appendage can be introduced on the nitrogen atom of ring C of compounds of Formula VI by one of the methods described below to give the compounds of Formula I.

[0132] Amine of the structure of Formula VI wherein Y, Z, U, V, R<sub>1</sub> and n are the same as defined for Formula I and M<sub>1</sub> is the same as defined earlier, is reacted with a heteroaromatic compound of Formula VII wherein Q<sub>1</sub>, Q<sub>2</sub>, J, L and G are the same as defined for Formula I earlier; R<sub>12</sub> is a suitable leaving group well known to one of ordinary skill in the art such as fluoro, chloro, bromo, SCH<sub>3</sub>, —SO<sub>2</sub>CH<sub>3</sub>, —SO<sub>2</sub>CF<sub>3</sub>, Tosyl or OC<sub>6</sub>H<sub>5</sub> etc

[0133] For the preparation of compounds of Formula I wherein W is equal to CH<sub>2</sub>, corresponding aldehyde can be used through a process of reductive amination and is attached to amine of Formula VI.

[0134] Similarly, for the preparation of compound of Formula I wherein W is equal to C=O corresponding acid can be used and the amine of Formula VI can be acylated through activated esters in the presence of condensing agents such as 1,3-dicyclohexylcarbodiimide (DCC) and 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride (EDC). Other methods of acylation known in the art can also be employed.

[0135] Alternatively, the compounds of Formula I (W=CO) having carbonyl link can also be made by reacting heteroaromatic compound of the Formula VII such as N-methyl pyrrole with the intermediate amine of Formula VI in the presence of triphosgene or phosgene. Carbonyl linkers may also be introduced between heteroaromatic compound of Formula VII such as 3-bromothiophene and amine of Formula VI with carbon monoxide and the catalyst such as Pd(PPh<sub>3</sub>)<sub>2</sub>Cl<sub>2</sub>. Extended chain pyrroles having dicarbonyl linkers can also be obtained from treatment with oxalyl chloride and amine of the Formula VI.

[0136] The reduction of the carbonyl linkers (W=CO) using the standard reducing agents results in the formation of methylene linkers (W=CH<sub>2</sub>),

[0137] Preparation of the compound of Formula I is accomplished as exemplified below by three methods A, B and C as shown in Scheme I:

[0138] Method A:

[0139] Amine of Formula VI is reacted with a heteroaromatic compound of Formula VII having R<sub>12</sub> as a suitable leaving group defined earlier for Scheme I, R<sub>1</sub>, Q<sub>1</sub>, O<sub>2</sub>, G, J and L are the same as defined for Formula I.

[0140] The reaction is carried out in a suitable solvent such as dimethylformamide, dimethylacetamide, ethanol or ethylene glycol at a suitable temperature in the range of -70° C. to 180° C. to afford compounds of Formula I. The presence of a suitable base such as triethylamine, diisopropyl amine, potassium carbonate, sodium bicarbonate is useful in some cases to improve the yield of the reaction,

[0141] Method B:

[0142] Reductive alkylation of the amine intermediate of Formula VI, with the corresponding heterocyclic aldehydes of the Formula VII, such as furaldehyde (Q<sub>1</sub>=O, Q<sub>2</sub>=C; G, J, L=H; R<sub>12</sub> is CHO) using known reducing agents well known to one of ordinary skill in the art such as sodium triacetoxyborohydride or sodium cyanoborohydride gave the products of Formula I wherein W=CH<sub>2</sub>, as shown in the Scheme I.

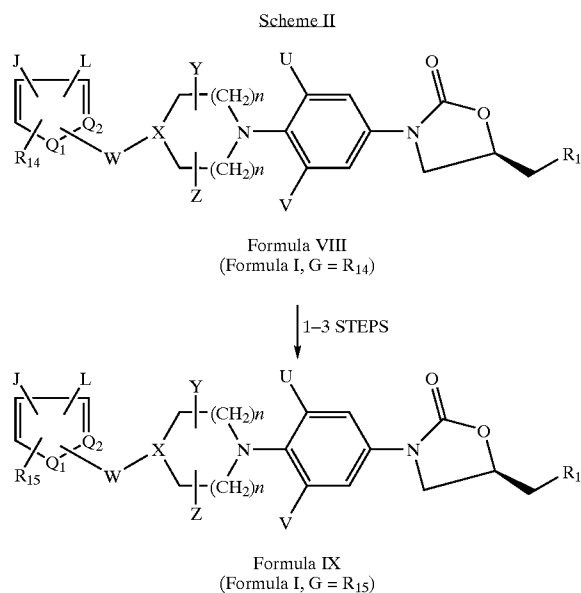
[0143] Method C:

[0144] Acylation of intermediate amines of Formula VI with heterocyclic acid of Formula VII, such as 2-furmic acid (Q<sub>1</sub>=O; Q<sub>2</sub>=C; G, J, L=H; R<sub>12</sub>=COOH) yield compound of Formula I, wherein W=CO, as shown in the Scheme I wherein U, V, Y, Z, X, W, Q<sub>1</sub>, Q<sub>2</sub>, G, J, L and are the same as defined earlier.

[0145] The reduction of the carbonyl linkers using the standard reducing agents results in the formation of methylene linkers.

[0146] Scheme II

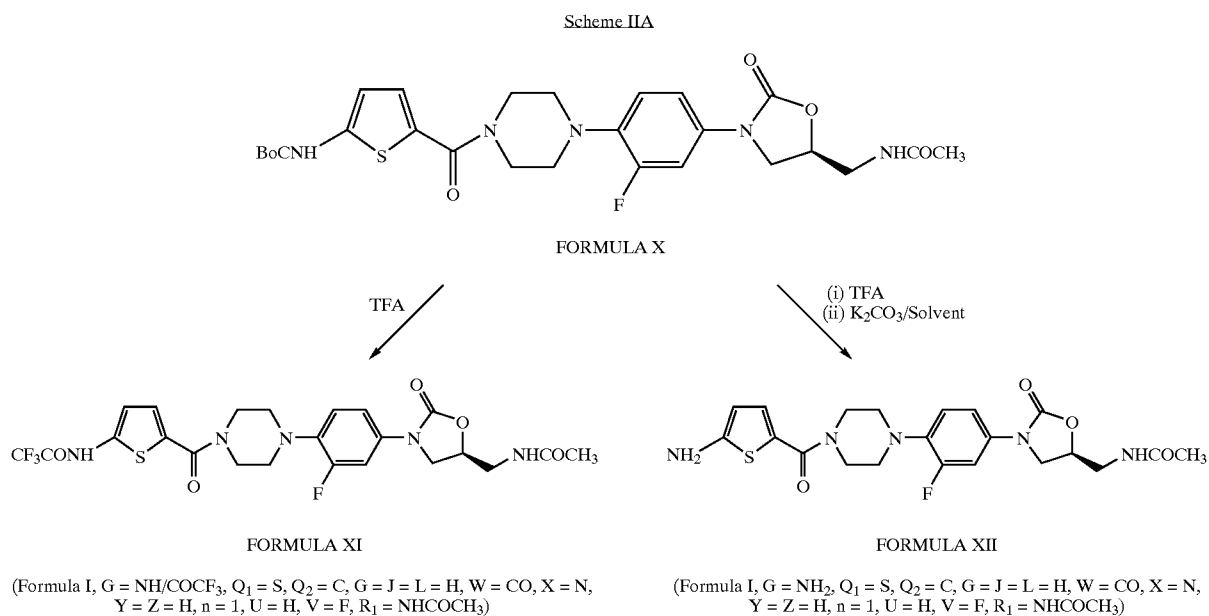
[0147] The compounds prepared by following the methods of Scheme I represented by Formula VIII (Formula I, when G=R<sub>14</sub>) were further used as starting compounds for further derivatization as shown in Scheme II



[0148] wherein R<sub>1</sub>, U, V, Y, Z, X, W, Q<sub>1</sub>, Q<sub>2</sub>, J, L and n are the same as defined earlier. The group R<sub>14</sub> (for example carbamate) is a subset of G in Formula I represented by Formula VIII, was transformed by carrying out one to three steps into final compounds of Formula IX, (Formula I when G=R<sub>15</sub>). The transformed group R<sub>15</sub> (for example amine, acetamide etc.), is also a subset of G group.

[0149] Scheme IIA

[0150] The following compounds are exemplified in Scheme IIA



[0151] in which (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenyl(5-trifluoroacetamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide represented by Formula XI (Formula I, G=NHCOCF<sub>3</sub>, Q<sub>1</sub>=S, Q<sub>2</sub>=C, G=J=L=H, W=CO, X=N, Y=Z=H, n=1, U=H, V=F, R<sub>1</sub>=NHCOCH<sub>3</sub>) was prepared by treating the Boc derivative of Formula X with trifluoroacetic acid for extended time.

[0152] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenyl(5-amino)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide represented by Formula XII (Formula I G=NH<sub>2</sub>, Q<sub>1</sub>=S, Q<sub>2</sub>=C, G=J=L=H, W=CO, X=N, Y=Z=H, n=1, U=H, V=F, R<sub>1</sub>=NHCOCH<sub>3</sub>) was prepared by treating the Boc derivative of Formula X with trifluoroacetic acid followed by neutralization with potassium carbonate in acetone as shown in Scheme IIA.

[0153] The transformations effected are described in the experimental section. In the above synthetic methods where specific acids, bases, solvents, catalysts, oxidising agents, reducing agents etc. are mentioned, it is to be understood that the other acids, bases, solvents, catalysts, oxidising agents; reducing agents etc. may be used. Similarly, the reaction temperature and duration of the reaction may be adjusted according to the need.

[0154] An illustrative list of particular compounds according to the invention and capable of being produced by the above mentioned schemes include:

[0155] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl-carbonylmethyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 1),

[0156] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-thiophenylmethyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 2),

- [0157] (S)-N-[[3-[3-Fluoro-4-[N-1-{2-furyl-{5-(4-chloro-2-nitro)-phenyl}methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 3),
- [0158] (S)-N-[[3-[3-Fluoro-4-[1-[4-{2-thiophen-(4-bromo-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 4),
- [0159] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(3-methyl-5-nitro)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 5),
- [0160] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-thiophene-(4-cyano-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 6),
- [0161] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-chloro)phenyl)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 7),
- [0162] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 8),
- [0163] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-bromo)phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 9),
- [0164] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-methyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 10),
- [0165] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-4-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 11),
- [0166] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 12),
- [0167] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 13),
- [0168] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen-(4-nitro)-methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 14),
- [0169] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-methoxy)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 15),
- [0170] (S)-N-[[3-[3-Fluoro-4-[N-1[4[2-furyl{5-O-(2-nitro-4-fluoro-phenyloxy)}methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 16),
- [0171] (S)-N-[[3-[3-Fluoro-4-[N-1[4-{2-furyl(5-chloro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 17),
- [0172] (S)-N-[[3-[3-Fluoro-4-[N-1[4-{3-furyl(2-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 18),
- [0173] (S)-N-[[3-[3-Fluoro-[N-1-[4-{2-thiophen-(4-dimethylamino-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 19),
- [0174] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-(4-morpholino-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 20),
- [0175] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-methylsulphonyl)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 21),
- [0176] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-nitro)-phenyl)-methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 22),
- [0177] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(3-nitro)-phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 23),
- [0178] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(2-nitro)-phenyl)-methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 24),
- [0179] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furyl-4-bromo-(nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 25),
- [0180] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furyl-(4-isopropyl)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 26),
- [0181] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furyl-4-isopropyl-(5-nitro)methyl}]piperazinyl]-Phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 27),
- [0182] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(5-methoxy)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 28),
- [0183] (S)-N-[[3-[3-Fluoro-1-[N-1-[4-{2-thiophenoyl-(5-acetamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 29),
- [0184] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-pyrazolecarbonyl-(4-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 30),
- [0185] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-pyrazolecarbonyl(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 31),
- [0186] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-tert-butoxycarboxamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 32),
- [0187] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-trifluoroacetamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 33),
- [0188] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-amino)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 34),
- [0189] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl{5-(4-chloro-2-nitro)-phenyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 35),
- [0190] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl(3-methyl)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 36),

- [0191] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(3-methyl-5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 37),
- [0192] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-4-dimethylamino-5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 38),
- [0193] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furoyl-(5-nitro)acylic}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 39),
- [0194] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-nitro)acrylic}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 40),
- [0195] Iodide (S)-N-[[3-[3-Fluoro-4-[N-1-[4-N-methyl-4-{2-furyl(5-nitro)methyl}]piperinyl]-phenyl]-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 41),
- [0196] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-nitro)methyl}]piperinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-fluoroacetamide. (Compound No. 42),
- [0197] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide. (Compound No. 43),
- [0198] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen(5-nitro)methyl}]piperazinyl]phenyl]oxo-5-oxazolidinyl]methyl]difluoroacetamide (Compound No. 44),
- [0199] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-difluoroacetamide. (Compound No. 45),
- [0200] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide. (Compound No. 46),
- [0201] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenyl-5-nitro)methyl}]](Compound No. 47),
- [0202] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenyl-4-bromo-(5-nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide. (Compound No. 48),
- [0203] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenyl-(5-nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide. (Compound No. 49),
- [0204] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-Furyl-(5-nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide. (Compound No. 50),
- [0205] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-thiophenyl-4-bromo-(5-nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide. (Compound No. 51),
- [0206] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-nitro)methyl}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 52),
- [0207] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(3-furoyl)]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 53),
- [0208] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-nitro)}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 54),
- [0209] (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(5-nitro)}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 55),
- [0210] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-(t-butoxycarbonyl)]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 56),
- [0211] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-thiophen-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 57),
- [0212] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 58),
- [0213] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-furoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 59),
- [0214] (S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-thiophenoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 60),
- [0215] (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furoyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 61),
- [0216] (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(5-formyl)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Compound No. 62),
- [0217] (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(5-nitro)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 63),
- [0218] (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(5-hydroxymethyl)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 64),
- [0219] (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(aldoxime)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 65),
- [0220] (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-(2-thienylacetyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 66),
- [0221] (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(5-cyano)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 67),
- [0222] (S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-thienylacetyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 68),
- [0223] (S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-furoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 69),
- [0224] (S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-thienoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 70),

- [0225] (S)-N-[[3-[3-Fluoro-4-[N-1-{4-[3-methyl-2-furyl-(5-formyl)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 71),
- [0226] (S)-N-[[3-[3-Fluoro-4-[4-{N-acetyl-N-2-furyl-(5-nitro)methyl-}]aminopiperidine-1-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 72),
- [0227] (S)-N-[[3-[3-Fluoro-4-[3-methyl-4-(N-methyl-N-thiophenacetyl-)]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 73),
- [0228] (S)-N-[[3-[3-Fluoro-4-[3-methyl-4-{N-methyl-2-furoyl-(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 74),
- [0229] (S)-N-[[3-[3-Fluoro-4-[3-methyl-4-{N-methyl-2-thienoyl-(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 75),
- [0230] (S)-N-[[3-[3-Fluoro-4-[3-methyl-4-(N-methyl-N-2-furoyl)]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 76),
- [0231] (S)-N-[[3-[3-Fluoro-4-[3-methyl-4-{N-methyl-N-2-furyl-(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 77),
- [0232] (S)-N-[[3-[3-Fluoro-4-[3-methyl-4-{N-methyl-N-2-thienyl-(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 78),
- [0233] (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-2-thienoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 79),
- [0234] (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-2-furoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 80),
- [0235] (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-furoyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 81),
- [0236] (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-thiophenacetyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide. (Compound No. 82),
- [0237] (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-thiophenyl-(5-nitro)methyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 83),
- [0238] (S)-N-[[3-[3-Fluoro-4-[4-{N-thienyl-(5-nitro)methyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 84),
- [0239] (S)-N-[[3-[3-Fluoro-4-[4-{2-furyl-(5-nitro)methylene-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 85),
- [0240] (S)-N-[[3-[3-Fluoro-4-[4-{N-2-furyl-(5-nitro)methyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 86),
- [0241] (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-pyrrole-(5-nitro)methyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 87),
- [0242] (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-furyl-(5-acetoxymethyl)methyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 88),
- [0243] (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-furoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 89),
- [0244] (S)-N-[[3-[3-Fluoro-4-[N-1,3-[N-methyl[N-(2-thiophenyl(5-nitro)methyl]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 90),
- [0245] (S)-N-[[3-[3-Fluoro-4-[N-1,{3-{[N-methyl][N-2-thiophenyl(5-nitro)}]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 91),
- [0246] (S)-N-[[3-[3-Fluoro-4[N-1,{3-{(N-methyl)[N-2-furoyl(5-nitro)}]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 92),
- [0247] (S)-N-[[3-[3-Fluoro-4-[N-1[4-{N-methyl-N-2-furyl-(5-nitro)-methyl}]aminomethylpiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 93),
- [0248] (S)-N-[[3-[3-Fluoro-4[4N-1-(N-methyl){N-2-thiophenyl-(5-nitro)-methyl}]aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 94),
- [0249] (S)-N-[[3-[3-Fluoro-4-N-1[4-N-methyl[N-2-furoyl(5-nitro)methyl]]aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 95),
- [0250] (S)-N-[[3-{3-Fluoro-4-(3-oxo-piperidin-1-yl)-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 96),
- [0251] (S)-N-[[3-[3-Fluoro-4-[N-1-3-N-methyl]-N-2-furyl(5-nitro)methyl]]aminopiperidinyl]-phenyl]2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 97),
- [0252] (S)-N-[[3-[3-Fluoro-4[N-1-[3-{2-furyl-(5-nitro)-methylene}aminomethyl]-3-azabicyclo(3.1.0)hexane]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 98),
- [0253] (S)-N-[[3-[3-Fluoro-4[N-1-[3-{N-2-furyl-(5-nitro)methyl-}aminomethyl]-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 99),
- [0254] (S)-N-[[3-[3-Fluoro-4-[N-1-4[1-{2-thiophenyl-(5-nitro)}-1-ethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide. (Compound No. 100),
- [0255] (S)-N-[[3-[3-Fluoro-4-[N-1-4[1-{2-furyl-(5-nitro)}-1-ethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]3-acetamide. (Compound No. 101),



-continued

Compound No.	<i>S. aureus</i> 25923	MRSA 15187	MRSA 562	MRSA 33	<i>E. faecalis</i> 29212	VRE 6A	<i>S. pyogenes</i> 19615	<i>S. pneum</i> 6303	<i>S. pneum</i> AB 34
84	2	2	2	2	1	2	1	2	2
85	4	4	4	4	>8	>8	2	4	4
86	1	1	1	1	0.5	0.5	<0.25	2	2
90	4	2	2	4	4	4	2	4	4
93	2	1	1	1	2	4	1	4	4
91	<0.25	<0.25	<0.25	<0.25	0.5	1	<0.25	1	1
92	1	0.5	<0.25	0.5	<0.25	<0.25	1	1	1
94	4	2	2	2	4	4	4	4	8
95	1	1	0.5	1	<0.25	0.5	—	—	—
96	16	16	8	16	8	8	4	4	4
99	>8	>8	>8	>8	>8	8	2	4	4
100	0.5	0.5	0.5	0.5	0.5	0.5	2	2	2
101	1	1	1	1	0.125	0.25	0.06	1	2

[0270] The in vitro antibacterial activity of the compounds were demonstrated by the agar incorporation method (NCCLS M 7 and M 100-S8 documents). Briefly, the compounds were dissolved in DMSO and doubling dilution of the compounds were incorporated into Mueller Hinton agar before solidification. Inoculum was prepared by suspending 4 to 5 colonies into 5 ml of normal saline solution and adjusting the turbidity to 0.5 Macfarland turbidity standard tables ( $1.5 \times 10^8$  CFU/ml), after appropriate dilutions,  $10^4$  CFU/spot was transferred into the surface of dried plate and incubated for 18 hours (24 hours for MRSN studies). The concentration showing no growth of the inoculated culture was recorded as the MIC. Appropriate ATCC standard strains were simultaneously tested and result recorded only when the MIC's against standard antibiotics were within the acceptable range.

[0271] The compounds of the present invention represented by general Formula I may be prepared by the method of reaction in Scheme I. Key intermediate amines of Formula VI for the analogue preparation were prepared by the synthetic procedures described below, from commercially available reagents. The compounds of Formula I were made by either Method A, B, or C.

[0272] Amines already known in the literature are given by reference and if they have been made by a different procedure they are described in detail.

[0273] Mainly following seventeen different amines of Formula VI were identified as different cores, namely

[0274] (S)-N-[[3-[3-Fluoro-4-(N-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core I);

[0275] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-fluoroacetamide (Core II);

[0276] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide (Core III);

[0277] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide (Core IV);

[0278] (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide (Core V);

[0279] (S)-N-[[3-[3-Fluoro-4-(N-1-homopiperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (core VI);

[0280] (S)-N-[[3-[3-Fluoro-4-{N-1-(2-methyl)piperazinyl}phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core VII);

[0281] (S)-N-[[3-[3-Fluoro-4-[N-1-{2,6-dimethyl}-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core VIII);

[0282] (S)-N-[[3-[3-Fluoro-4-[N-1-{3-methyl}-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core IX);

[0283] (S)-N-[[3-[3-Fluoro-4-{3-methyl-4-(N-methyl)-aminopiperidine-1-yl}phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core X);

[0284] (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XI);

[0285] (S)-N-[[3-[3-Fluoro-4-(4-aminopiperidine-1-yl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XII);

[0286] (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XIII);

[0287] (S)-N-[[3-[3-Fluoro-4-[N-1,3-[N-methylaminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XIV);

[0288] (S)-N-[[3-[3-Fluoro-4-[N-1(4-N-methyl)-aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XVI);

[0289] (S)-N-[[3-[3-Fluoro-4-[N-1-(3-N-methyl)-aminopiperidinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XVI);

[0290] (S)-N-[[3-[3-Fluoro-4-[N-1-(N-aminomethyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XVII)

[0291] The mentioned cores were used for the synthesis of compounds of this invention.

[0292] Most of the compounds were characterized using NMR, IR and were purified by chromatography. Crude

products were subjected to column chromatographic purification using silica gel (100-200 or 60-120 mesh) as stationary phase.

[0293] The examples mentioned below demonstrate the general synthetic procedure as well as the specific method for the preparation of the preferred compound. The examples are given to illustrate the details of the invention and should not be constrained to limit the scope of the present invention.

#### EXAMPLE 1

Analogues of (S)-N-[[3-[3-Fluoro-4-(N-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core I)

[0294] The heteroaromatic group with the corresponding appendage can be introduced on the nitrogen atom of ring C of compounds of Formula I by one of the methods described below:

[0295] Method A:

[0296] General Procedure.

[0297] Amine of structure of Formula VI is reacted with a heteroaromatic compounds of Formula VII having corresponding  $R_{12}$  appendages such as  $-\text{CH}_2R_{13}$ ,  $-\text{COR}_{13}$  or  $-\text{CH}(\text{CH}_3)R_{13}$  wherein  $R_{13}$  is a suitable leaving group well known to one of ordinary skill in the art such as fluoro, chloro, bromo,  $\text{SCH}_3$ ,  $-\text{SO}_2\text{CH}_3$ ,  $-\text{SO}_2\text{CF}_3$ , Tos or  $\text{OC}_6\text{H}_5$  etc.

[0298] The reaction is done in a suitable solvent such as dimethylformamide, dimethylacetamide, ethanol or ethylene glycol at a suitable temperature in the range of  $-78^\circ\text{C}$ . to  $180^\circ\text{C}$ . to afford compounds of Formula II. The presence of a suitable base such as triethylamine, diisopropyl amine, potassium carbonate, sodium bicarbonate is useful in some cases to improve the yield of the reaction,

[0299] The following compounds were made using this method:

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furylcarbonylmethyl)]piperinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 1)

[0300] To the mixture of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide (prepared by following the method described in U.S. Pat. No. 5,700,799; 0.57 mmol) and 2-chloroacetyl furan (0.13 g, 0.86 mmol) (prepared by following the method described in J. Am. Chem. Soc., 57, 909-912, 1935) in dimethyl formamide (10 mL), potassium carbonate (0.24 g, 1.72 mmol) was added and stirred for 1 hr. The reaction mixture was then diluted with water and extracted with ethyl acetate. The combined organic layers were dried over anhydrous sodium sulphate and evaporated in vacuo. The crude product was purified by column chromatography ( $\text{MeOH}/\text{CHCl}_3$ ) to get the title compound (0.1 g).

[0301]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta\text{ppm}$ : 7.62 (s, 1H), 7.5 (d, 1H), 7.38 (s, 1H), 7.06 (m, 1H), 6.96 (t, 1H), 6.67 (s, 1H), 6.01 (m, 1H), 4.77 (m, 1H), 4.03 (t, 1H), 3.85-3.5 (m, 5H), 3.2 (m, 4H), 2.89 (m, 4H), 2.03 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-thiophenylmethyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 2)

[0302] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 2-chloroacetylthiophene using Method A

[0303]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta\text{ppm}$ : 7.94 (d, 1H), 7.63 (d, 1H), 7.39 (d, 1H), 7.12 (m, 1H), 7.05 (m, 1H), 6.93 (t, 1H), 6.08 (m, 1H), 4.75 (m, 1H), 4.01 (t, 1H), 3.8-3.4 (m, 5H), 3.14 (m, 4H), 2.79 (m, 4H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl{5-(4-chloro-2-nitro)-phenyl}methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 3)

[0304] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-(4-chloro-2-nitro)phenyl-2-chloromethyl-furan using Method A

[0305]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta\text{ppm}$ : 7.68 (m, 2H), 7.55 (d, 1H), 7.44 (d, 1H), 7.02 (m, 1H), 6.92 (t, 1H), 6.62 (d, 1H), 6.38 (d, 1H), 6.07 (t, 1H), 4.77 (m, 1H), 4.01 (t, 1H), 3.9-3.97 (m, 6H), 3.10 (m, 4H), 2.71 (m, 4H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen-(4-bromo-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 4)

[0306] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-bromo-5-nitro-2-chloromethylthiophene (prepared by following the method described in J. Med. Chem. 2000, 43, 2258-2265) using Method A.

[0307]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta\text{ppm}$ : 7.47 (m, 1H), 7.1-6.6 (m, 3H), 6.05 (m, 1H), 4.77 (m, 1H), 4.1-2.5 (m, 4H), 2.03 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl-(3-methyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 5)

[0308] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 3-methyl-5-nitro-2-chloromethylfuran using Method A.

[0309]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta\text{ppm}$ : 7.46 (dd, 1H), 7.18 (s, 1H), 7.04 (dd, 1H), 6.93 (t, 1H), 6.06 (m, 1H), 4.77 (m, 1H), 4.1-3.5 (m, 6H), 3.22 (m, 4H), 2.91 (m, 4H), 2.21 (s, 3H), 2.02 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-(4-cyano-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 6)

[0310] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-cyano-5-nitro-2-chloromethylthiophene using Method A.



[0311]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.44 (m, 1H), 7.2-6.7 (m, 3H), 6.04 (m, 1H), 4.76 (m, 1H), 4.1-2.6 (m, 14H), 2.02 (s, 3H).

[0312]  $M+1=503$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-[1-{2-thiophenyl-(5-nitro)}-1-ethyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide. (Compound No. 100)

[0313] To a mixture of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide (0.65 g, 1.93 mmol) in tetrahydrofuran (20 mL), triethylamine (0.8 mL, 5.8 mmol) was added and the resultant mixture cooled to  $0^\circ\text{C}$ . 5-nitro-2-( $\alpha$ -methylsulfonate)ethylthiophene (0.885 g, 2.9 mmol) dissolved in tetrahydrofuran (10 mL) was added and the reaction mixture stirred at room temperature for 24 hrs. It was then diluted with ethylacetate and washed with saturated sodium bicarbonate solution, water and brine solution. The organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo. The residue was purified by silica gel column chromatography using dichloromethane-methanol as eluents (Yield=0.612 g).

[0314]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ )  $\delta$ ppm: 2.02 (s, 3H), 2.69-2.72 (m, 6H), 3.01-3.06 (q, 2H), 3.12-3.14 (br s, 4H), 3.63-3.77 (m, 3H), 4.00-4.06 (q, 1H), 4.76 (br s, 1H), 6.13 (s, 1H), 6.8-6.81 (d, 1H), 6.93-6.96 (t, 1H), 7.04-7.07 (t, 1H), 7.42-7.46 (dd, 1H), 7.76-7.78 (d, 1H).

#### Preparation of

5-nitro-2-( $\alpha$ -Trifluoromethylsulfonate)ethylthiophene

[0315] (a) 5-nitro-2-( $\alpha$ -hydroxy)ethylthiophene: 5-nitro-2-acetylthiophene (0.85 g, 4.97 mmol; Synthesis, 1992, 849-851) was taken in 25 ml of tetrahydrofuran and cooled to  $0^\circ\text{C}$ . Sodium borohydride (0.19 g, 4.97 mmol) was added to the above, followed by 25 ml of water. The reaction mixture was allowed to come to room temperature and stirring was further continued for about 3 hrs. The reaction mixture was then diluted with ethyl acetate and washed with water and brine solution. The combined organic layers were dried over anhydrous sodium sulphate and then concentrated in vacuo (Yield=652 mg).

[0316]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm: 1.60-1.66 (d, 3H), 2.41 (br s, 1H), 5.11-5.13 (d, 1H), 6.88-6.9 (d, 1H), 7.79-7.81 (d, 1H).

[0317] (b) 5-nitro-2-( $\alpha$ -Trifluoromethylsulfonate)ethylthiophene: 5-nitro-2-( $\alpha$ -hydroxy)ethylthiophene (650 mg, 3.76 mmol) was taken in 10 ml of dichloromethane and cooled to  $0^\circ\text{C}$ . Triflic anhydride (0.95 ml, 5.64 mmol) was added at  $0^\circ\text{C}$  and the reaction mixture was allowed to come to room temperature and stirring was further continued for about 3 hrs. The reaction mixture further diluted with dichloromethane and washed with sodium bicarbonate solution, water and brine solution. The combined organic layers were dried over anhydrous sodium sulphate and then concentrated in vacuo. The crude product obtained was used for the next reaction without further purification (Yield=940 mg).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-[1-{2-furyl-(5-nitro)}-1-ethyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide. (Compound No. 101)

[0318] To a mixture of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide (0.25 g, 0.744 mmol) in tetrahydrofuran (20 mL), triethylamine (0.3 mL, 2.23214 mmol) was added and the resultant mixture was cooled to  $0^\circ\text{C}$ . To it, 5-nitro-2-( $\alpha$ -Trifluoromethylsulfonate)ethylfuran (0.43 g, 1049 mmol) dissolved in tetrahydrofuran (10 mL) was added and the reaction mixture stirred at room temperature for 24 hrs. It was then diluted with ethyl acetate and washed with saturated sodium bicarbonate solution, water and brine solution. The organic layer was dried over sodium sulphate and evaporated in vacuo. The residue was purified by silica gel column chromatography using dichloromethane-methanol as eluents (Yield 0.2 g, m.p.:  $144-46^\circ\text{C}$ ).

[0319]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ )  $\delta$ ppm: 2.015 (s, 3H), 2.68-2.7 (d, 4H), 2.80-2.82 (m, 2H), 2.84-2.89 (t, 2H), 3.07-3.1 (s, 4H), 3.46-3.7 (m, 3H), 4.01 (t, 1H), 4.7 (br s, 1H), 5.29 (s, 1H), 6.05 (br s, 1H), 6.37 (s, 1H), 6.89-6.91 (t, 1H), 7.04-7.07 (d, 1H), 7.4-7.45 (d, 1H).

#### Preparation of

5-nitro-2-( $\alpha$ -Trifluoromethylsulfonate)ethylfuran

[0320] (a) 5-nitro-2-acetylthiophene: 58 ml of acetic anhydride was cooled to  $-30^\circ\text{C}$  and 23.1 ml of fuming  $\text{HNO}_3$  was added to acetic anhydride dropwise at  $-30^\circ\text{C}$ . In another flask, 10 g of 2-acetyl furan was dissolved in 21.6 ml of acetic anhydride and added to the nitration mixture at  $-30^\circ\text{C}$  dropwise. The reaction mixture was stirred at  $-30$  to  $-0^\circ\text{C}$  for about 4 hours and then was poured over ice and neutralized with 40% NaOH solution (up to pH -6). The reaction mixture was then extracted with ethyl acetate (3x100 ml). To the ethyl acetate layer 10 ml of pyridine was added and further kept for 1 hour. This mixture was then washed with saturated citric acid solution, water and brine solution. The combined organic layers were dried over anhydrous sodium sulphate and evaporated in vacuo. The residue was purified by silica gel column chromatography using hexane-ethyl acetate mixture as eluent (Yield: 625 mg).

[0321]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ )  $\delta$ ppm: 2.39 (s, 3H), 7.26d 7.28 (s, 1H), 7.35-7.38 (s, 1H)

[0322] (b) 5-nitro-2-( $\alpha$ -hydroxy)ethylfuran: 5-nitro-2-acetylthiophene (1 g, 6.45 mmol) was taken in 25 ml of tetrahydrofuran and cooled to  $0^\circ\text{C}$ . Sodium borohydride was added to the above, followed by 25 ml of water. The reaction mixture was allowed to come to room temperature and stirring was further continued for about 3 hrs. The reaction mixture was then diluted with ethyl acetate and washed with water and brine solution. The combined organic layers were dried over anhydrous sodium sulphate and then concentrated in vacuo. The crude product obtained was used for the next reaction without further purification (Yield=625 mg).

[0323]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ )  $\delta$ ppm: 1.60 (d, 3H), 4.99 (q, 1H), 6.50-6.51 (d, 1H), 7.27-7.28 (d, 1H).

[0324] (c) 5-nitro-2-( $\alpha$ -trifluoromethylsulfonate)ethylfuran: To a mixture of 5-nitro-2-( $\alpha$ -hydroxy)ethylfuran (400 mg, 2.5477 mmoles) and dichloromethane (10 ml),

triethylamine (0.7 m, 5.0955 m.moles) was added and the reaction mixture cooled to 0° C. Triflic anhydride (0.6 ml, 3.8216 m.moles) was added at 0° C. and then the reaction mixture was allowed to stir at room temperature for another 6 hours. The reaction mixture was further diluted with dichloromethane and washed with sodium bicarbonate solution, water and brine solution dried. The combined organic layers were dried over sodium sulphate and evaporated in vacuo. The crude product obtained was used for the next reaction without further purification (Yield=410 mg).

**[0325]** Method B

**[0326]** General Procedure:

**[0327]** Reductive alkylation of the amine intermediate of Formula VI, with the corresponding heterocyclic aldehydes of the Formula VII, using known reducing agents well known to one of ordinary skill in the art such as sodium triacetoxyborohydride or sodium cyanoborohydride gave the products of Formula I wherein  $W=CH_2$ .

**[0328]** The following compounds were made using this method:

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-chloro)phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 7)

**[0329]** To a mixture of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (1.14 mmol) and 5-(4-chloro)phenyl-2-furfuraldehyde (1.37 mmol) in tetrahydrofuran, freshly activated molecular sieves were added and stirred for 45 min. Then, sodium triacetoxyborohydride (0.29 g, 1.37 mmol) was added and stirred for 1-17 hrs. It was then filtered and filtrate evaporated in vacuo. The crude product was purified by column chromatography (1%, 2% MeOH/CHCl<sub>3</sub>) to get the title compound (0.126 g)

**[0330]** <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.7-7.3 (m, 5H), 7.04 (m, 1H), 6.92 (t, 1H), 6.58 (d, 1H), 6.32 (d, 1H), 5.95 (m, 1H), 4.74 (m, 1H), 4.01 (t, 1H), 3.8-3.5 (m, 5H), 3.11 (m, 4H), 2.74 (m, 4H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 8)

**[0331]** The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-3-furfuraldehyde (prepared by following method described in J. Am. Chem. Soc., 1933, 55, 2903-2909) using Method B.

**[0332]** <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.6-7.3 (m, 3H), 7.07 (m, 1H), 6.92 (t, 1H), 6.06 (m, 1H), 4.76 (m, 1H), 4.41 (m, 1H), 4.0 (m, 2H), 3.8-2.8 (m, 9H), 2.65 (m, 2H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-bromo)phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 9)

**[0333]** The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-(4-bromo)phenyl-2-furfuraldehyde using Method B.

**[0334]** <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.6-7.3 (m, 5H), 7.06 (m, 1H), 6.92 (t, 1H), 6.60 (d, 1H), 6.4 (d, 1H), 6.00 (m, 1H), 4.75 (m, 1H), 4.0 (t, 1H), 3.8-3.5 (m, 5H), 3.2-2.6 (m, 8H), 2.0 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-methyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 10)

**[0335]** The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-methyl-2-furfuraldehyde using Method B.

**[0336]** <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.39 (dd, 1H), 7.03 (m, 1H), 6.92 (t, 1H), 6.11 (d, 1H), 6.02 (m, 1H), 5.9 (d, 1H), 4.76 (m, 1H), 4.00 (t, 1H), 3.8-3.4 (m, 5H), 3.11 (m, 4H), 2.67 (m, 4H) 2.28 (s, 3H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-4-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 11)

**[0337]** The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 1-methyl-4-nitro-pyrrole-2-aldehyde using Method B.

**[0338]** <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.48 (s, 1H), 7.4 (dd, 1H), 7.05 (m, 1H), 6.89 (t, 1H), 6.6 (s, 1H), 6.24 (t, 1H), 4.75 (m, 1H), 4.0 (t, 1H), 3.8-3.5 (m, 6H), 3.45 (s, 2H), 3.02 (m, 4H), 2.59 (m, 4H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 12)

**[0339]** The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 1-methyl-5-nitro-pyrrole-2-aldehyde using Method B.

**[0340]** <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.42 (dd, 1H), 7.16 (d, 1H), 7.05 (m, 1H), 6.9 (t, 1H), 6.1 (d, 1H), 5.97 (m, 1H), 4.75 (m, 1H), 4.04 (m, 4H), 3.8-3.4 (m, 5H), 3.04 (m, 4H), 2.6 (m, 4H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 13)

**[0341]** The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-pyrrole-2-aldehyde (Bull. Soc. Chim. France, 1963, 484-487) using Method B.

**[0342]** <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.42 (dd, 1H), 7.06 (m, 2H), 6.91 (t, 1H), 6.37 (m, 1H), 6.16 (d, 1H), 4.77 (m, 1H), 4.01 (t, 1H), 3.76 (t, 1H), 3.65 (m, 5H), 3.08 (m, 4H), 2.68 (m, 4H), 2.02 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen-(4-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 14)

**[0343]** The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-nitro-2-thiophen-aldehyde using Method B.

[0344]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 8.24 (s, 1H), 7.53 (s, 1H), 7.44 (dd, 1H), 7.06 (d, 1H), 6.93 (t, 1H), 6.14 (t, 1H), 4.76 (m, 1H), 4.2-3.4 (m, 6H), 3.14 (m, 4H), 2.75 (m, 4H), 1.93 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl(5-methoxy)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 15)

[0345] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-methoxy-2-furaldehyde (Khlm. Geterosikl. Soedin, 1982, (6), 747-50) using Method B.

[0346]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.43 (dd, 1H), 7.03 (m, 1H), 6.91 (t, 1H), 6.1 (m, 2H), 5.06 (d, 1H), 4.8 (m, 1H), 3.97 (t, 1H), 3.8-3.4 (m, 8H), 3.08 (m, 4H), 2.66 (m, 4H), 2.01 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl(5-O-(2-nitro-4-fluorophenyl)oxy})methyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 16)

[0347] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-O-(2-nitro-4-fluoro)-phenyloxy-2-furaldehyde (Chem. Pharm. Bull. 28(9), 2846-2849, 1980) using Method B.

[0348]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.8 (d, 1H, Ar—H), 7.7 (d, 1H, Ar—H), 7.1-7.4 (m, 4H, Ar—H), 6.2 (d, 1H, Ar—H), 6.0 (t, 1H, NH), 5.6 (d, 1H, Ar—H), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.4-3.6 (m, 5H,  $\text{CH}_2$ ), 3.1 (m, 4H,  $\text{CH}_2$ ), 2.6 (m, 4H,  $\text{CH}_2$ ), 2.0 (s, 3H,  $\text{CH}_3$ ).

[0349] IR: 1748, 1654  $\text{cm}^{-1}$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl(5-chloro)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 17)

[0350] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-chloro-2-furaldehyde using Method B.

[0351]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.8 (d, 1H, Ar—H), 7.6 (m, 1H, Ar—H), 7.4 (m, 1H, Ar—H), 6.4 (m, 1H, Ar—H), 6.0 (m, 1H, Ar—H), 4.7 (m, 1H, CH), 4.0 (m, 2H,  $\text{CH}_2$ ), 3.8 (m, 4H,  $\text{CH}_2$ ), 3.6 (m, 4H,  $\text{CH}_2$ ), 3.4 (m, 4H,  $\text{CH}_2$ ), 2.0 (s, 3H,  $\text{CH}_3$ ).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(3-furyl(2-nitro)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 18)

[0352] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 2-nitro-3-furaldehyde (J. Org. Chem. 1989, 54, 5094-5100) using Method B.

[0353]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.3-7.5 (m, 2H, Ar—H), 7.1 (d, 1H, Ar—H), 6.9 (t, 1H, Ar—H), 6.8 (d, 1H, Ar—H), 6.0 (t, 1H, NH), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.9 (s, 2H,  $\text{CH}_2$ ), 3.6-3.8 (m, 3H,  $\text{CH}_2$ ), 3.1 (m, 4H,  $\text{CH}_2$ ), 2.8 (m, 4H,  $\text{CH}_2$ ), 2.0 (s, 3H,  $\text{CH}_3$ ).

[0354] IR: 1743, 1654  $\text{cm}^{-1}$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-thiophen-(4-dimethylamino-5-nitro)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 19)

[0355] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-dimethylamino-6-nitro-2-thiophenaldehyde (J. Med. Chem., 2000, 43, 2258-65) using Method B.

[0356]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.44 (dd, 1H), 7.06 (m, 1H), 6.93 (t, 1H), 6.56 (s, 1H), 6.15 (t, 1H), 4.76 (m, 1H), 4.02 (t, 1H), 3.5-3.9 (m, 5H), 3.11 (m, 10H), 2.71 (m, 4H), 2.02 (s, 3H).

[0357]  $M+1=521$ ;  $m.p.=135^\circ\text{C}$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-thiophene-(4-morpholino-5-nitro)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 20)

[0358] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-morpholino-5-nitro-2-thiophenaldehyde (prepared by following the method as described in J. Med. Chem., 2000, 43, 2258-65, wherein instead of dimethylamine hydrochloride, morpholine was used) using Method B.

[0359]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.44 (m, 1H), 7.06 (m, 1H), 6.93 (t, 1H), 6.60 (s, 1H), 5.09 (t, 1H), 4.75 (m, 1H), 3.5-4.1 (m, 10H), 3.39 (m, 4H), 3.11 (m, 4H), 2.73 (m, 4H), 2.02 (s, 3H).

[0360]  $M+1=663$ ;  $m.p.=188-191^\circ\text{C}$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl(5-methylsulphonyl)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 21)

[0361] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-methylsulphonyl-2-furaldehyde (prepared by following the method as described in Chem. Abs. 71:101697d) using Method B.

[0362]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.42 (m, 1H), 7.13 (d, 1H), 7.05 (m, 1H), 6.94 (t, 1H), 6.42 (d, 1H), 6.09 (m, 1H), 4.76 (m, 1H), 4.01 (t, 1H), 3.3-3.8 (m, 5H), 3.17 (s, 3H), 3.09 (m, 4H), 2.7 (m, 4H), 2.04 (s, 3H).

[0363]  $M+1=495$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl(5-(4-nitro)phenyl)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 22)

[0364] The title compound was prepared with (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-(4-nitro)phenyl-2-furaldehyde using Method B.

[0365]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 8.23 (d, 2H), 7.79 (d, 2H), 7.42 (dd, 1H), 7.06 (m, 1H), 6.92 (t, 1H), 6.83 (d, 1H), 6.41

(d, 1H), 6.06 (t, 1H), 4.74 (m, 1H), 3.97 (t, 1H), 3.4-3.48 (m, 5H), 3.12 (m, 4H), 2.75 (m, 4H), 2.08 (s, 3H).

[0366] M+1=538.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl-(5-(3-nitro)-phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 23)

[0367] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-(3-nitro)phenyl-2-furaldehyde using Method B.

[0368] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 8.49 (s, 1H), 8.08 (d, 1H), 7.96 (d, 1H), 7.54 (t, 1H), 7.42 (dd, 1H), 7.04 (m, 1H), 6.94 (m, 1H), 6.76 (d, 1H), 6.39 (d, 1H), 6.02 (t, 1H), 4.75 (m, 1H), 4.01 (t, 1H), 3.9-3.4 (m, 1H), 3.12 (m, 4H), 2.74 (m, 1H), 2.01 (s, 3H).

[0369] M+1=538.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl-(5-(2-nitro)-phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 24)

[0370] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-(2-nitro)phenyl-2-furaldehyde using Method B.

[0371] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.7 (m, 2H), 7.58 (t, 1H), 7.41 (m, 2H), 7.03 (m, 1H), 6.94 (t, 1H), 6.61 (d, 1H), 6.36 (d, 1H), 5.99 (t, 1H), 4.75 (m, 1H), 4.00 (t, 1H), 3.8-3.25 (m, 5H), 3.11 (m, 4H), 2.71 (m, 4H), 2.01 (s, 3H).

[0372] M+1=538.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furyl-4-bromo-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 25)

[0373] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-bromo-5-nitro-2-furaldehyde using Method B.

[0374] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.45 (d, 1H, Ar—H), 7.1 (d, 1H, Ar—H), 6.9 (m, 1H, Ar—H), 6.65 (s, 1H, Ar—H), 6.0 (m, 1H, NH), 4.76 (m, 1H, CH), 4.0 (m, 1H, CH), 3.8-3.6 (m, 6H, CH<sub>2</sub>), 3.1 (m, 4H, CH<sub>2</sub>), 2.8 (m, 4H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furyl-(4-isopropyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 26)

[0375] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-Isopropyl-2-furaldehyde (J. Org. Chem., 1976, 41, 2835-2846) using Method B.

[0376] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.4 (d, 1H, Ar—H), 7.2 (d, 1H, Ar—H), 7.0 (m, 1H, Ar—H), 6.9 (m, 1H, Ar—H),

6.2 (m, 2H, Ar—H, and NH), 4.77 (m, 1H, CH), 4.0 (m, 1H, CH), 3.8-3.6 (m, 6H, CH<sub>2</sub>), 2.8 (m, 4H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furyl-(4-isopropyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 27)

[0377] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-isopropyl-5-nitro-2-furaldehyde using Method B.

[0378] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.45 (d, 1H, Ar—H), 7.1 (m, 1H, Ar—H), 6.9 (m, 1H, Ar—H), 6.5 (s, 1H, Ar—H), 6.0 (m, 1H, NH), 4.77 (m, 1H, CH), 4.5 (m, 1H, CH), 4.0 (m, 3H, CH<sub>2</sub>), 3.8 (m, 3H, CH<sub>2</sub>), 3.2 (m, 4H, CH<sub>2</sub>), 2.8 (m, 4H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-(4-N-(4-t-butoxycarbonyl)piperazinyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 102)

[0379] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-N-(4-t-butoxycarbonyl)piperazinyl-5-nitro-2-thiophenylaldehyde (J. Med. Chem., 2000, 43, 2268-2265, wherein instead of dimethyl amine hydrochloride, 1-(t-butoxycarbonyl)-piperazine was used) using Method B.

[0380] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 1.25-1.33 (s, 9H), 2.023 (s, 3H), 2.724 (s, 4H), 3.105 (s, 4H), 3.36-3.52 (d, 4H), 3.60-5.40 (m, 9H), 4.75 (br s, 1H), 6.0 (br s, 1H), 6.592 (s, 1H), 6.937 (t, 1H), 7.0503 (d, 1H), 7.4 (dd, 1H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-4-N-piperazinyl]-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 103)

[0381] To a mixture of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-(4-N-piperazinyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (0.15 g) in dichloromethane (20 mL) at 0° C. was added trifluoroacetic acid (2 ml). The resultant mixture was allowed to come to room temperature and was further stirred for 3 hours. It was then diluted with ethyl acetate (20 ml) and sodium carbonate (300 mg) was added and the mixture stirred for another for 10 min. The reaction mixture was filtered and the filtrate evaporated in vacuo to give the title compound (Yield: 0.118 g).

[0382] <sup>1</sup>HNMR (CDCl<sub>3</sub>+DMSO) δppm: 1.96 (s, 3H), 2.59 (s, 4H), 2.88 (s, 4H), 3.16 (s, 4H), 3.35-3.36 (br s, 4H), 3.55-3.63 (m, 6H), 4.77 (br s, 1H), 6.68 (s, 1H), 6.97 (s, 1H), 7.07-7.1 (d, 1H), 7.47 (s, 1H), 8.09 (br s, 1H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-(4-N-methyl)piperazinyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 104)

[0383] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-N-(4-methyl)piperazi-

nyl-5-nitro-2-thiophenylaldehyde (prepared by following the method as described in J. Med. Chem., 2000, 43, 2258-2265), wherein 1-methyl-piperazine was used instead of dimethyl amine hydrochloride, using Method B.

[0384] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 2.02 (s, 3H), 2.32 (s, 3H), 2.39-2.57 (d, 4H), 2.65-2.8 (m, 4H), 3.44-3.47 (s, 4H), 3.60 (m, 3H), 3.9-3.95 (t, 2H), 4.05 (t, 1H), 4.77 (bs, 1H), 6.99 (bs, 1H), 6.59 (s, 1H), 6.91-6.97 (t, 1H), 7.05-7.07 (d, 1H), 7.43-7.47 (d, 1H).

[0385] Method C:

[0386] General Procedure:

[0387] Preparation of compound of Formula I wherein W is equal to C=O corresponding acid of Formula VII can be used and the amine of Formula VI can be acylated through activated esters in the presence of condensing agents such as 1,3-dicyclohexylcarbodiimide (DCC) and 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride (EDC), along with 1-hydroxybenzotriazole (HOBT). Other methods of acylation can also be employed.

[0388] The following compounds were used using this method:

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(5-methoxy)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 28)

[0389] To a mixture of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide (1.14 mmol) and 5-methoxy-2-furoic acid (0.16 g, 1.14 mmol) and dry dimethylformamide (10 mL) at 5° C., N-methylmorpholine (0.14 g, 1.37 mmol) and 1-hydroxybenzo-triazole (0.17 g, 1.14 mmol) were added and stirred for 15 min. Next, 1-[3-(dimethylamino)propyl]-3-ethylcarbodiimide hydrochloride (0.22 g, 1.14 mmol) was added to the above. The reaction mixture was allowed to come to room temperature and stirred for further 18 hours. It was then diluted with water and extracted with ethyl acetate (3x20 ml). The organic layers were dried over anhydrous sodium sulphate and evaporated in vacuo. The crude product was purified by column chromatography (3% MeOH/CH<sub>2</sub>Cl<sub>2</sub>) to get 0.37 g of product. The product was then digested with ether and filtered to yield 0.25 g of the title compound.

[0390] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm; 7.43 (d, 1H), 7.04 (m, 2H), 6.92 (t, 1H), 6.03 (m, 1H), 5.31 (m, 1H), 4.76 (m, 1H), 3.91 (m, 7H), 3.8-3.51 (m, 3H), 3.09 (m, 4H), 2.02 (s, 3H),

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-acetamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 29)

[0391] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-acetamido-2-thiophenoic acid using Method C.

[0392] <sup>1</sup>HNMR (CDCl<sub>3</sub>+DMSO) δppm: 10.81 (s, 1H), 7.69-6.60 (m, 6H), 4.75 (m, 1H), 4.01-3.57 (m, 8H), 3.08 (m, 4H), 2.17 (s, 3H), 1.98 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-pyrazolecarbonyl-(4-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 30)

[0393] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-nitro-pyrazole-3-carboxylic acid using Method C.

[0394] <sup>1</sup>HNMR (CDCl<sub>3</sub>+DMSO) δppm: 8.3-6.6 (m, 6H), 4.74 (m, 1H), 4.1-2.1 (m, 12H+DMSO), 1.99 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-pyrazolecarbonyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 31)

[0395] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-pyrazole-8-carboxylic acid using Method C.

[0396] <sup>1</sup>HNMR (CDCl<sub>3</sub>+DMSO) δppm: 8.04 (t, 1H), 7.5 (dd, 1H), 7.13 (m, 2H), 6.9 (t, 1H), 4.78 (m, 1H), 4.1-3.25 (m, 8H), 3.13 (m, 4H+DMSO), 1.97 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-tert-butoxycarboxamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 32)

[0397] The title compound was prepared with (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-tert-butoxycarboxamido-2-thiophenoic acid using Method C.

[0398] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.5-6.75 (m, 4H), 6.46 (m, 1H), 6.16 (t, 1H), 4.76 (m, 1H), 4.2-3.25 (m, 8H), 3.07 (m, 4H), 2.02 (s, 3H), 1.53 (s, 9H).

Preparation of  
5-tert-butoxycarboxamido-2-thiophenoic acid

[0399] (a) Ethyl 5-bis-tert-butoxycarboxamidothiophene-2-carboxylate:

[0400] To a mixture of ethyl 6-amino-thiophene-2-carboxylate (2.06 g, 12 mmol) in dry tetrahydrofuran at 5° C., sodium hydride (60% w/w, 0.58 g) was added and stirred for 10 minutes. Next, di-tert-butoxypropanecarbonate (3.15 g, 14.5 mmol) was added and the reaction mixture stirred for 17 hrs. It was then diluted with ethyl acetate (200 ml) and washed with water. The organic layers were dried over anhydrous sodium sulphate and evaporated in vacuo. The crude product was purified by column chromatography to yield 2.3 g of product.

[0401] <sup>1</sup>HNMR (DMSO) δppm: 7.63 (d, 1H), 6.97 (d, 1H), 4.29 (q, 2H), 1.43 (s, 18H), 1.39 (t, 3H);

[0402] M+1=394.

[0403] (b) 5-tert-butoxycarboxamido-2-thiophenoic acid:

[0404] To ethyl 5-bis-tert-butoxycarboxamido-thiophene-2-carboxylate (0.27 g, 1 mmol) in tetrahydrofuran (15 ml), a solution of lithium hydroxide hydrate (0.1 g, 2.4 mmol) in water (5 mL) was added and the reaction mixture stirred for 24 hours. Another 0.1 g of lithium hydroxide hydrate was

added and the reaction mixture stirred for further 3 days. It was then acidified with saturated citric acid solution to pH=3. The mixture was extracted with ethyl acetate (3×30 ml). The organic layers were washed with water and brine solution, dried over anhydrous sodium sulphate and evaporated in vacuo. The product was digested with hexanes and filtered. The filtered solid was further digested with ether and filtered again. The filtrate was evaporated to get the title compound.

[0405] <sup>1</sup>HNMR (DMSO) δppm: 12.16 (br, 1H), 10.91 (s, 1H), 7.46 (d, 1H), 6.52 (d, 1H), 1.48 (s, 9H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-trifluoroacetamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 33)

[0406] A mixture of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl(5-tert-butoxycarboxamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Compound No. 32) (0.25 g) and 20% trifluoroacetic acid (10 ml) in dichloromethane was kept at 4-10° C. for 24 hours. The reaction mixture was then evaporated in vacuo and cooled to get the title compound.

[0407] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 12.96 (s, 1H), 8.25 (m, 1H), 7.5-6.8 (m, 5H), 4.7 (m, 1H), 3.03 (m, 4H), 1.83 (m, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl(5-amino)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 34)

[0408] Compound No. 32 was treated with 20% trifluoroacetic acid in dichloromethane for 3 hrs and evaporated. The residue was then taken in acetone and treated with potassium carbonate (10 eq.), stirred for 15 min and filtered. Filtrate was evaporated in vacuo. The residue was digested with ether and decanted to give the title compound along with potassium salt of trifluoroacetic acid.

[0409] <sup>1</sup>HNMR (DMSO) δppm : 8.26 (m, 1H), 7.47 (m, 1H), 7.3-6.8 (m, 3H), 6.29 (s, 2H), 5.83 (m, 1H), 4.7 (m, 1H), 4.05 (m, 1H), 3.7 (m, 4H), 2.9 (m, 4H), 1.8 (m, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl{5-(4-chloro-2-nitro)-phenyl}}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 35)

[0410] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-(4-chloro-2-nitro)-2-furoic acid using Method C

[0411] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 8-6.5 (m, 9H+CDCl<sub>3</sub>), 4.78 (m, 1H), 4.1-3.5 (m, 8H), 3.13 (m, 4H), 2.0 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(3-methyl)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 36)

[0412] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 3-methyl-2-furoic acid using Method C.

[0413] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.49 (dd, 1H), 7.34 (s, 1H), 7.06 (m, 1H), 6.97 (t, 1H), 6.34 (s, 1H), 6.06 (m, 1H), 4.76 (m, 1H), 4.1-3.75 (m, 8H), 3.11 (m, 4H), 2.29 (s, 3H), 2.02 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl-(3-methyl-5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 37)

[0414] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 3-methyl-5-nitro-2-furoic acid using Method C.

[0415] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.55 (dd, 1H), 7.22 (s, 2H), 7.1 (dd, 1H), 6.23 (t, 1H), 4.79 (m, 1H), 4.1-3.2 (m, 12H), 2.36 (s, 3H), 2.03 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(4-dimethylamino-5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide. (Compound No. 38)

[0416] The title compound was prepared reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 4-dimethylamino-5-nitro-2-thiophenoic acid using Method C

[0417] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.45 (m, 1H), 7.09 (m, 1H), 6.92 (m, 2H), 5.99 (m, 1H), 4.76 (m, 1H), 4.02 (t, 1H), 3.9-3.4 (m, 9H), 3.1 (m, 10H), 2.04 (s, 3H).

[0418] M+1=535.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-Furoyl-(5-nitro)acrylic}piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide. (Compound No. 39)

[0419] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoylacrylic acid (J. Med. Chem., 16, 72-78, 1973) using Method C.

[0420] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.6 (d, 1H, Ar—H), 7.4 (m, 1H, Ar—H), 7.2 (m, 3H, Ar—H), 6.8 (d, 1H, Ar—H), 6.0 (m, 1H, NH), 4.7 (m, 1H, CH), 4.0 (m, 4H, CH<sub>2</sub>), 3.8 (m, 4H, CH<sub>2</sub>), 3.4 (m, 4H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-nitro)acrylic}piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide. (Compound No. 40)

[0421] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 2-thiophenoyl-5-nitroacrylic acid using Method C.

[0422] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm 7.9 (d, 1H, Ar—H), 7.8 (d, 1H, Ar—H), 7.6 (d, 1H, Ar—H), 7.2 (m, 1H, Ar—H), 7.0 (m, 2H, Ar—H), 6.9 (d, 1H, Ar—H), 6.0 (m, 1H, NH), 4.78 (m, 1H, CH), 3.8-3.6 (m, 8H, CH<sub>2</sub>), 3.2 (m, 4H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>).

Preparation of Iodide (S)-N-[[3-[3-Fluoro-4-[N-1-[4-N-methyl-4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 41)

[0423] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-[4-N-methyl-4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and Iodomethane.

[0424] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 8.1 (m, 1H, NH), 8.0 (m, 1H, Ar—H), 7.5 (m, 1H, Ar—H), 7.4 (d, 1H, Ar—H), 7.2 (m, 2H, Ar—H), 5.0 (m, 2H, CH<sub>2</sub>), 4.7 (m, 1H, CH<sub>2</sub>), 4.1 (t, 1H, CH), 3.3-3.6 (m, 3H, CH<sub>2</sub>), 3.2 (broad, s, CH<sub>3</sub>), 3.0 (m, 4H, CH<sub>2</sub>) 2.8 (m, 4H, CH<sub>2</sub>), 1.9 (s, 3H, CH<sub>3</sub>).

#### EXAMPLE 2

Analogues of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide (Core II)

Preparation of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide (Core II)

[0425] (a) (S)-N-[[3-[3-Fluoro-4-[N-1-(4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide:

[0426] To a mixture of (S)-N-[[3-[3-Fluoro-4-[N-1-(4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]amine (1 g, 2.5 mmol; U.S. Pat. No. 5,700,799) and dry dimethylformamide (20 mL) at 5° C. were added fluoroacetic acid (0.2 g, 2.5 mmol), N-methylmorpholine (0.33 g, 3 mmol) and 1-hydroxybenzotriazole (0.38 g, 2.8 mmol), and stirred the reaction mixture for 15 min. Then, 1-(3-dimethylaminopropyl)-3-ethycarbodimide hydrochloride (EDC) (0.48 g, 2.5 mmol) was added to the above, and it was further stirred for 20 hrs at room temperature. Water was added to the reaction mixture and it was then extracted with ethyl acetate. The combined organic layer were dried over anhydrous sodium sulphate and evaporated in vacuo. The crude product was purified by column chromatography to yield 0.38 g of product.

[0427] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.45 (dd, 1H), 7.08 (m, 1H), 6.91 (m, 2H), 4.8 (d and m, 3H), 4.06 (t, 1H), 3.9-3.3 (m, 8H), 2.98 (m, 4H), 1.48 (s, 9H).

[0428] M+1=455.

[0429] (b) (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide

[0430] To a mixture of (S)-N-[[3-[3-Fluoro-4-(N-1-(4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide (0.25 g, 0.55 mmol) and dichloromethane (4 mL), trifluoroacetic acid (1 mL) was added and stirred for 2 hrs. The solvent was evaporated and to the reaction mixture was added acetone (10 mL), and potassium carbonate (0.5 g). This was further stirred for 15 min. The separated solid was filtered and the filtrate was evaporated in vacuo. The residue was used as such in subsequent step without further purification.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide. (Compound No. 42)

[0431] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide and 5-nitro-2-furaldehyde using Method B.

[0432] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.5-6.5 (m, 6H), 5-4.6 (m, 3H), 4.1-3.5 (m, 6H), 3.08 (m, 4H), 2.72 (m, 4H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide. (Compound No. 43)

[0433] The title compound was prepared with (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide and 5-nitro-2-thiophenaldhyde using Method B.

[0434] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.81 (d, 1H), 7.43 (dd, 1H), 7.06 (m, 1H), 6.94 (m, 2H), 6.81 (m, 1H), 4.5-5 (m, 3H), 4.2-3.5 (m, 6H), 3.13 (s, 4H), 2.77 (s, 4H).

#### EXAMPLE 3

Analogues of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide (Core III)

[0435] Preparation of (S)-N-H3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide (Core III) was similar to the method used for the synthesis of (S)-N-[[3-[3-Fluoro-4-[N-1-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide (Core II) except using difluoroacetic acid instead of fluoroacetic acid.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide. (Compound No. 44)

[0436] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide and 5-nitro-2-thiophenaldhyde using Method B.

[0437] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.8 (d, 1H), 7.42 (dd, 1H), 7.05 (m, 1H), 6.9 (m, 3H), 5.93 (t, 1H), 4.8 (m, 1H), 4.08 (t, 1H), 3.9-3.5 (m, 6H), 3.12 (m, 4H), 2.73 (m, 4H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide. (Compound No. 45)

[0438] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide and 5-nitro-2-furaldehyde using Method B.

[0439] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.5-6.75 (N, 5H+CHCl<sub>3</sub> in CDCl<sub>3</sub>), 6.51 (m, 1H), 5.94 (t, 1H), 4.81 (m, 1H), 4.2-3.3 (m, 6H), 3.1 (m, 4H), 2.7 (m, 4H).

## EXAMPLE 4

Analogues of (S)-N-[[3-[3-Fluoro-4-[4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]-methyl]monochloroacetamide (Core IV)

[0440] Preparation of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)-phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide (Core IV) was similar to the synthesis of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)-phenyl]]-2-oxo-5-oxazolidinyl]-methyl]fluoroacetamide (core II) using chloroacetic acid instead of fluoroacetic acid.

Preparation of (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide. (Compound No. 46)

[0441] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4[N-1]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide and 5-nitro-2-furaldehyde using Method B.

[0442] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.6 (d, 2H, Ar—H), 6.8 (7.3 (m, 4H, Ar—H), 6.6 (broad s, 1H, Ar—H), 4.7 (m, 1H, CH), 4.0 (m, 3H, CH<sub>2</sub>Cl, CH) 3.8 (m, 5H, CH<sub>2</sub>) 3.4 (m, 4H, CH<sub>2</sub>), 2.8 (m, 4H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>).

[0443] IR: 1749, 1678 cm<sup>-1</sup>.

Preparation of (S)-N-[[3-[3-Fluoro-4[N-1[4-{2-thiophenyl(5-nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide. (Compound No. 47)

[0444] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4[N-1-piperazinyl]-phenyl]2-oxo-5-oxazolidinyl]methyl]monochloroacetamide and 5-nitro-2-thiophene aldehyde using Method B.

[0445] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.8 (d, 1H, Ar—H), 7.4 (d, 1H, Ar—H), 7.0 (m, 2H, Ar—H), 6.9 (m, 2H, Ar—H), 4.79 (m, 1H, CH) 4.0 (m, 3H, CH<sub>2</sub>), 3.6-3.8 (m, 5H, CH<sub>2</sub>), 3.2 (m, 2H, CH<sub>2</sub>), 2.8 (m, 2H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>).

Preparation of (S)-N-[[3-[3-Fluoro-4[N-1[4-{2-thiophenyl(4-bromo-5-nitro)methyl]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide. (Compound No. 48)

[0446] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4[N-1-piperazinyl]-phenyl]2-oxo-5-oxazolidinyl]methyl]monochloroacetamide and 4-bromo-5-nitro-2-thiophene aldehyde using Method B.

[0447] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.46 (d, 1H, Ar—H), 7.0 (m, 2H, Ar—H), 6.9 (m, 2H, Ar—H and NH), 4.79 (m, 1H, CH), 4.1 (m, 3H, CH<sub>2</sub>), 3.8 (m, 5H, CH<sub>2</sub>), 3.2 (m, 4H, CH<sub>2</sub>), 2.8 (m, 4H, CH<sub>2</sub>).

## EXAMPLE 5

Analogues of (S)-N-[[3-[3-Fluoro-4(N-1-piperazinyl)-phenyl]2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide (Core V)

[0448] Preparation of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide (Core V) was similar to the synthesis of (S)-N-

[[3-[3-Fluoro-4-(N-1-piperazinyl)-phenyl]-2-oxo-5-oxazolidinyl]-methyl]-fluoroacetamide (core II) except using 2-chloropropionic acid instead of fluoroacetic acid.

Preparation of (S)-N-[[3-[3-Fluoro-4[N-1[4-{2-thiophenyl(5-nitro)methyl}]piperazinyl]-phenyl]2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide. (Compound No. 49)

[0449] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4(N-1-piperazinyl)-phenyl]2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide and 5-nitro-2-thiophene aldehyde using Method B.

[0450] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.8 (d, 1H, Ar—H), 7.4 (d, 1H, Ar—H), 7.1 (m, 2H, Ar—H), 6.9 (m, 2H, Ar—H, NH), 4.8 (m, 1H, CH), 4.4 (m, 1H, CH), 4.0 (m, 1H, CH), 3.8-3.6 (m, 5H, CH<sub>2</sub>), 3.2 (m, 2H, CH<sub>2</sub>), 2.8 (m, 2H, CH<sub>2</sub>), 1.8 (d, 3H, CH<sub>3</sub>).

[0451] IR 1752, 1658 cm<sup>-1</sup>.

Preparation of (S)-N-[[3-[3-Fluoro-4[N-1[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide. (Compound No. 50)

[0452] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4[N-1-piperazinyl]-phenyl]2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide and 5-nitro-2-fural using Method B.

[0453] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.6 (d, 1H, Ar—H), 7.4 (d, 2H, Ar—H, NH), 7.1 (m, 2H, Ar—H), 6.9 (m, 1H, NH), 6.6 (broad s, 1H, Ar—H), 4.8 (m, 1H, CH), 4.4 (m, 1H, CH), 4.0 (m, 1H, CH), 3.8-3.6 (m, 5H, CH<sub>2</sub>), 3.2 (m, 2H, CH<sub>2</sub>), 2.8 (m, 2H, CH<sub>2</sub>), 1.8 (d, 3H, CH<sub>3</sub>).

[0454] IR 1745, 1663 cm<sup>-1</sup>.

Preparation of (S)-N-[[3-[3-Fluoro-4[N-1[4-{2-thiophenyl(4-bromo-5-nitro)methyl]piperazinyl]-phenyl]2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide. (Compound No. 51)

[0455] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4[N-1-piperazinyl]-phenyl]2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide and 4-bromo-5-nitro-2-thiophene carboxaldehyde using Method B.

[0456] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.46 (d, 1H, Ar—H), 7.05-6.9 (m, 3H, Ar—H), 4.78 (m, 1H, CH), 4.4 (m, 1H, CH), 4.0 (m, 1H, CH), 3.8 (m, 4H, CH<sub>2</sub>), 3.6 (m, 2H, CH), 3.11 (m, 4H, CH<sub>2</sub>), 2.75 (m, 4H, CH<sub>2</sub>), 1.8 (m, 3H, CH<sub>3</sub>).

## EXAMPLE 6

Analogues of (S)-N-[[3-[3-Fluoro-4-(N-1-homopiperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide.

Preparation of (S)-N-[[3-[3-Fluoro-4[N-1[4-{2-furyl(5-nitro)methyl}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 52)

[0457] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-homopiperazinyl)-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-chloromethylfuran using Method A.



[0458] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.43 (d, 1H), 7.25-6.75 (m, 2H), 6.58 (s, 1H), 6.15 (m, 1H), 4.81 (m, 1H), 4.25-3.0 (m, 10H), 2.9 (m, 4H), 2.1 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-{4-(3-furoyl)}homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 53)

[0459] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-homopiperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 3-furoic acid using Method C.

[0460] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.8-7.25 (m, 3H+CHCl<sub>3</sub> in CDCl<sub>3</sub>), 7.05 (m, 1H), 6.93 (t, 1H), 6.56 (m, 1H), 6.11 (m, 1H), 4.8 (m, 1H), 4.2-3.1 (m, 12H), 2.07 (m, 5H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-{4-(2-thiophenyl-(5-nitro))}homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 54)

[0461] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-homopiperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-thiophenoic acid using Method C.

[0462] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.79 (m, 1H), 7.4 (m, 1H), 7.01 (m, 2H), 6.88 (t, 1H), 6.12 (m, 1H), 4.77 (m, 1H), 4.1-3.25 (m, 12H), 2.03 (s, 5H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-{4-(2-furoyl-(5-nitro))}homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 55)

[0463] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(N-1-homopiperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoic acid using Method C.

[0464] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.5-6.75 (N, 5H+CHCl<sub>3</sub> in CDCl<sub>3</sub>), 5.99 (m, 1H), 4.76 (m, 1H), 4.1-3.25 (m, 12H), 2.2 (m, 2H), 2.03 (s, 3H).

#### EXAMPLE 7

Analogues of (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0465] (a) Preparation of 2-methyl-4-tert-butoxycarbonylpiperazine.

[0466] To a solution of 2-methylpiperazine (5 g, 0.05 mol) in water (30 mL) and tetrahydrofuran (60 mL), tert-butoxydicarbonate (4.35 g, 0.02 mol) were added and stirred for 2 days. The reaction mixture was subjected to vacuum until all the tetrahydrofuran was removed. The aqueous phase was then extracted with ethyl acetate (3×250 mL). The combined organic layer were washed with saturated sodium chloride solution, dried over anhydrous sodium sulphate and evaporated in vacuo to yield 3.2 g of the title compound.

[0467] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 3.92 (br s, 2H), 2.96 (dd, 1H), 2.71 (m, 3H), 2.39 (m, 1H), 1.46 (s, 9H), 1.03 (d, 3H).

[0468] M+1=201.

[0469] (b) Preparation of 1-(2-fluoro-4-nitrophenyl)-2-methyl-4-tert-butoxycarbonylpiperazine

[0470] To a mixture of 2-methyl-4-tert-butoxycarbonylpiperazine (A, 1 g, 0.005 mol) and DMSO (20 mL), 3,4-difluornitrobenzene (0.79 g, 0.005 mol), and potassium carbonate (3.45 g, 0.025 mol), were added and the reaction mixture heated to 120° C. for 8 hrs. It was then diluted with ethyl acetate and washed with water (3×) and brine solution. Combined organic layer were dried over anhydrous sodium sulphate and evaporated in vacuo to get a semisolid. This was further purified by column chromatography using 6-10% Hexane ethyl acetate as eluent to yield 0.98 g compound.

[0471] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.93 (m, 2H), 6.89 (t, 1H), 3.98 (m, 2H), 3.8 (d, 1H), 3.4 (m, 2H), 3.15 (m, 2H), 1.49 (s, 9H), 1.1 (d, 3H).

[0472] (c) Preparation of 3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]-aniline.

[0473] To a solution of 1-(2-fluoro-4-nitrophenyl)-2-methyl-4-tert-butoxycarbonylpiperazine (B, 23 g) and methanol (100 mL), 10% palladium/carbon (5 g) was added and shaken in a Parr hydrogenation apparatus under 40 psi of hydrogen gas for 3 hrs. Then the reaction mixture was filtered over celite and the filtrate evaporated in vacuo to yield 17.2 g of the final product.

[0474] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 6.88 (t, 1H), 6.4 (m, 2H), 4.2-2.75 (m, 9H), 1.46 (s, 9H), 0.85 (d, 3H).

[0475] M+1=311.

[0476] (d) Preparation of N-Benzyloxycarbonyl-3-fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]-aniline.

[0477] To a mixture of 3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]aniline (C, 17 g, 0.055 mol) and THF (200 mL) at 5° C., sodium bicarbonate (23 g, 0.274 mol), was added. Benzylchloroformate (11.22 g, 0.066 mol) was added dropwise to the above. The reaction mixture was allowed to come to room temperature and was further stirred for 18 hrs. It was then filtered and evaporated in vacuo. The residue was dissolved in ethyl acetate and washed with saturated sodium bicarbonate solution, water and brine water. The combined organic layer were dried over anhydrous sodium sulphate and evaporated in vacuo to give 27 g of final product.

[0478] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.33 (m, 6H), 6.97 (m, 2H), 6.78 (m, 1H), 5.17 (s, 2H), 3.8-2.7 (m, 7H), 1.47 (s, 9H), 0.88 (d, 3H).

[0479] M+444, M+2=445.

[0480] (e) Preparation of (R)-[N-3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methanol

[0481] To a solution of N-Benzyloxycarbonyl-3-fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]-aniline (D, 25 g, 0.0056 mol) in dry tetrahydrofuran (150 mL), at 78° C., butyl lithium (49.2 mL, 15% sol. In hexane, 0.112 mol) was added under positive pressure of nitrogen. The reaction mixture was stirred at -78° C. for 1.5 hrs. R-glycidyl butyrate (9.71 g, 0.067 mol) was added to the

above and the reaction mixture was stirred at  $-78^{\circ}\text{C}$ . for 1 hr further the reaction mixture was allowed to come to room temperature and stirred for further 18 hrs. 100 mL of saturated ammonium chloride solution was added to the above and the reaction mixture extracted with ethyl acetate. The combined organic layers was washed with water and brine solution, dried over anhydrous sodium sulphate and evaporated in vacuo. The crude product was purified by column chromatography using 3% (MeOH/ $\text{CHCl}_3$ ) as eluent to yield 8.8 g of final product.

[0482]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.33 (m, 1H), 7.16 (m, 1H), 6.99 (t, 1H), 4.75 (m, 1H), 4.1-3.75 (m, 1H), 1.49 (s, 9H), 0.92 (d, 3H).

[0483]  $M+1=410$ .

[0484] (f) Preparation of (R)-[N-[3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl methanesulfonate.

[0485] To a solution of (R)-[N-[3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methanol (E, 6.5 g, 0.016 mol) in dichloromethane (200 mL)  $5^{\circ}\text{C}$ ., triethylamine (2.4 g, 0.024 mol) and methanesulfonylchloride (2.66 g, 0.024 mol) were added and the reaction mixture was stirred for 17 hr. The reaction mixture was then diluted with dichloromethane and washed with saturated sodium bicarbonate solution and brine water. The combined organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo to yield 6.5 g of product.

[0486]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.38 (m, 2H), 7.11 (m, 1H), 4.91 (m, 1H), 4.75-2.5 (m, 14H), 1.48 (s, 9H), 0.76 (m, 3H).

[0487]  $M+1=488$ .

[0488] (g) Preparation of (R)-[N-[3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methylazide.

[0489] To a solution of (R)-[N-[3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl methanesulfonate compound (F, 6.5 g, 0.013 mol) in dimethylformamide (200 mL), sodium azide (4.33 g, 0.067 mol) was added and the reaction mixture heated to  $80^{\circ}\text{C}$ . for 7 hrs. The solid was filtered off and the filtrate evaporated in vacuo. The residue was dissolved in chloroform and washed with water and brine solution. The combined organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo to yield 6 g of the product.

[0490]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.38 (m, 1H), 7.13 (m, 1H), 7.01 (m, 1H), 4.77 (m, 1H), 4.25-3 (m, 11H), 1.47 (s, 9H), 0.76 (d, 3H).

[0491] (h) Preparation of (S)-[N-3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methylamine.

[0492] To a solution of (R)-[N-3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methylazide (G, 6 g) in methanol (100 mL), 10% palladium/carbon (0.6 g) was added and the reaction mixture shaken in a Parr hydrogenation apparatus under 40 psi hydrogen pressure for 9 hrs. The reaction was filtered over celite and the filtrate evaporated in vacuo to yield 5 g

of product. The crude product was used in further next reaction without further purification.

[0493]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.44 (m, 1H), 7.14 (m, 1H), 7.00 (m, 1H), 4.67 (m, 1H), 4.25-2.75 (m, 11H), 1.48 (s, 9H), 0.79 (d, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 56)

[0494] To a solution of (S)-[N-[3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methylamine (H, 5 g, 0.0122 mol) in dichloromethane (150 mL), pyridine (1.94 g, 0.025 mol) and acetic anhydride (2.5 g, 0.025 mol) were added and the reaction mixture was stirred at room temperature for 17 hrs. The reaction mixture was diluted with dichloromethane and washed with saturated sodium bicarbonate solution and brine water. The combined organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo. The residue obtained was purified by column chromatography to yield 3.5 g of final product.

[0495]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ ) ppm: 7.4 (d, 1H), 7.07 (d, 1H), 6.99 (t, 1H), 6.18 (m, 1H), 4.76 (m, 1H), 4.06 (t, 1H), 3.9-2.6 (m, 10H), 2.01 (s, 3H), 0.89 (d, 3H).

[0496] HPLC: 84% purity.

[0497] (j) Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0498] To a solution of (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl-4-tert-butoxycarbonyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (I, 0.5 g, 1.11 mmol) in dichloromethane (8 mL), trifluoroacetic acid (2 mL) was added and stirred for 2 hrs. The reaction mixture was then evaporated and dried in vacuo. The residue was taken in acetone (10 mL), potassium carbonate (0.78 g, 5.55 mmol) was added to it and stirred for 15 minutes. Then the reaction mixture was filtered and the filtrate evaporated in vacuo to yield the product in quantitative yield. This product was used as such in next step without further characterization.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl-4-{2-thiophen-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 57)

[0499] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-thiophene aldehyde using Method B.

[0500]  $^1\text{HNMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.8 (s, 1H), 7.39 (dd, 1H), 7.06 (m, 2H), 6.89 (m, 1H), 6.02 (m, 1H), 4.76 (m, 1H), 4.03 (t, 1H), 3.8-2.25 (m, 12H), 2.02 (s, 3H), 0.96 (d, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl-4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 58)

[0501] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furaldehyde using Method B.

[0502] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.6-6.8 (m, 4H), 6.5 (s, 1H), 6.06 (m, 1H), 4.76 (m, 1H), 4.02 (t, 1H), 4.8-2.25 (m, 12H), 2.0 (s, 3H), 0.92 (d, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-[N-1-[2-methyl-4-{2-furoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 59)

[0503] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoic acid using Method C.

[0504] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.7-6.8 (m, 5H+CHCl<sub>3</sub>), 6.16 (m, 1H), 4.79 (m, 1H), 4.2-2.8 (m, 11H), 2.03 (s, 3H), 1.00 (d, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-[N-1-[2-ethyl-4-{2-thiophenoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 60)

[0505] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-(2-methyl)piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-thiophenoic acid using Method C.

[0506] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.84 (d, 1H), 7.47 (dd, 1H), 7.21 (d, 1H), 7.11 (d, 1H), 7.04 (t, 1H), 5.97 (m, 1H), 4.75 (m, 1H), 4.2-2.75 (m, 11H), 2.02 (s, 3H), 0.96 (d, 3H).

#### EXAMPLE 8

Analogues of (S)-N-[[3-[3-Fluoro-4-[N-1-{2,6-dimethyl}-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core VIII)

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furoyl-}]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 61)

[0507] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-[2,6-methyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 2-furoyl chloride using Method A.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2furyl-(5-formyl)methyl-}]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 62)

[0508] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-[2,6-dimethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-formyl-2-chloromethylfuran using Method A.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(5-nitro)methyl-}]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 63)

[0509] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-[2,6-dimethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-furaldehyde using Method B.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(5-hydroxymethyl)methyl-}]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 64)

[0510] The title compound was prepared with (S)-N-[[3-[3-fluoro-4-[N-1-[2,6-dimethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-hydroxymethyl furan 2-carboxaldehyde using Method B.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl(aldoxime)methyl-}]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 65)

[0511] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-aldoxime-2-chloromethylfuran using Method A.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-diethyl-4-(2thienylacetyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 66)

[0512] The title compound was prepared reacting (S)-N-[[3-[3-fluoro-4-[N-1-[2,6-dimethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and thiophene-2-acetyl chloride using Method A.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl-(5-cyano)methyl-}]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 67)

[0513] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-cyano-2-chloromethylfuran using Method A

#### EXAMPLE 9

Analogues of (S)-N-[[3-[3-Fluoro-4-[N-1-{3-methyl-}piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core IX)

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-thiophenacetyl-}]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 68)

[0514] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-[3-methyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and thiophene-2-acetyl chloride using Method A.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[3-dimethyl-4-{2-furoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 69)

[0515] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-[3-methyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro furan 2-carboxaldehyde using Method B.

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-thienoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 70)

[0516] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-[3-methyl]piperazinyl]phenyl]-2-

oxo-5-oxazolidinyl)methyl]acetamide and 5-nitrothiophene-2-carboxaldehyde using Method B

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-methyl-2-furyl-(5-formyl)methyl}]-piperazinyl]phenyl]-2-oxo-5-oxazolidinyl)methyl]acetamide. (Compound No. 71)

[0517] The title compound was prepared by reacting (S)-N-[[3-[3-fluoro-4-[N-1-[3-methyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl)methyl]acetamide and 5-formyl-2-chloromethylfuran using Method A Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-acetyl-N-2-Furyl-(5-nitro)methyl}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl)methyl]acetamide. (Compound No. 72)

[0518] The title compound was prepared by acetylation of (S)-N-[[3-[3-Fluoro-4-[4-{N-2-furyl-(5-nitro)methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl)methyl]acetamide with acetic anhydride and pyridine.

[0519] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.45 (d, 1H), 7.28, 6.96 (m, 3H), 6.52 (bs, 1H), 6.00 (bs, 1H), 4.77 (bs, 1H), 4.57 (s, 2H), 4.07-3.43 (m, 5H), 2.80 (t, 2H), 2.49 (s, 3H), 2.04 (s, 5H), 1.91-1.87 (m, 3H).

#### EXAMPLE 10

Analogues of (S)-N-[[3-[3-Fluoro-4-[4-{3-methyl-4-(N-methyl-)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl)methyl]acetamide (Core X)

Preparation of (S)-N-{3-[4-[3-methyl,4-(N-methyl)aminopiperidin-1-yl]-3-fluorophenyl]-2-oxo-5-oxazolidin-5-yl}methyl acetamide.

[0520] N-(2-methylmethacryl)benzylamine: To a solution of benzylamine (43.6 ml, 406.8 mmol) in methanol (50 ml) was added methyl methacrylate (64.52 ml, 644.4 mmol). The reaction mixture was refluxed for 32 hours. Solvent was evaporated under reduced pressure and the residue was purified through column chromatography using hexane:ethylacetate (5%) as eluent to give 67 gm of the desired product as oil.

[0521] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 7.248 (s, 6H), 3.776 (s, 2H), 3.674 (s, 3H), 2.834 (m, 1H), 2.615&2.686 (m, 2H), 1.676 (d, 3H).

[0522] N,N'-[2-Carboethoxyethyl,methyl-(2-methyl)propionate]benzylamine: A mixture of N-(2-methylmethacryl)benzylamine methacrylate derivative (64 gm, 309.1 mmol) and ethylacrylate (35.6 gm, 352.4 mmol) was heated at 80° C. for 12 hours. The reaction mixture was heated for further 5 hours. Ethylacrylate was removed under reduced pressure and the residue was purified by column chromatography using hexane:ethylacetate (1%) as eluent (Yield-63 gms)

[0523] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 7.34-7.22 (bs, 5H), 4.07 (dd, 2H) 3.65 (s, 3H), 3.52 (q, 2H), 2.79-2.66 (m, 4H), 2.45-2.36 (m, 3H), 1.25 (t, 3H).

[0524] N-Benzyl-4-methylpiperidin-4-one: To a hot solution of benzene (590 ml) was added sodium hydride (20 gms, mmol). After 5 minutes ethyl alcohol (0.3 ml) was added. The reaction mixture was heated at 80-90° C. for 10 to 15 min then benzylamine derivative (59 gms) was added dropwise. Reaction mixture was then refluxed for 5 hrs. at 90° C.

[0525] Reaction mixture was cooled down to room temperature and water was added slowly to decompose sodium hydride followed by addition of conc. hydrochloric acid. The aqueous layer was then separated and refluxed at 100° C. for 6.8 hours. The aqueous solution was then added to solid potassium carbonate and extracted with ethyl acetate. Ethyl acetate layer was washed with water and dried over anhydrous sodium sulphate and solvent was removed to give 8.5 gms of product.

[0526] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 7.36-7.26 (bs, 5H), 3.60 (s, 2H), 3.11-3.05 (m, 2H), 2.66-2.58 (m, 2H), 2.45-2.37 (m, 2H), 0.99 (d, 3H).

[0527] N-Benzyl 3-methylpiperidine-4-oxime: To a solution of N-benzylpiperidin-4-one derivative 18.5 gms) in pyridine (75ml) was added hydroxylamine hydrochloride (6.93 gms). The reaction mixture was stirred at room temperature for 1 hour then at 60° C. for 2 hr. Pyridine was removed under reduced pressure and the residue was digested with isopropyl alcohol and filtered. Yield-17.5 gms as white solid.

[0528] m.p. 221° C.

[0529] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 13.50 (bs, 1H), 7.60-7.47 (m, 5H), 4.15 (s, 2H), 3.54-3.43 (m, 2H), 2.79-2.43 (m, 4H), 1.08 (d, 3H).

[0530] N-Benzyl-3-methyl-4-aminopiperidine: To a solution of the oxime derivative (35 gm) in methanolic ammonia (250 ml) was added Raney Ni (3.5 gms). The whole reaction mixture was hydrogenated at 45 psi for 6 hours. The reaction mixture was filtered through celite bed and washed with methanol. Solvent was removed to give 25 gms of product.

[0531] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 7.43-7.31 (bs, 5H), 3.74 (bs, 2H), 3.61 (s, 2H), 2.44-2.08 (m, 7H), 0.99 (bs, 3H).

[0532] N-Benzyl-3-methyl-4-(t-butyloxycarbonyl)aminopiperidine: To a solution of 4-aminopiperidine derivative (8.0 gm, 39.2 mmol) in dichloromethane (75 ml) was added triethylamine (6.2 ml) followed by addition of BOC-anhydride (dropwise, 10.7 ml, mmol) at 0° C. The reaction mixture was then stirred overnight at room temperature. The reaction mixture was washed with water 3 to 4 times. The organic layer was then separated and dried over anhydrous sodium sulphate and evaporated in vacuo. The residue was then dried to give desired product in 10.7 gms as oil.

[0533] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 7.35 (s, 6H), 2.85 (s, 2H), 2.85-2.82 (m, 2H), 2.40-2.02 (bs, 2H), 2.06-1.90 (m, 4H), 1.44 (s, 9H), 0.90 (d, 3H).

[0534] N-(t-butyloxy)amino-3-methylpiperidine: To a solution of N-benzylpiperidine derivative (22 gms, 72.3 mmol) in methanol (100 ml) was added dry ammonium formate (6.8 gms, 108.5 mmol) and Pd/C (10%, 3.3 gm). The reaction mixture was then refluxed for 6 to 8 hr. at 80° C. The reaction mixture was filtered through celite bed using methanol. Solvent was evaporated under reduced pressure. Residue was dried to give 15.0 gms of desired product.

[0535] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 3.80 (bs, 1H), 3.08 (m, 1H), 2.86 (m, 2H), 2.66-2.61 (m, 2H), 1.99-1.95 (m, 1H), 1.67-1.45 (m, 2H), 1.45 (s, 9H), 0.91 (d, 3H).

[0536] 1-[4-(N-t-Butyloxycarbonylamino-3-methyl)piperidin-1-yl]-3-fluoro]nitrobenzene: To a solution of aminopiperidine derivative (15 gm, 70 mmol) in acetonitrile

(120 ml) was added diisopropylethyl amine followed by the addition of 1,2-difluoro-4-nitrobenzene. The reaction mixture was refluxed for 5 to 6 hours. Thereafter, acetonitrile was evaporated from reaction mixture. The residue was dissolved in ethyl acetate, washed with water 3 to 4 times. The combined organic layers were dried over sodium sulphate and evaporated in vacuo to give 24 gms (97%) of the desired product.

[0537] <sup>1</sup>HNMR (CDCl<sub>3</sub>): 7.97-7.87 (m, 2H), 6.92-6.86 (t, 1H), 3.86 (bs, 1H), 3.67 (t, 1H), 3.35 (m, 1H), 3.20-3.16 (m, 1H), 2.94 (t, 1H), 2.63 (t, 1H), 2.03-1.84 (m, 1H), 1.68-1.57 (m, 1H), 1.45 (s, 9H), 1.01 (d, 3H).

[0538] The following compounds were also prepared:

[0539] 1-[[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluoro]-nitrobenzene,

[0540] 1-[[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluoro]-aniline,

[0541] 1-{N-Carbobenzyloxy-[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluoro}-aniline,

[0542] (S)-(N)-{3-[4-[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluorophenyl]-2-oxo-5-oxazolidin-5-yl}methanol,

[0543] (S)-(N)-{3-[4-[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluorophenyl]-2-oxo-5-oxazolidin-5-yl}methyl methanesulfonate,

[0544] (S)-(N)-{3-[4-[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluorophenyl]-2-oxo-5-oxazolidin-5-yl}methyl azide,

[0545] (S)-(N)-{3-[4-[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluorophenyl]-2-oxo-5-oxazolidin-5-yl}methyl amine,

[0546] (S)-(N)-{3-[4-[3-methyl 4-(N-t-butyloxycarbonyl,N-methylamino)piperidin-1-yl]-3-fluorophenyl]-2-oxo-5-oxazolidin-5-yl}methyl acetamide,

[0547] (S)-(N)-{3-[4-[3-methyl 4-(N-methylamino)piperidin-1-yl]-3-fluorophenyl]-2-oxo-5-oxazolidin-5-yl}methyl acetamide,

Preparation of (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-(N-methyl-N-thiophenacetyl)]-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 73)

[0548] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-(N-methyl-)]-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and thiophene-2-acetyl chloride by method A.

[0549] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.44-6.91 (m, 6H), 6.05 (bs, 1H), 4.77 (bs, 1H), 4.50-4.25 (m, 1H), 4.06-2.88 (m, 15H), 2.04 (s, 4H), 1.15 (s, 1H), 1.14 (d, 1H), 0.85-0.77 (m, 2H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-2-furoyl(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 74)

[0550] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoyl chloride by using Method A.

dine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoyl chloride by using Method A.

[0551] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.48-7.06 (m, 4H), 6.22 (bs, 1H), 4.78 (bs, 1H), 3.03-4.02 (9H), 3.00-2.10 (m, 2H), 2.02 (s, 3H), 1.74 (bs, 4H), 0.80 (m, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-2-thienoyl(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 75)

[0552] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-thiophenoyl chloride by using Method A.

[0553] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.87-6.85 (m, 6H), 4.70 (bs, 1H), 3.94 (t, 1H), 3.74 (t, 1H), 3.55 (s, 2H), 3.50-2.50 (m, 12H), 1.94 (s, 3H), 0.75 (bs, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-(N-methyl-N-2-furoyl)]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 76)

[0554] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 2-furoyl chloride by using Method A.

[0555] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.46 (bs, 1H), 7.38 (m, 1H), 6.93 (d, 2H), 6.49 (bs, 1H), 6.02 (bs, 1H), 4.77 (bs, 1H), 4.52-4.25 (m, 1H), 3.99 (t, 1H), 3.77-3.49 (m, 5H), 3.20&3.16 (s, 3H), 2.99 (d, 1H), 2.82 (t, 1H), 2.65-2.17 (m, 4H), 2.02 (s, 3H), 0.87 (t, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-N-2-furyl(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 77).

[0556] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitrofuraldehyde by using Method B.

[0557] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.39 (d, 1H), 7.06-6.88 (m, 2H), 6.48 (t, 1H), 6.17 (bs, 1H), 4.76 (bs, 1H), 4.01-3.25 (m, 8H), 2.60 (t, 1H), 2.33 (s, 4H), 2.01 (m, 1H), 1.84 (s, 5H), 1.66 (m, 3H), 0.88 (t, 2H), 0.8 (t, 1H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-N-2-thienyl(5-nitro)}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 78)

[0558] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[[3-methyl-4-{N-methyl-}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro thiophene 2-aldehyde by using the Method B.

#### EXAMPLE 11

Analogues of (S)-N-[[3-[3-Fluoro-4-[4-(N-ethyl)-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XI)

[0559] The preparation of (S)-N-[[3-[3-Fluoro-4-[4-(N-ethyl)-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

methyl]acetamide (Core XI) is similar to the synthesis of (S)-N-[[3-[3-Fluoro-4-(4-(N-methyl)-aminopiperidine-1-yl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XIII).

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-2-thienoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 79)

[0560] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-thienoyl chloride by using Method A.

[0561] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 7.45 (d, 1H), 7.45 (d, 1H), 7.23 (d, 1H), 7.07-6.97 (m, 2H), 4.92 (bs, 1H), 3.98 (t, 1H), 3.98-3.47 (m, 9H), 2.76 (bs, 1H), 2.15 (m, 2H), 2.01 (s, 4H), 1.88 (d, 2H), 1.41 (bs, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-2-furoyl-(5-nitro)}aminopiperidine-(1-yl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 80)

[0562] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoyl chloride by using the Method A.

[0563] <sup>1</sup>HNMR (CDCl<sub>3</sub>) δppm: 8.01-6.96 (m, 5H), 6.05 (bs, 1H), 5.29 (s, 1H), 4.91 (m, 1H), 4.75 (bs, 1H), 4.27-3.99 (m, 1H), 3.77-3.49 (m, 7H), 2.95-2.32 (m, 3H), 2.02 (bs, 4H), 1.25 (bs, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-furoyl}-aminopiperidine-77 1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 81)

[0564] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 2-furoyl-chloride using Method A.

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-thiophenacetyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 82)

[0565] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and thiophene-2-acetyl chloride by using Method A.

[0566] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.46-6.92 (m, 6H), 6.18 (bs, 1H), 4.76 (bs, 1H), 4.58 (bs, 1H), 4.01-3.35 (m, 10H), 2.75-2.50 (m, 2H), 2.02 (s, 3H), 1.97-1.75 (m, 3H), 1.45 (m, 1H), 1.20 (s, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-thiophenyl-4-(nitro)methyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 33)

[0567] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl}-methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro thiophene-2-aldehyde by using the Method B.

[0568] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.79 (d, 1H), 7.43 (dd, 1H), 7.05 (dd, 1H), 6.92 (t, 1H), 6.83 (d, 1H), 6.05 (t, 1H), 4.75 (bs, 1H), 4.01 (t, 1H), 3.75 (s, 2H), 3.84-3.44 (m, 5H), 2.71-2.60 (m, 5H), 1.75-1.90 (m, 4H), 1.97 (s, 3H), 1.07 (t, 3H).

#### EXAMPLE 12

Analogues of (S)-N-[[3-[3-Fluoro-4-(4-aminopiperidine-1-yl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XII)

[0569] The title core XII is prepared by following the procedure as given in WO 95/25106.

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-thienyl-(5-nitro)methyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 84)

[0570] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(4-aminopiperidine-1-yl)phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-thiophene-2-aldehyde by using Method B.

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{2-furyl-(5-nitro)methylene}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 85)

[0571] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[4-aminopiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furaldehyde.

[0572] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 8.2 (s, 1H, CH), 7.8 (t, 1H, NH), 7.6 (m, 1H, Ar—H), 7.4 (m, 1H, Ar—H), 6.8-7.0 (m, 2H, Ar—H), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.4-3.8 (m, 7H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>), 2.0 (m, 2H, CH<sub>2</sub>), 1.9 (m, 2H, CH<sub>2</sub>).

[0573] IR: 1748, 1656 cm<sup>-1</sup>.

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-2-furyl-(5-nitro)methyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 86)

[0574] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-(4-aminopiperidine-1-yl) phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furaldehyde by using Method B.

[0575] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.41-6.45 (m, 4H), 6.48 (bs, 1H), 6.11 (bs, 1H), 4.75 (bs, 1H), 4.04-3.97 (m, 1H), 3.95 (s, 2H), 3.76-3.57 (m, 3H), 3.40-3.37 (m, 2H), 2.75-2.67 (m, 3H), 2.01 (bs, 3H), 1.74 (bs, 3H), 1.66-1.55 (m, 2H).

#### EXAMPLE 13

Analogues of (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XIII)

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-pyrrole-(5-nitro)methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 87)

[0576] The title compound was prepared by reacting Core XIII and 5-nitro-pyrrole-2-aldehyde using Method B.

[0577]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm: 7.41 (d, 1H), 7.06 (d, 1H), 6.92 (t, 1H), 6.17-6.12 (m, 2H), 4.77-4.73 (m, 1H), 4.05-3.46 (m, 7H), 2.69-2.62 (t, 4H), 2.33 (s, 3H), 2.09 (s, 2H), 2.04 (s, 3H), 2.02-1.81 (m, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-furyl-(5-acetoxymethyl)methyl}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 88)

[0578] The title compound was prepared by reacting Core XIII and 5-acetoxypyrrol-2-aldehyde using Method A.

[0579]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm 7.40 (d, 1H), 7.05 (d, 1H), 6.90 (t, 1H), 6.39 (bs, 1H), 6.09 (bs, 1H), 5.01 (s, 2H), 4.75 (bs, 1H), 4.02-3.96 (m, 3H), 3.75-3.46 (m, 5H), 2.90 (bs, 1H), 2.71-2.63 (t, 2H), 2.54 (s, 3H), 2.03 (s, 3H), 1.90 (s, 3H), 1.95-1.87 (m, 3H).

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-furoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 89)

[0580] The title compound was prepared from Core XIII and 5-nitro-2-furoyl chloride using Method A.

[0581]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm: 7.87-6.91 (m, 6H), 4.76 (bs, 1H).

#### EXAMPLE 14

Analogues of (S)-N-[[3-[3-Fluoro-4[N-1,3-[N-methylaminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XIV)

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1-[3-[N-methyl[N-2-thiophenyl(5-nitro)methyl]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 90)

[0582] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4[N-1,3-[N-methylaminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (WO 95/25106) and 5-nitro-2-thiophenecarboxaldehyde using Method B.

[0583]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm: 7.8 (d, 1H, Ar—H), 7.5 (d, 1H, Ar—H), 7.0 (m, 2H, Ar—H), 6.8 (t, 1H, Ar—H), 6.4 (t, 1H, NH), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.4-3.8 (m, 9H,  $\text{CH}_2$ ), 2.4 (s, 3H,  $\text{CH}_3$ ), 2.3 (m, 1H, CH), 2.1 (m, 1H, CH), 2.0 (s, 3H,  $\text{CH}_3$ ).

[0584] IR: 1746, 1650  $\text{cm}^{-1}$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1[3-{(N-methyl)-N-2-thiophenyl(5-nitro)}aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 91)

[0585] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-thiophenoic acid using Method C.

[0586]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm: 7.8 (d, 1H, Ar—H), 7.5 (d, 1H, Ar—H), 7.2 (m, 1H, Ar—H), 7.0 (d, 1H, Ar—H), 6.8 (t, 1H, Ar—H), 6.0 (t, 1H, NH), 4.70 (m, 1H, CH), 4.0 (m, 1H,

CH), 3.6-3.8 (m, 8H, CH), 3.2 (broad s, 3H,  $\text{CH}_3$ ), 2.5 (m, 1H, CH), 2.4 (m, 1H, CH), 2.0 (s, 3H,  $\text{CH}_3$ ).

[0587] IR: 1746, 1622  $\text{cm}^{-1}$ .

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1[3-{(N-methyl)-N-2-furoyl-(5-nitro)}aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 92)

[0588] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoic acid using Method C.

[0589]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm: 7.5 (d, 1H, Ar—H), 7.4 (m, 1H, Ar—H), 7.0 (m, 2H, Ar—H), 6.8 (t, 1H, Ar—H), 6.0 (t, 1H, NH), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.4-3.8 (m, 8H,  $\text{CH}_2$ ), 2.6 (m, 1H, CH), 2.4 (m, 1H, CH), 2.0 (s, 1H,  $\text{CH}_3$ ).

#### EXAMPLE 15

Analogues of (S)-N-[[3-[3-Fluoro-4-[N-1-(4-N-methyl)-aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XV)

Preparation of (S)-N-[[3-[3-Fluoro-4-[N-1[4-{N-methyl-N-2-furyl-(5-nitro)methyl]aminomethyl]piperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 93)

[0590] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4-[N-1-(4-N-methyl)-aminomethyl]piperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furaldehyde using Method B. Synthesis of (S)-N-[[3-[3-Fluoro-4-[N-1[4-N-methyl]-aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide is similar to the synthesis of (S)-N-[[3-[3-Fluoro-4-(N-1-piperazinyl)phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide (Core I, U.S. Pat. No. 5,700,799) except that instead of piperazine, 4-(aminomethyl)piperidine was used.

[0591]  $^1\text{H}$ NMR ( $\text{CDCl}_3$ ) ppm: 7.6 (d, 1H, Ar—H), 7.5 (d, 1H, Ar—H), 7.0 (d, 1H, Ar—H), 6.9 (t, 1H, Ar—H), 6.6 (d, 1H, Ar—H), 6.0 (t, 1H, OH), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.3-3.8 (m, 6H, CH), 2.8 (t, 2H,  $\text{CH}_2$ ), 2.4 (m, 5H,  $\text{CH}_2$ ), 2.0 (s, 3H,  $\text{CH}_3$ ), 1.8 (m, 3H,  $\text{CH}_2$ ), 1.4 (m, 2H,  $\text{CH}_2$ ).

Preparation of (S)-N-[[3-[3-Fluoro-4-[4-N-1-(N-methyl){N-2-thiophenyl(5-nitro)-methyl}]aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 94)

[0592] The title compound was prepared by reacting (S)-N-[[3-[3-Fluoro-4[4-N-1(N-methyl)aminomethyl]piperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-thiophenecarboxaldehyde using Method B.

Preparation of (s)-N-[[3-[3-Fluoro-4-{N-1[4-N-methyl)-N-2-furoyl(5-Nitro)}aminomethyl]piperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 95)

[0593] The title compound was prepared by reacting (s)-N-[[3-[3-Fluoro-4-{N-1[4-N-methyl]aminomethyl]piperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide and 5-nitro-2-furoic acid using Method C.

[0594]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ ) ppm: 7.6 (m, 1H, Ar—H), 7.5 (m, 1H, Ar—H), 7.4 (m, 1H, Ar—H), 7.1 (d, 1H, Ar—H), 7.0 (t, 1H, Ar—H), 6.0 (t, 1H, NH), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.4-3.8 (m, 10H,  $\text{CH}_2$ ), 3.1 (m, 1H, CH), 2.6 (t, 2H,  $\text{CH}_2$ ), 2.0 (s, 3H,  $\text{CH}_3$ ), 1.6 (m, 5H,  $\text{CH}_2$ ).

Preparation of (S)-N-[[3-{3-Fluoro-4-(3-oxo-piperidin-1-yl)-phenyl}-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 96)

[0595]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ ) ppm: 7.6 (d, 1H, Ar—H), 7.0 (d, 1H, Ar—H), 6.8 (m, 1H, Ar—H), 6.0 (t, 1H, NH), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.4-3.6 (m, 5H,  $\text{CH}_2$ ), 3.2 (m, 2H,  $\text{CH}_2$ ), 2.0 (s, 3H,  $\text{CH}_3$ ), 1.9 (m, 2H,  $\text{CH}_2$ ), 1.8 (m, 2H,  $\text{CH}_2$ ).

[0596] IR: 1748, 1660.

#### EXAMPLE 16

Analogues of (S)-N-[[3-{3-Fluoro-4-[N-1-[3-N-methyl]-aminopiperidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XVI)

Preparation of (S)-N-[[3-{3-Fluoro-4-[N-1-[3-N-methyl-N-2-furyl(5-nitro)methyl]aminopiperidinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide. (Compound No. 97)

[0597] The title compound was prepared by reacting (S)-N[[3-{3-Fluoro-4-[N-1-[3-N-methyl]-aminopiperidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (WO 95/25106) and 5-nitro-2-furaldehyde using Method B.

[0598]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ ) ppm: 7.6 (d, 1H, Ar—H), 7.2 (m, 1H, Ar—H), 7.0 (m, 1H, Ar—H), 6.9 (m, 1H, Ar—H), 6.6 (d, 1H, Ar—H), 6.0 (t, 1H, NH), 4.7 (m, 1H, CH), 4.0 (t, 1H, CH), 3.6-3.8 (m, 5H,  $\text{CH}_2$ ), 3.2 (m, 4H,  $\text{CH}_2$ ), 2.5 (s, 3H,  $\text{CH}_3$ ), 2.0 (s, 3H,  $\text{CH}_3$ ), 1.9 (m, 2H,  $\text{CH}_2$ ), 1.8 (m, 2H,  $\text{CH}_2$ ).

[0599] IR: 1749, 1659  $\text{cm}^{-1}$ .

#### EXAMPLE 17

Analogues of (S)-N-[[3-{3-Fluoro-4-[N-1-(N-aminomethyl)-3-azabicyclo[3.1.0]hexane]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide (Core XVII)

Preparation of (S)-N-[[3-{3-Fluoro-4-(N-1-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane)-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

[0600] (a) Preparation of N-(tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane.

[0601] The title compound was prepared by following the procedure as described in U.S. Pat. No. 5,164,402.

[0602] (b) Preparation of 11-[(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-2-fluoro-4-nitrophenyl

[0603] To N-(tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane. (A, 15 g, 70.75 mmol) in acetonitrile (100 mL), 3,4-difluoronitrobenzene (11.24 g, 70.75 mmol), and ethyldiisopropylamine (10.04 g, 77.8 mmol), were added and the reaction mixture heated to 60° C. for 6 hrs. The solution was cooled to ambient temperature and concentrated to yield 22.2 g of title compound.

[0604]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.9 (m, 2H), 6.89 (t, 1H), 3.4-3.8 (m, 6H), 1.6 (m, 1H), 1.5 (s, 9H), 0.8 (m, 1H), 0.6 (m, 1H).

[0605] c) Preparation of 1-[4-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-3-fluoro aniline.

[0606] To a solution of 1-[4-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-2-fluoro-3-nitrophenyl (B, 26 g) in methanol (100 mL), 10% palladium/carbon (2.6 g) was added and shaken in a Parr hydrogenation apparatus under 40 psi of hydrogen gas for 3 hrs. Then, the reaction mixture was filtered over celite and the filtrate evaporated in vacuo to yield 24 gm of the final product.

[0607]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ ) ppm: 6.4-6.8 (m, 3H), 4.6 (brs, 1H, NH), 3-3.8 (m, 8H), 1.5 (s, 10H), 0.9 (m, 1H), 0.6 (m, 1H).

[0608] d) Preparation of 1-[N-benzyloxycarbonyl-4-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-3-fluoro aniline.

[0609] To a solution of 1-[4-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-3-fluoro aniline (C, 24 g, 74.7 mmols) in tetrahydrofuran (200 mL) cooled to 5° C., sodium bicarbonate (25 g, 298 mmol) was added and then benzylchloroformate (36 mL) was added dropwise. The reaction mixture was stirred for 18 hrs. at room temperature and then filtered. The filtrate was evaporated in vacuo. The residue was dissolved in ethyl acetate and washed with saturated sodium bicarbonate solution, water and brine water. The organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo to give 33 g of final product.

[0610]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ )  $\delta$ ppm: 7.6 (m, 6H), 7.4 (m, 1H), 6.8 (m, 1H), 6.6 (t, 1H), 5.2 (s, 2H), 4.6 (brs, 1H, NH), 3.6-3.8 (m, 4H), 1.6 (m, 1H), 1.5 (s, 9H), 0.8 (m, 1H), 0.6 (m, 1H).

[0611] e) Preparation of (R)-N[[3-{3-Fluoro-4-[N-1-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-phenyl]-2-Oxo-5-Oxazolidinyl]methanol

[0612] To a solution of 1-[N benzyloxycarbonyl-4-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-3-fluoro aniline. (D, 25.5 g) in dry tetrahydrofuran (150 mL), cooled to -78° C., butyl lithium (28.6 mL, 15% sol. in hexane) was added under +ve pressure of nitrogen. The reaction mixture was stirred at -78° C. for 1.5 hrs. Then R-glycidyl butyrate (9.51 g) was added and the reaction mixture was stirred at -78° C. for 1 hr and then at room temperature for 18 hrs. To it, 100 mL of saturated ammonium chloride solution was added and the reaction mixture extracted with ethyl acetate. The combined organic layers were washed with water and brine water, dried over anhydrous sodium sulphate and evaporated in vacuo. The crude product (~28 g) was purified by column chromatography (3% MeOH/ $\text{CHCl}_3$ ) to yield 9 g of final product.

[0613]  $^1\text{H NMR}$  ( $\text{CDCl}_3$ ) ppm: 7.4 (m, 1H), 7.0 (m, 1H), 6.6 (t, 1H), 4.7 (m, 1H), 4.0 (m, 1H), 3.8 (m, 3H), 3.4-3.6 (m, 3H), 1.6 (m, 1H), 1.5 (s, 9H), 0.8 (m, 1H), 0.7 (m, 1H).

[0614] (f) Preparation of (R)-N[[3-{3-Fluoro-4-[N-1-(N-tert-butyloxycarbonylaminoethyl)-3-azabicyclo[3.1.0]hexane]-phenyl]-2-Oxo-5-Oxazolidinyl]methylsulfonate.



[0615] To a solution of (S)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-Oxo-5-Oxazolidinyl]methanol (E, 1.5 g, 3.562 mmol) in dichloromethane (20 mL) at 5° C., triethylamine 5 (0.6 ml, 4.275 mmol) and methanesulfonylchloride (0.33 ml, 4.275 mmol) were added and the reaction mixture was stirred for 17 hr. Then the reaction mixture was diluted with dichloromethane and washed with saturated sodium bicarbonate solution and brine. The organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo to yield 1.45 g of product.

[0616] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.3 (m, 1H), 7.0 (m, 1H), 6.6 (t, 1H), 4.8 (m, 1H), 4.5 (m, 2H), 4.0 (t, 1H), 3.9 (t, 1H), 3.6-3.8 (m, 2H), 3.2-3.4 (m, 4H), 3.0 (s, 3H), 1.6 (m, 1H), 1.5 (s, 9H), 0.8 (m, 1H), 0.6 (m, 1H).

[0617] (g) Preparation of (R)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-Oxo-5-Oxazolidinyl]methylazide.

[0618] To a solution of (S)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-Oxazolidinyl]methylsulfonate.

[0619] (F, 1.4 gm, 2.8 mmol) in dimethylformamide (20 mL), sodium azide (0.547 g, 8.41 mmol) was added and the reaction mixture heated to 80° C. for 7 hrs. The solid was filtered off and the filtrate evaporated in vacuo. The residue was dissolved in chloroform and washed with water and brine solution. The organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo to yield 1 g of the product.

[0620] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.2 (m, 1H), 7.0 (m, 1H), 6.5 (t, 1H), 4.8 (m, 1H), 4.0 (t, 1H), 3.6-3.8 (m, 5H), 3.4-3.6 (m, 4H), 1.5 (s, 9H), 1.4 (m, 1H), 0.8 (m, 1H), 0.6 (m, 1H).

[0621] (h) Preparation of (S)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-Oxo-5-Oxazolidinyl]methylamine.

[0622] To a solution of (S)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-Oxo-5-Oxazolidinyl]methylazide (G, 15 g) in methanol (100 mL), 10% palladium/carbon (1.5 g) was added and the reaction mixture shaken in a Parr hydrogenation apparatus under 40 psi hydrogen pressure for 9 hrs. The reaction was filtered over celite and the filtrate evaporated in vacuo to yield 13 g of product. The product was used as such in next step without further purification.

[0623] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.2 (m, 1H), 7.0 (m, 1H), 6.6 (t, 1H), 4.6 (m, 1H), 4.0 (m, 1H), 3.7-3.8 (m, 3H), 3.0-3.6 (m, 6H), 1.5 (s, 10H), 0.8 (m, 1H), 0.6 (m, 1H).

[0624] (i) Preparation of (S)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-Oxo-5-Oxazolidinyl]methylacetamide.

[0625] To a solution of (S)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-Oxo-5-Oxazolidinyl]methylamine (H, 14 g, 33.5 mmol) in dichloromethane (150 mL), triethylamine

(6.98 ml) and acetic anhydride (4.12 ml) were added and the reaction mixture was stirred at room temperature for 17 hrs. Then the reaction mixture was diluted with dichloromethane and washed with saturated sodium bicarbonate solution and brine water. The organic layer was dried over anhydrous sodium sulphate and evaporated in vacuo. The residue was purified by column chromatography to yield 10 g of final product.

[0626] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.4 (m, 1H), 7.0 (m, 1H), 6.0 (m, 1H), 4.7 (m, 1H), 4.68 (br s, 1H), 4.06 (t, 1H), 3.5-3.7 (m, 5H), 3.0-3.5 (m, 4H), 2.0 (s, 3H), 1.5 (s, 10H), 0.8 (m, 1H), 0.67 (m, 1H).

[0627] (j) (S)-N-[3-[3-Fluoro-4[N-1-(aminomethyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methylacetamide.

[0628] To a solution of (S)-N-[3-[3-Fluoro-4[N-1-(N-tert-butyloxycarbonylamino-methyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-Oxo-5-Oxazolidinyl]methylacetamide (I, 0.6 g,) in dichloromethane (8 mL), trifluoroacetic acid (2 mL) was added and stirred for 2 hrs. Then the reaction mixture was evaporated and dried in vacuo. To the residue in acetone (10 mL), potassium carbonate (0.78 g, 5.55 mmol) was added and stirred for 15 minutes. Then the reaction mixture was filtered and the filtrate evaporated in vacuo to yield the product in quantitative yield. This product was used as such in next step without further characterization.

Preparation of (S)-N-[3-[3-Fluoro-4[N-1-[3-{2-furyl-(5-nitro)methylene}aminomethyl]-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methylacetamide. (Compound No. 98)

[0629] The title compound was prepared with (S)-N-[3-[3-Fluoro-4[N-1-(aminomethyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methylacetamide and 5-nitro-2-furaldehyde.

[0630] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 8.2 (s, 1H, CH), 7.4 (m, 2H, Ar—H), 7.0 (m, 2H, Ar—H), 6.4 (m, 1H, Ar—H), 6.0 (t, 1H, NH), 4.7 (m, 1H, CH), 3.4-3.8 (m, 1H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>), 1.6 (m, 1H, CH), 0.8 (m, 1H, CH), 0.6 (m, 1H, CH).

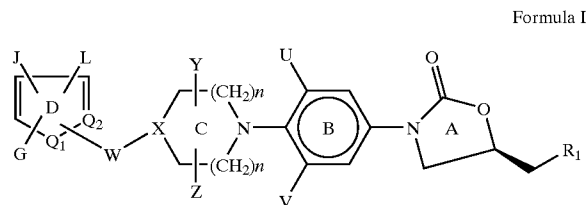
[0631] IR: 1745, 1659 cm<sup>-1</sup>.

Preparation of (S)-N-[3-[3-Fluoro-4[N-1-[3-{N-2-furyl-(5-nitro)methyl}aminomethyl]-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methylacetamide. (Compound No. 94)

[0632] The title compound was prepared with (S)-N-[3-[3-Fluoro-4[N-1-(aminomethyl)-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methylacetamide and 5-nitro-2-furaldehyde using Method B.

[0633] <sup>1</sup>HNMR (CDCl<sub>3</sub>) ppm: 7.4 (m, 2H, Ar—H), 7.0 (d, 1H, Ar—H), 6.7 (t, 1H, Ar—H), 6.5 (d, 1H, Ar—H), 6.0 (t, 1H, NH), 4.7 (m, 1H, CH), 3.4-4.0 (m, 8H, CH<sub>2</sub>), 3.2 (m, 2H, CH<sub>2</sub>), 3.0 (d, 2H, CH), 2.8 (d, 1H, CH<sub>2</sub>), 2.0 (s, 3H, CH<sub>3</sub>), 1.4 (m, 1H, CH), 0.8 (m, 1H, CH), 0.6 (m, 1H, CH).

1. A compound having the structure of Formula I,



and its pharmaceutically acceptable salts, enantiomers, diastereomers, N-oxide, polymorphs, pharmaceutically acceptable solvates, prodrugs or metabolites, wherein

ring D is a five membered heterocyclic ring;

ring C is four to eight membered in size or larger which has either two or three carbon atoms between each nitrogen atoms or ring C is a bridged bicyclic system and is optionally substituted by the substituents Y and Z independently selected from alkyl groups, cycloalkyl groups, fluoro group, carboxylic groups and corresponding esters or amides;

Q<sub>1</sub> is selected from O, S, NR<sub>11</sub>;

Q<sub>2</sub> is selected from N or C;

G, J, L are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, —CN, COR<sub>5</sub>, COOR<sub>5</sub>, N(R<sub>6</sub>, R<sub>7</sub>), NHCOC(R<sub>5</sub>, R<sub>8</sub>, R<sub>9</sub>), —NHCOOR<sub>5</sub>, CON(R<sub>6</sub>, R<sub>7</sub>), CH<sub>2</sub>NO<sub>2</sub>, NO<sub>2</sub>, CH<sub>2</sub>R<sub>8</sub>, CHR<sub>9</sub>, —CH=N—OR<sub>10</sub>, —C=CH—R<sub>5</sub>, OR<sub>5</sub>, SR<sub>5</sub>, —C(R<sub>9</sub>)=C(R<sub>9</sub>)NO<sub>2</sub>, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>4</sub>, SR<sub>4</sub>; wherein R<sub>5</sub> is selected from H, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH, aryl, heteroaryl; R<sub>6</sub> and R<sub>7</sub> are independently selected from H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy; R<sub>8</sub> and R<sub>9</sub> are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>5</sub>, SR<sub>5</sub>, N(R<sub>6</sub>, R<sub>7</sub>); R<sub>10</sub>=H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, aryl, heteroaryl; except when W is C=O, Q<sub>1</sub>=S, Q<sub>2</sub>=C, and G, J, L=H;

R<sub>1</sub> is selected from the group consisting of —NHC(=O)R<sub>2</sub>, N(R<sub>3</sub>, R<sub>4</sub>), —NR<sub>2</sub>C(=S)R<sub>3</sub>, —NR<sub>2</sub>C(=S)SR<sub>3</sub>, wherein R<sub>2</sub> is hydrogen, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH; R<sub>3</sub>, R<sub>4</sub> are independently selected from hydrogen, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH;

U and V are independently selected from hydrogen, optionally substituted C<sub>1-6</sub> alkyl, F, Cl, Br, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I;

X is selected from C, CH, CH—S, CH—O and N;

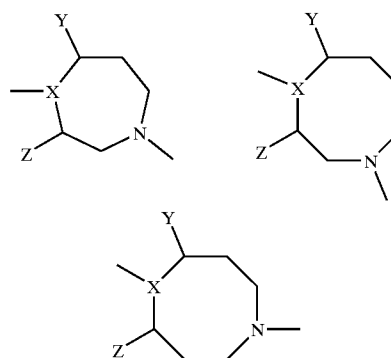
Y and Z are independently selected from hydrogen, C<sub>1-6</sub> alkyl, C<sub>3-12</sub> cycloalkyl and C<sub>0-3</sub> bridging groups;

W is selected from the group CH<sub>2</sub>, CO, CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(R<sub>11</sub>)CH<sub>2</sub>—,

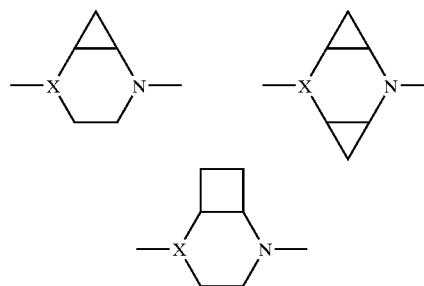
CH<sub>2</sub>(R<sub>11</sub>)N—, CH(R<sub>11</sub>), S, CH<sub>2</sub>(CO), NH, O, N(R<sub>11</sub>), (CO)CH<sub>2</sub>, N(R<sub>11</sub>)CON(R<sub>11</sub>), N(R<sub>11</sub>)C(=S)N(R<sub>11</sub>), SO<sub>2</sub>, SO, wherein R<sub>11</sub> is hydrogen, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkylcarboxy, aryl, heteroaryl;

n is an integer ranging from 0 to 3.

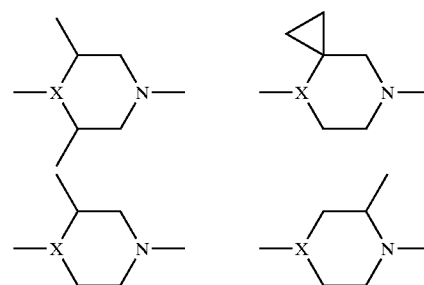
2. The compound of Formula I according to claim 1 wherein ring C is four to eight membered in size or the larger size which have either two or three carbon atoms between each nitrogen atom, comprising of



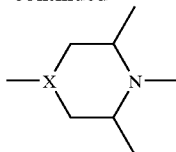
or ring C is bridged to form a bicyclic system as shown below,



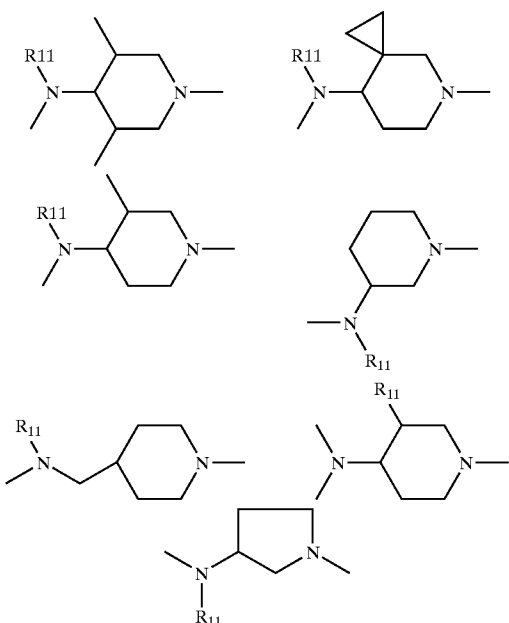
ring C is optionally substituted by Y and Z, independently selected from alkyl groups, cycloalkyl groups, fluoro group, carboxylic and corresponding esters, amides, substituted alkyls or bridging alkyl groups which are as shown below:



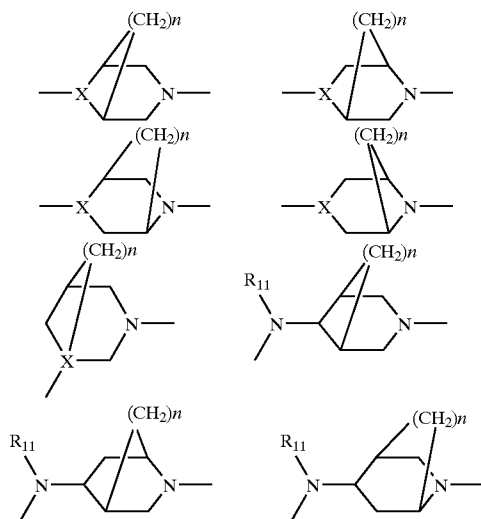
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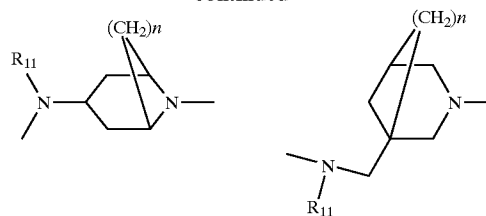
the five or six membered ring C (when X is  $-\text{CH}-(\text{NHR})$ , or  $>\text{CCH}_2(\text{NHR})$ ) is selected from the group consisting of the following rings,



and the bicyclic bridged ring C is selected from the group consisting of the following rings,



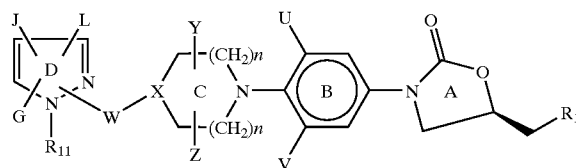
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3. The compound of Formula I according to claim 1 wherein ring D is selected from the group consisting of furanyl, thienyl, pyrrolyl and pyrazolyl.

4. The compound of Formula I according to claim 1 wherein  $\text{Q}_1=\text{NR}_{11}$  and  $\text{Q}_2=\text{N}$  shown as Formula II below

Formula II



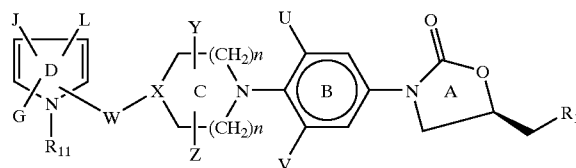
5. The compound of Formula II according to claim 4 selected from the group consisting of:

(S)-N-[[3-[3-Fluoro-[N-1-[4-{3-pyrazolecarbonyl-(4-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-pyrazolecarbonyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide.

6. The compound of Formula I according to claim 1 wherein  $\text{Q}_1=\text{NR}_{11}$  and  $\text{Q}_2=\text{C}$  shown as Formula III below,

Formula III

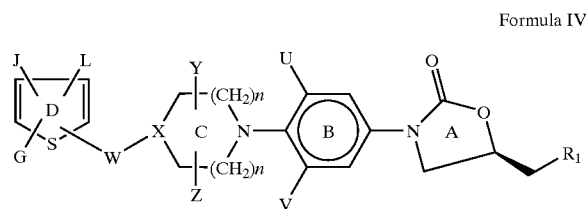


7. The compound of Formula III according to claim 6 selected from the group consisting of:

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

8. The compound of Formula I according to claim 1 wherein  $\text{Q}_1=\text{S}$  and  $\text{Q}_2=\text{C}$  shown as Formula IV below,



9. The compound of Formula IV according to claim 8 selected from the group consisting of:

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-thiophen-(4-nitro)methyl-)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-thiophenyl-(5-nitro))]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

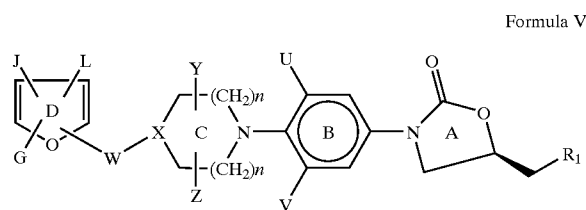
(S)-N-[[3-[3-Fluoro-4-[N-1-[4-[1-(2-thiophenyl-(5-nitro))-1-ethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-(2-thiophenyl-(5-nitro))]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-2-thiophenyl-(5-nitro)}-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1,{3-{[N-methyl][N-(2-thiophenyl(5-nitro))]amino pyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

10. The compound of Formula I according to claim 1 wherein  $Q_1=O$  and  $Q_2=C$  shown as Formula V below,



11. The compound of Formula V according to claim 10 selected from the group consisting of:

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furoyl-(3-methyl))]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furoyl-(3-methyl-5-nitro))]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-[1-(2-furyl(5-nitro))]ethyl]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl(5-nitro)methyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-difluoroacetamide,

(S)-N-[[3-[3-Fluoro-4-[4-[N-2-furyl(5-nitro)methyl]-aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide

12. A compound selected from the group consisting of:

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-furyl-carbonylmethyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-(2-thiophenyl-methyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl{5-(4-chloro-2-nitro-)-phenyl}methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen-(4-bromo-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl-(3-methyl-5-nitro)methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-(4-cyano-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-chloro)phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl],

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-bromo)phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-methyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-4-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(1-methyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-pyrrole-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen-(4-nitro)-methyl-}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl-(5-methoxy)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl-{5-O-(2-nitro-4-fluoro-phenyloxy)}methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-chloro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

- (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{3-furyl(2-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophen-(4-dimethylamino-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophene-(4-morpholino-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl-(5-methylsulphonyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(4-nitro)-phenyl)-methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-furyl(5-(3-nitro)-phenyl)-methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1-[2-furyl(5-(2-nitro)-phenyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-Furyl-4-bromo-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-4-{2-Furyl-(4-isopropyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-Furyl-4-isopropyl-(5-nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furoyl-(5-methoxy)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-thiophenoyl-(5-acetamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{3-pyrazolecarbonyl-(4-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{3-pyrazolecarbonyl(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-4-{2-thiophenoyl-(5-tert-butoxy-carboxamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-thiophenoyl(5-trifluoroacetamido)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl],
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-thiophenoyl(5-amino)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furoyl{5-(4-chloro-2-nitro)-phenyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl],
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furoyl-(3-methyl)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furoyl-(3-methyl-5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-thiophenoyl-(4-dimethylamino-5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-Furoyl-(5-nitro)acrylic}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-thiophenoyl-(5-nitro)acrylic}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide,
- Iodide (S)-N-[[3-[3-Fluoro-4[N-1-[4-N-methyl-4-{2-furyl-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-fluoroacetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-thiophen(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]fluoroacetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-thiophen(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]difluoroacetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-[2-thiophenyl-5-nitro)methyl]],
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-[2-thiophenyl-4-bromo-(5-nitro)methyl}]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]monochloroacetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1[4-[2-thiophenyl-(5-nitro)methyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide,
- (S)-N-[[3-[3-Fluoro-4[N-1[4-[2-Furyl-(5-nitro)methyl]]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide,
- (S)-N-[[3-[3-Fluoro-4[N-1[4-[2-thiophenyl-4-bromo-(5-nitro)methyl]]piperazinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]-2-chloropropionamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-{2-furyl-(5-nitro)methyl}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1-[4-(3-furoyl)]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

- (S)-N-[[3-[3-Fluoro-4-[N-1-[4-{2-thiophenoyl-(5-nitro)}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-[[3-[3-Fluoro-4-[N-1-[4-{2-furoyl(5-nitro)}]homopiperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-{2-methyl-4-(t-butoxycarbonyl)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-thiophen-(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-furoyl(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2-methyl-4-{2-thiophenoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furoyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl(5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl(5-hydroxymethyl)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl(aldoxime)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-(2-thienylacetyl)]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[2,6-dimethyl-4-{2-furyl(5-cyano)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-thienylacetyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-furoyl(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[N-1-[3-methyl-4-{2-thienoyl-(5-nitro)}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-acetyl-N-2-furyl-(5-nitro)methyl-}]aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{3-methyl-4-(N-methyl-N-thiophenacetyl-)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{3-methyl-4-(N-methyl-2-furoyl(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{3-methyl-4-(N-methyl-N-2-thienoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-2-thienoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-2-furoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-furoyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-thiophenacetyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-ethyl-N-2-thiophenyl-(5-nitro)methyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-thienyl-(5-nitro)methyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{2-furyl(5-nitro)methylene-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-2-furyl-(5-nitro)methyl-}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-pyrrole-(5-nitro)methyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-furyl-(5-acetoxymethyl)methyl}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

(S)-N-[[3-[3-Fluoro-4-[4-{N-methyl-N-2-furoyl-(5-nitro)}aminopiperidine-1-yl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

- (S)-N-[[3-[3-Fluoro-4-[N-1,3-[N-methyl[N-{2-thiophenyl-(5-nitro)methyl}]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1,{3-[[N-methyl][N-{2-thiophenyl-(5-nitro)}]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1{3-{(N-methyl)[N-2-furoyl(5-nitro)}]aminopyrrolidinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1[4-{N-methyl}-N-2-furyl-(5-nitro)-methyl]aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[4-N-1(N-methyl){N-2-thiophenyl-(5-nitro)-methyl]aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1[4-N-methyl]-N-2-furoyl(5-Nitro)-methyl]aminomethylpiperidine-1-yl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-{3-Fluoro-4-(3-oxopiperidin-1-yl)-phenyl}-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[3-{3-Fluoro-4-[N-1-[3-N-methyl]-N-2-furyl(5-nitro)methyl]aminopiperidinyl]-phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1-[3-{2-furyl-(5-nitro)-methylene}aminomethyl]-3-azabicyclo(3.1.0)hexane]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4[N-1[3N-2-furyl-(5-nitro)methyl]-aminomethyl]-3-azabicyclo[3.1.0]hexane]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1[4-[1-{2-thiophenyl-(5-nitro)}-1-ethyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1[4-[1-{2-furyl-(5-nitro)}-1-ethyl]]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1[4-{2-thiophene-(4-(4-t-butoxycarbonyl)piperazinyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1[4-{2-thiophene-(4N-piperazinyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,
- (S)-N-[[3-[3-Fluoro-4-[N-1[4-{2-thiophene-(4(4-methyl)piperazinyl-5-nitro)methyl}]piperazinyl]phenyl]-2-oxo-5-oxazolidinyl]methyl]acetamide,

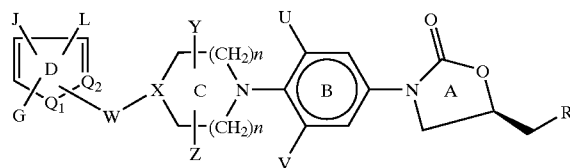
13. A pharmaceutical composition comprising the compound of claim 1 or 12 and a pharmaceutical acceptable carrier, diluent, excipient or solvate.

14. A pharmaceutical composition comprising a pharmaceutically effective amount of a compound according to claims 1 or 12, or a physiologically acceptable acid additional salt thereof with a pharmaceutically acceptable carrier for treating microbial infections.

15. A method of treating or preventing microbial infection in a mammal comprising administering to said mammal the pharmaceutical composition according to claim 14.

16. A process for preparing a compound of Formula I,

Formula I



and its pharmaceutically acceptable salts, enantiomers, diastereomers, N-oxide, polymorphs, pharmaceutically acceptable solvates prodrugs or metabolites, wherein

ring D is a five membered heterocyclic ring;

ring C is four to eight membered in size or larger which has either two or three carbon atoms between each nitrogen atoms or ring C is a bridged bicyclic system and is optionally substituted by the substituents Y and Z independently selected from alkyl groups, cycloalkyl groups, fluoro group, carboxylic groups and corresponding esters or amides;

Q<sub>1</sub> is selected from O, S, NR<sub>11</sub>;

Q<sub>2</sub> is selected from N or C;

G, J, L are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, N, —CN, COR<sub>5</sub>, COOR<sub>5</sub>, N(R<sub>6</sub>, R<sub>7</sub>), NHCOC(R<sub>5</sub>, R<sub>8</sub>, R<sub>9</sub>), —NHCOOR<sub>5</sub>, CON(R<sub>6</sub>, R<sub>7</sub>), CH<sub>2</sub>NO<sub>2</sub>, NO<sub>2</sub>, CH<sub>2</sub>R<sub>8</sub>, CHR<sub>9</sub>, —CH=N—OR<sub>10</sub>, —C=CH—R<sub>5</sub>, OR<sub>5</sub>, SR<sub>5</sub>, —C(R<sub>6</sub>)=C(R<sub>9</sub>)NO<sub>2</sub>, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>4</sub>, SR<sub>4</sub>; wherein R<sub>5</sub> is selected from H, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH, aryl, heteroaryl; R<sub>6</sub> and R<sub>7</sub> are independently selected from H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy; R<sub>8</sub> and R<sub>9</sub> are independently selected from H, C<sub>1-6</sub> alkyl, F, Cl, Br, I, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I, OR<sub>5</sub>, SR<sub>5</sub>, N(R<sub>6</sub>, R<sub>7</sub>); R<sub>10</sub>=H, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, aryl, heteroaryl; except when W is C=O, Q<sub>1</sub>=S, Q<sub>2</sub>=C, and G, J, L=H;

R<sub>1</sub> is selected from the group consisting of —NHC(=O)R<sub>2</sub>, N(R<sub>3</sub>, R<sub>4</sub>), —NR<sub>2</sub>C(=S)R<sub>3</sub>, —NR<sub>2</sub>C(=S)SR<sub>3</sub>, wherein R<sub>2</sub> is hydrogen, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH; R<sub>3</sub>, R<sub>4</sub> are independently selected from hydrogen, C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl substituted with one or more of F, Cl, Br, I or OH;

U and V are independently selected from hydrogen, optionally substituted C<sub>1-6</sub> alkyl, F, Cl, Br, C<sub>1-12</sub> alkyl substituted with one or more of F, Cl, Br, I,

X is selected from C, CH, CH—S, CH—O and N;

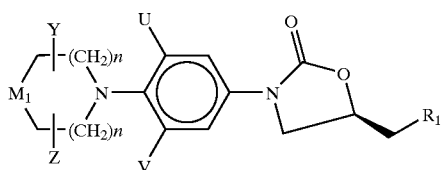
Y and Z are independently selected from hydrogen, C<sub>1-6</sub> alkyl, C<sub>3-12</sub> cycloalkyl and C<sub>0-3</sub> bridging groups;

W is selected from the group CH<sub>2</sub>, CO, CH<sub>2</sub>NH, —NHCH<sub>2</sub>, —CH<sub>2</sub>NHCH<sub>2</sub>, —CH<sub>2</sub>—N(R<sub>11</sub>)CH<sub>2</sub>—, CH<sub>2</sub>(R<sub>11</sub>)N—, CH(R<sub>11</sub>), S, CH<sub>2</sub>(CO), NH, O, N(R<sub>11</sub>),

(CO)CH<sub>2</sub>, N(R<sub>11</sub>)CON(R<sub>11</sub>), N(R<sub>11</sub>)C(=S)N(R<sub>11</sub>), SO<sub>2</sub>, SO, wherein R<sub>11</sub> is hydrogen, optionally substituted C<sub>1-12</sub> alkyl, C<sub>3-12</sub> cycloalkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkylcarboxy, aryl, heteroaryl;

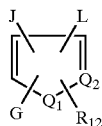
n is an integer ranging from 0 to 3;

which comprises reacting an amine compound of Formula VI



Formula VI

with a heterocyclic compound of Formula VII



Formula VII

wherein Q<sub>1</sub>, Q<sub>2</sub>, G, J, L, W, X, Y, Z, U, V, R<sub>1</sub> and n are the same as defined above and M<sub>1</sub> in amine of Formula VI is defined as NH, CH(NHR<sub>13</sub>), CH—CH<sub>2</sub>NHR<sub>13</sub>, CCH<sub>2</sub>NHR<sub>13</sub> wherein R<sub>13</sub> is H, methyl, ethyl, isopropyl, acetyl, cyclopropyl, alkoxy or acetyl;

R<sub>12</sub> is a suitable leaving group or suitable functional group.

17. The process according to claim 16 wherein the suitable leaving group R<sub>12</sub> is selected from the group comprising of fluoro alkyl, chloro alkyl, bromo alkyl SCH<sub>3</sub>, —SO<sub>2</sub>CH<sub>3</sub>, —SO<sub>2</sub>CF<sub>3</sub> and OC<sub>6</sub>H<sub>5</sub>.

18. The process according to claim 16 wherein the suitable functional group is carboxaldehyde or carboxylic acid.

19. The process according to claim 16 for preparing a compound of Formula I wherein reaction of compounds of Formula VI and VII is carried out in a suitable solvent selected from the group consisting of N,N-dimethylformamide, dimethylacetamide, dimethylsulfoxide, ethanol and ethylene glycol.

20. The process according to claim 19 wherein the reaction is carried out in the presence of a base selected from the group consisting of triethylamine, diisopropylamine, potassium carbonate and sodium carbonate.

21. The process according to claim 16 for preparing a compound of Formula I wherein a compound of Formula VII is a heterocyclic aldehyde.

22. The process according to claim 16 wherein the reductive amination of the compound of Formula VI with the heterocyclic aldehyde of Formula VII is performed with a reducing agent selected from the group consisting of sodium triacetoxyborohydride and sodium cyanoborohydride to give a compound of Formula I wherein W=CH<sub>2</sub>.

23. The process according to claim 16 wherein the compound of Formula VII is a heterocyclic carboxylic acid.

24. The process according to claim 16 wherein the reaction of amine of Formula VI with carboxylic acid of Formula VII is carried out in the presence of a suitable condensing agent.

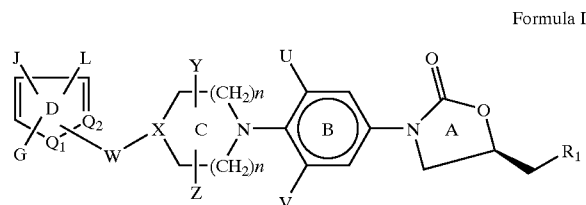
25. The process according to claim 24 wherein the suitable condensing agent is selected from the group consisting of 1,3-dicyclohexylcarbodiimide (DCC) and 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride (EDC).

26. The process according to claim 16 for preparing a compound of Formula I wherein the compounds of Formula I having carbonyl link are prepared by reacting heteroaromatic compound of Formula VII with a compound of Formula VI in the presence of triphosgene and phosgene.

27. The process according to claim 22 wherein compound of Formula VII is N-methyl pyrrole.

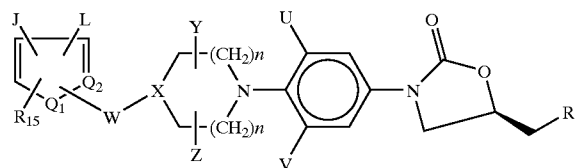
28. The process according to claim 16 for preparing a compound of Formula I wherein W=CO comprising reacting 3-bromothiophene (Formula VII) and amine of Formula VI with carbon monoxide.

29. The process according to claim 16 for preparing a compound of Formula I



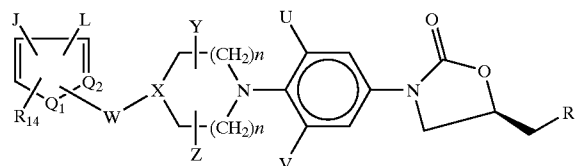
Formula I

when G=R<sub>15</sub> shown as Formula IX



Formula IX

wherein R<sub>15</sub> is a subset of G comprising of amine and acetamide, comprising converting compound of Formula VIII (Formula I, when G=R<sub>14</sub> wherein R<sub>14</sub> is also a subset of G comprising carbamate)



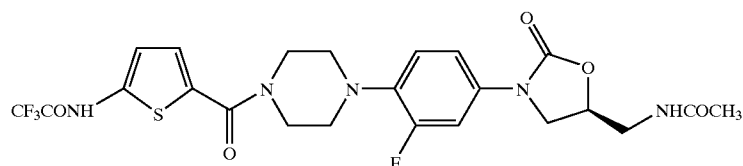
Formula VIII

to a compound of Formula IX (Formula I, when G=R<sub>15</sub>).

30. The process according to claim 16 for preparing a compound of Formula I when G=NHCOCF<sub>3</sub>, Q<sub>1</sub>=S, Q<sub>2</sub>=C, G=J=L=H, W=CO, X=N, Y=Z=H, n=1, U=H, V=F, R<sub>1</sub>=NH—COCH<sub>3</sub> shown as Formula XI

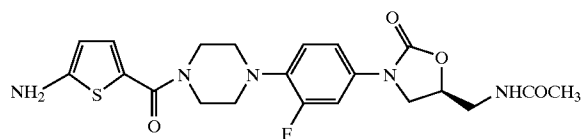


FORMULA XI

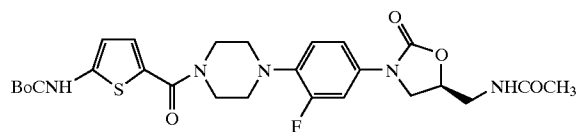


comprising reacting compound of Formula X with trifluoroacetic acid.

FORMULA XII

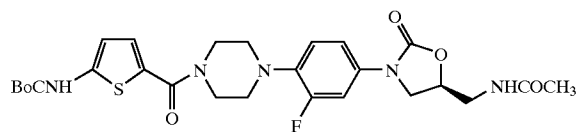


FORMULA X



comprising reacting compound of Formula X

FORMULA X



**31.** The process according to claim 16 for preparing a compound of Formula I when G=NH<sub>2</sub>, Q<sub>1</sub>=S, Q<sub>2</sub>=C, G=J=L=H, W=CO, X=N, Y=Z=H, n=1, U=H, V=F, R<sub>1</sub>=NH-COCH<sub>3</sub>) shown as Formula XII

with trifluoroacetic acid followed by potassium carbonate in a suitable solvent.

\* \* \* \* \*