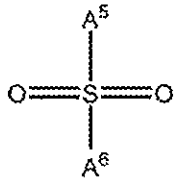
We Claim

1. A compound having the structure of Formula I:



Formula I

wherein:

A^5 is a secondary or tertiary amino substituent, and

A^6 is a substituted or unsubstituted aryl or heteroaryl group.

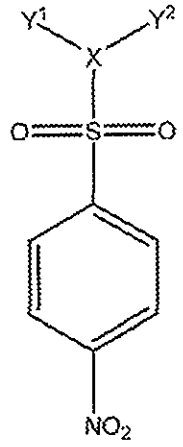
2. A compound of claim 1, wherein the aryl or heteroaryl group bears at least one substituent including a nitro substitutent

3. The compound of claim 2, wherein the nitro substituent is disposed at a position on A^6 distal to the sulfonyl, e.g., A^6 is a 4-nitrophenyl group optionally substituted with 1-4 additional substituents.

4. The compound of any preceding claim, wherein A^5 is a heterocyclic amine, such as a piperidine, piperazine, or morpholine ring

5. The compound of any one of claims 1-3, wherein A^5 is acyclic, such as $NR^{15}R^{16}$, wherein each of R^{15} and R^{16}, independently, is H, alkyl, alkenyl, alkynyl, aryl, heteroaryl, aralkyl, or heteroaralkyl, provided that R^{15} and R^{16} are not both H.

6. A compound of claim 1, having the structure of Formula II:



Formula II

wherein:

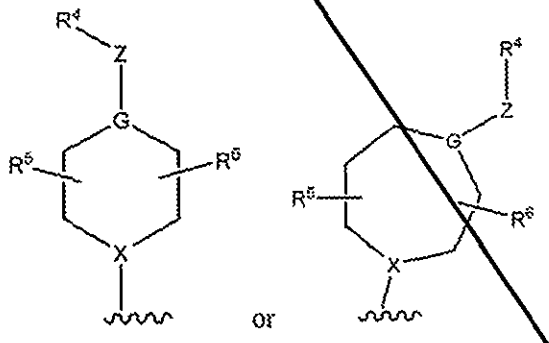
X is N or -C(H)-, preferably N; and

Y^1 and Y^2 are each independently lower alkyl or Y^1 and Y^2 taken together with X form a heterocyclyl ring.

7. The compound of claim 6, wherein Y^1 and Y^2 are each ethyl.

8. The compound of claim 6, wherein Y^1 and Y^2 taken together form a piperazine ring

9. The compound of claim 6, wherein Y^1 and Y^2 taken together with X form:



wherein

X is N;

G is selected from N or -C(H)-, preferably N;

Z is absent or selected from substituted or unsubstituted alkyl, heteroalkyl, alkenyl, or alkynyl;

R^4 is absent or selected from substituted or unsubstituted aryl (e.g., phenyl) and heteroaryl; and

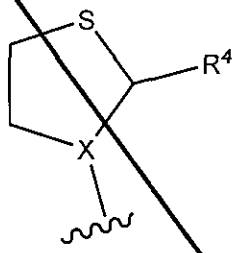
R^5 and R^6 are each independently absent or lower alkyl.

10. The compound of claim 9, wherein G is N and R^4 is selected from phenyl, 4-fluorophenyl and 3-chlorophenyl.

11. The compound of any one of claims 6-10, wherein Z is absent.

12. The compound of any one of claims 6-10, wherein Z is prop-2-en-1-yl and R^4 is phenyl.

13. The compound of claim 6, wherein Y^1 and Y^2 taken together with X form:



wherein X is -C(H)-, and

R^4 is absent or selected from substituted or unsubstituted aryl (e.g., phenyl) and heteroaryl, such as a halogen-substituted phenyl group, e.g., 4-fluorophenyl or 3-chlorophenyl.

14. A pharmaceutical composition comprising a compound of any preceding claim and a pharmaceutically acceptable excipient or solvent.

15. The use of at least one compound or composition of any preceding claim in the manufacture of a medicament for mitigating an effect of ionizing radiation on a cell, organ, tissue, or organism.

16. The use of claim 15, wherein the medicament is to be administered before, during, or after exposure to ionizing radiation.

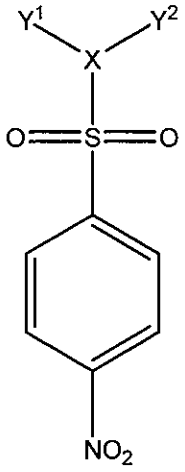
17. The use of a compound or composition of any one of claims 1-14 in the manufacture of a medicament for the treatment of inflammation in an organism.

18. The use of a compound or composition of any one of claims 1-14 in the manufacture of a medicament for the treatment of cancer in an organism.

19. The use of any one of claims 15-18, wherein the organism is a mammal.

CLAIMS

1. The use of a compound in the manufacture of a medicament for mitigating an effect of ionizing radiation on a cell, organ, tissue, or organism, the compound having the structure of Formula II:



Formula II

wherein:

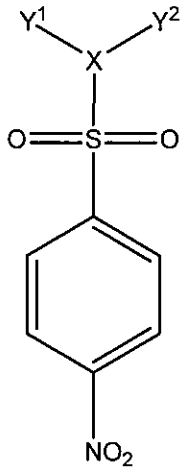
X is N; and

Y^1 and Y^2 are each independently lower alkyl or Y^1 and Y^2 taken together with X form a substituted or unsubstituted heterocyclyl ring,

wherein the heterocyclyl ring is optionally substituted with one or more substituents selected from halogen, hydroxyl, carboxyl, alkoxycarbonyl, formyl, acyl, thiocarbonyl, alkoxyl, a phosphoryl, phosphate, phosphonate, phosphinate, amino, amido, amidine, imine, cyano, nitro, azido, sulfhydryl, alkylthio, sulfate, sulfonate, sulfamoyl, sulfonamido, sulfonyl, heterocyclyl, aralkyl, alkyl, aryl and heteroaryl.

2. The use of claim 1, wherein the medicament is to be administered before, during, or after exposure to ionizing radiation.

3. The use of a compound in the manufacture of a medicament for the treatment of inflammation in an organism, the compound having the structure of Formula II:

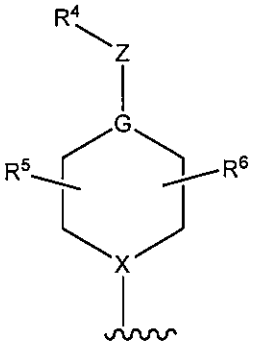


Formula II

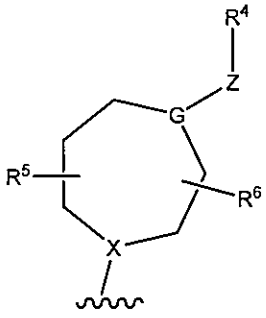
wherein:

X is N; and

Y^1 and Y^2 are each independently lower alkyl or Y^1 and Y^2 taken together with X form



or



G is selected from N or -C(H)-;

Z is absent or prop-2-en-1-yl;

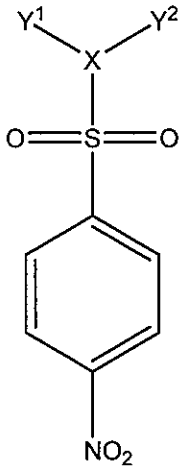
R^4 is absent or selected from hydrogen or substituted or unsubstituted aryl or heteroaryl; and

R^5 and R^6 are each independently absent or lower alkyl,

wherein aryl or heteroaryl is optionally substituted with one or more substituents selected from halogen, hydroxyl, carboxyl, alkoxycarbonyl, formyl, acyl, thiocarbonyl,

alkoxyl, a phosphoryl, phosphate, phosphonate, phosphinate, amino, amido, amidine, imine, cyano, nitro, azido, sulfhydryl, alkylthio, sulfate, sulfonate, sulfamoyl, sulfonamido, sulfonyl, heterocyclyl, aralkyl, alkyl, aryl and heteroaryl.

4. The use of a compound in the manufacture of a medicament for the treatment of lung cancer in an organism, the compound having the structure of Formula II:

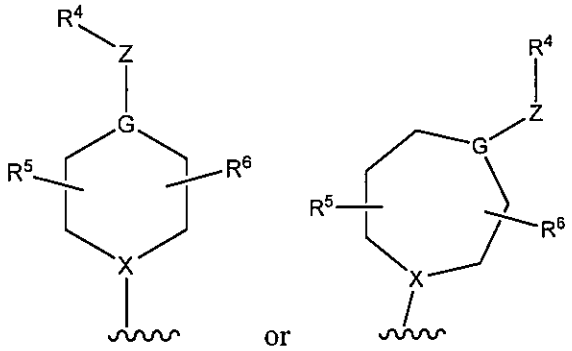


Formula II

wherein:

X is N; and

Y^1 and Y^2 are each independently lower alkyl or Y^1 and Y^2 taken together with X form



G is selected from N or -C(H)-;

Z is absent or prop-2-en-1-yl;

R^4 is absent or selected from hydrogen or substituted or unsubstituted aryl; and

R^5 and R^6 are each independently absent or lower alkyl,

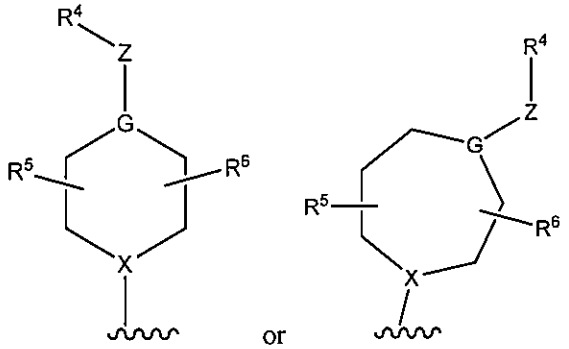
wherein aryl is optionally substituted with one or more substituents selected from halogen, hydroxyl, carboxyl, alkoxycarbonyl, formyl, acyl, thiocarbonyl, alkoxyl, a phosphoryl, phosphate, phosphonate, phosphinate, amino, amido, amidine, imine, cyano, nitro, azido, sulfhydryl, alkylthio, sulfate, sulfonate, sulfamoyl, sulfonamido, sulfonyl, heterocyclyl, aralkyl, alkyl, aryl and heteroaryl.

5. The use of any one of claims 1-4, wherein the organism is a mammal.

6. The use of any one of claims 1-5, wherein Y^1 and Y^2 are each ethyl.

7. The use of any one of claims 1, 2, and 5, wherein Y^1 and Y^2 taken together form a piperidine, piperazine, or morpholine ring

8. The use of any one of claims 1, 2, and 5, wherein Y^1 and Y^2 taken together with X form:



wherein

X is N;

G is selected from N or -C(H)-, preferably N;

Z is absent;

R^4 is absent or selected from hydrogen, substituted or unsubstituted aryl and heteroaryl; and

R^5 and R^6 are each independently absent or lower alkyl,

wherein aryl and heteroaryl are optionally substituted with one or more substituents selected from halogen, hydroxyl, carboxyl, alkoxycarbonyl, formyl, acyl, thiocarbonyl, alkoxyl, a phosphoryl, phosphate, phosphonate, phosphinate, amino, amido, amidine, imine, cyano, nitro, azido, sulfhydryl, alkylthio, sulfate, sulfonate, sulfamoyl, sulfonamido, sulfonyl, heterocyclyl, aralkyl, alkyl, aryl and heteroaryl.

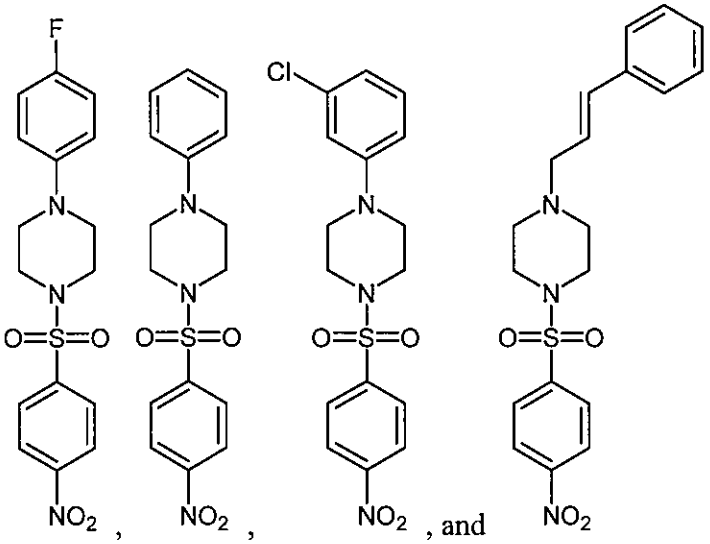
9. The use of any one of claims 3-5 and 7-8, wherein G is N and R^4 is selected from phenyl, 4-fluorophenyl and 3-chlorophenyl.

10. The use of claim 9, wherein R^4 is phenyl.

11. The use of any one of claims 3, 4, 5, and 8-10, wherein Z is absent.

12. The use of any one of claims 3-5 and 7-9, wherein Z is prop-2-en-1-yl and R^4 is phenyl.

13. The use of any one of claims 1-5 and 7-9 wherein the compound is selected from



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