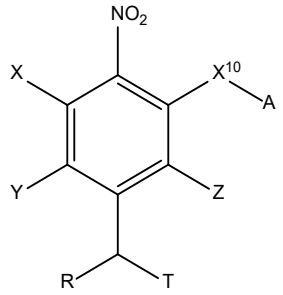
CLAIMS

1. A compound of formula I:



I

or a pharmaceutically acceptable salt, or a solvate of each thereof, wherein

X^{10} is O, S, SO, or SO_2;

A is C_6-C_{10} aryl, 5-15 membered heteroaryl, or -N=CR^1R^2;

R^1 is C_1-C_6 alkyl or CN and R^2 is C_6-C_{10} aryl;

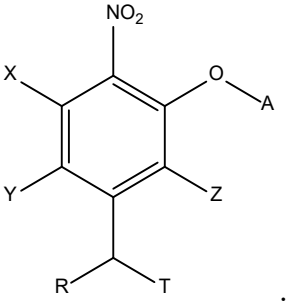
each X, Y, and Z independently is hydrogen, CN, halo, or C_1-C_6 alkyl;

R is hydrogen, or C_1-C_6 alkyl;

T is an -O-P(Z^1)(Z^5-X^5-Y^5)$_2$, where Z^5 is -NH, S or O, X^5 is optionally substituted ethylene, Y^5 is halo or -OSO_2-R^{20}, wherein R^{20} is optionally substituted alkyl, aryl, cycloalkyl, heterocyclyl, or heteroaryl, or Z^5-X^5-Y^5 is an aziridinyl (NCH_2CH_2) moiety; or T is OP(Z^1)($NR^{30}CH_2CH_2Cl$)$_2$, OP(Z^1)($NR^{30}CH_2CH_2Br$)$_2$, OP(Z^1)(NR^{30}_2)(N($CH_2CH_2X^1$)$_2$), OP(Z^1)(N(CH_2)$_2$)$_2$, or OP(Z^1)(N(CH_2CH_2Cl)$_2$)$_2$ where each R^{30} is hydrogen or C_1-C_6 alkyl, or 2 R^{30} groups together with the nitrogen atom they are bound to form 5-7 membered heterocyclyl group and X^1 is Cl, Br, or -OSO_2Me; and Z^1 is O or S; and

wherein the alkyl, aryl, and heteroaryl groups are optionally substituted.

2. The compound of claim 1 of formula I-A:



I-A

wherein the remaining variables are defined as in claim 1 above.

3. The compound of claim 1 or 2, wherein T is $OP(Z^1)(NR^{30}CH_2CH_2Cl)_2$, $OP(Z^1)(NR^{30}CH_2CH_2Br)2$, $OP(Z^1)(NR^{30}{}_2)(N(CH_2CH_2X^1)_2)$, $OP(Z^1)(N(CH_2)_2)_2$, or $OP(Z^1)(N(CH_2CH_2Cl)_2)_2$, wherein each R^{30} independently is hydrogen or C_1-C_6 alkyl or 2 R^{30} groups together with the nitrogen atom they are bound to form 5-7 membered heterocyclyl group, Z^1 is O or S, and X^1 is Cl, Br, or $-OSO_2Me$.

4. The compound of any one of claims 1-3, wherein T is $OP(Z^1)(NHCH_2CH_2Cl)_2$, $OP(Z^1)(NHCH_2CH_2Br)2$, $OP(Z^1)(NH_2)(N(CH_2CH_2X^1)_2)$, $OP(Z^1)(N(CH_2)_2)_2$, or $OP(Z^1)(N(CH_2CH_2Cl)_2)_2$, wherein X^1 is defined as in claim 3.

5. The compound of any one of claims 1-4, wherein Z^1 is O.

6. The compound of any one of claims 1-5, wherein T is $OP(O)(N(CH_2CH_2))_2$, $OP(O)(NHCH_2CH_2Cl)_2$, $OP(O)(NHCH_2CH_2Br)_2$, or $OP(O)(NH_2)(N(CH_2CH_2Cl)_2)$.

7. The compound of any one of claims 1-6, wherein Z is hydrogen.

8. The compound of any one of claims 1-7, wherein X is hydrogen.

9. The compound of any one of claims 1-8, wherein Y is hydrogen or halo.

10. The compound of any one of claims 1-9, wherein A is optionally substituted C_6-C_{10} aryl.

11. The compound of any one of claims 1-10, wherein A is optionally substituted phenyl.

12. The compound of any one of claims 1-9, wherein A is optionally substituted 5-15 membered heteroaryl.

13. The compound of any one of claims 1-9 and 12, wherein A is optionally substituted pyridyl.

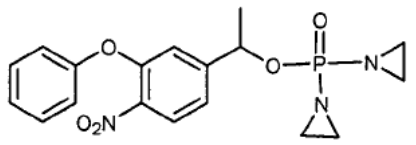
14. The compound of any one of claims 1-9, wherein A is $-N=CR^1R^2$ where R^1 and R^2 are defined as in claim 1.

15. The compound of any one of claims 1-14, wherein R is hydrogen.

16. The compound of any one of claims 1-14, wherein R is C_1-C_6 alkyl.

17. The compound of any one of claims 1-14 and 16, wherein R is methyl.

18. The compound of claim 1, wherein the compound is selected from the following compounds: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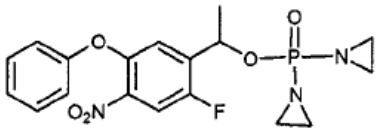
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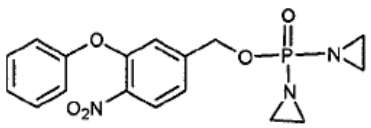
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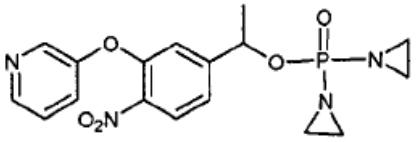
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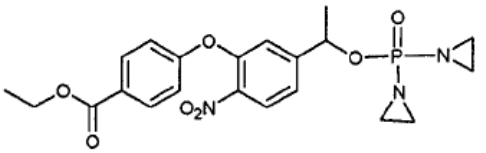
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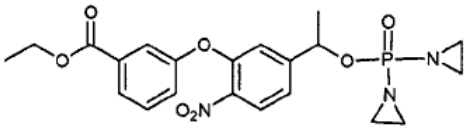
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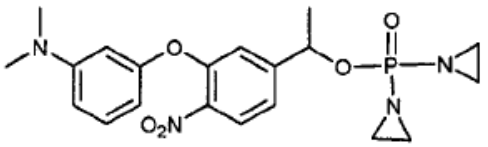
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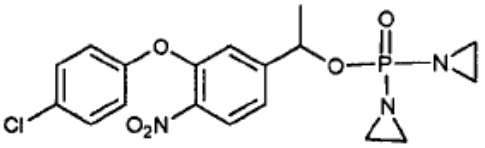
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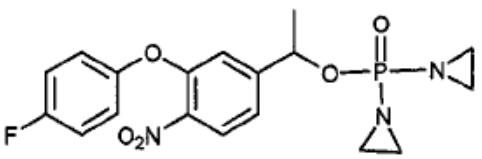
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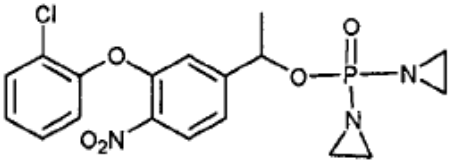
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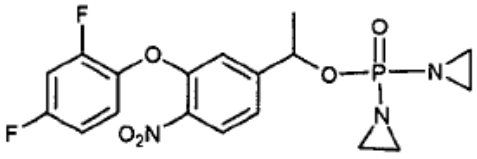
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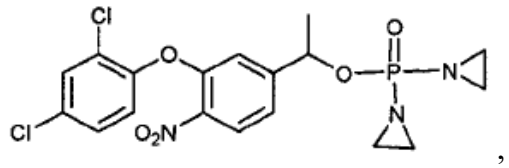
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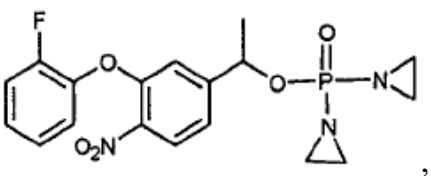
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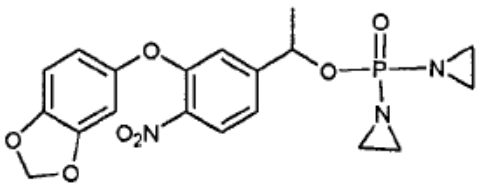
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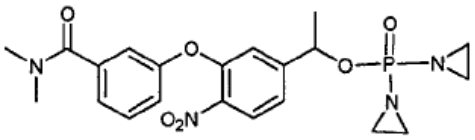
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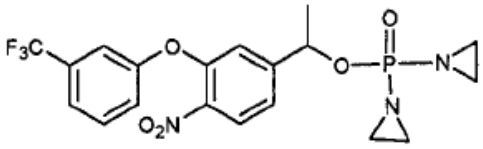
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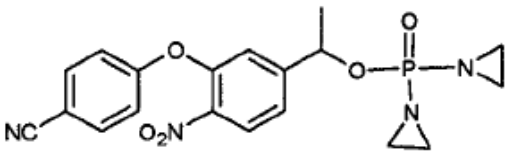
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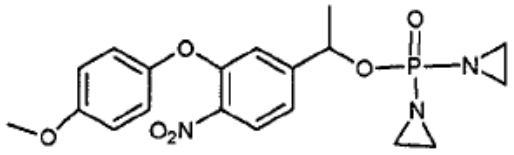
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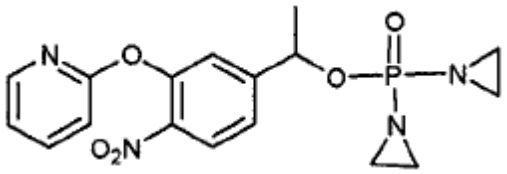
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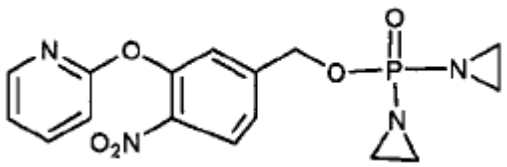
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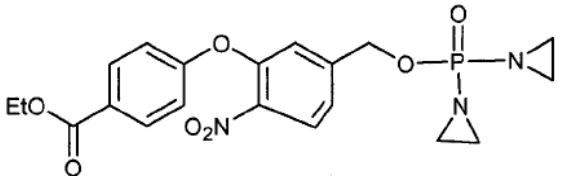
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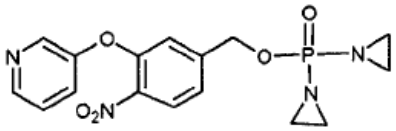
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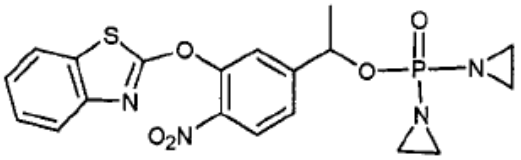
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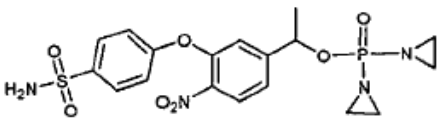
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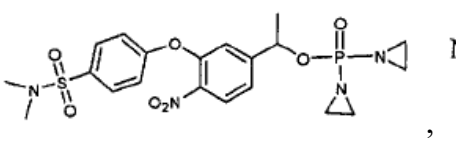
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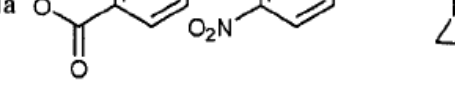
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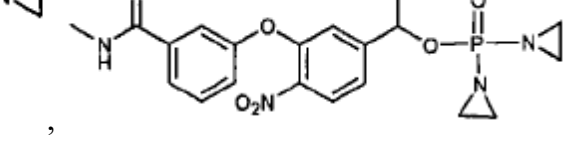
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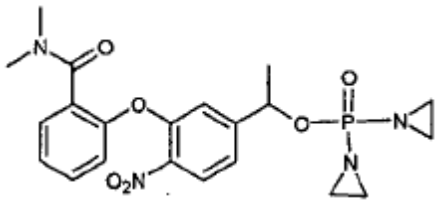
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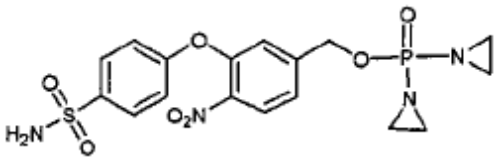
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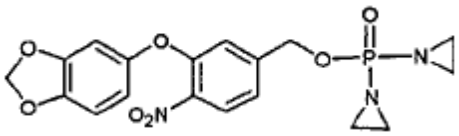
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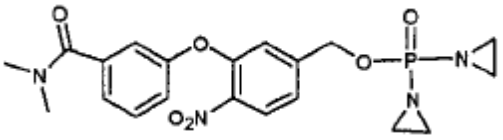
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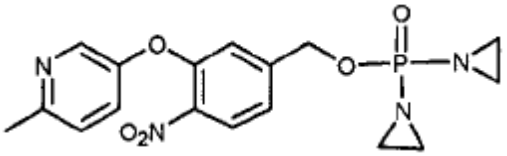
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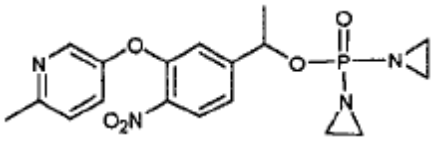
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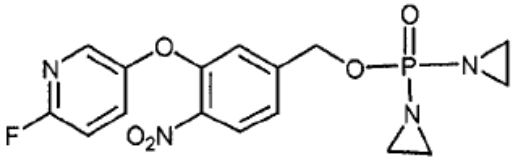
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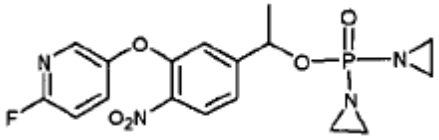
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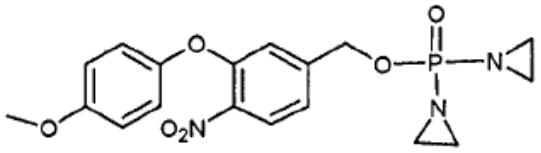
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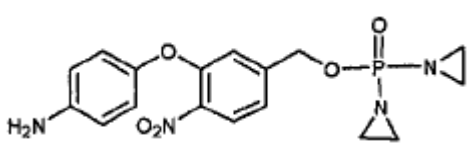
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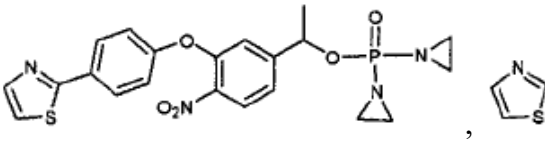
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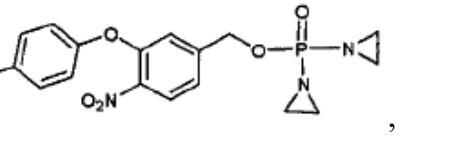
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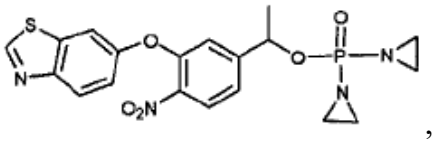
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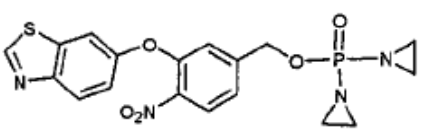
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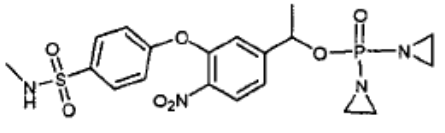
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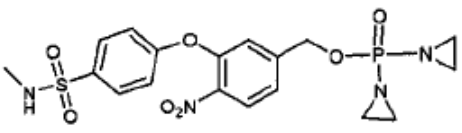
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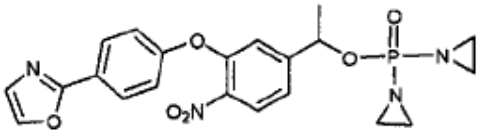
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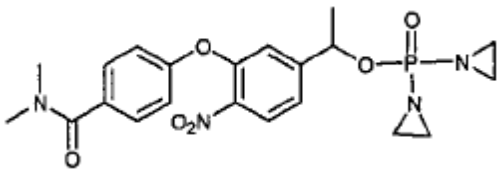
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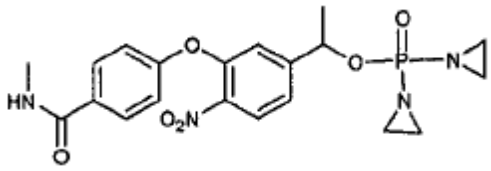
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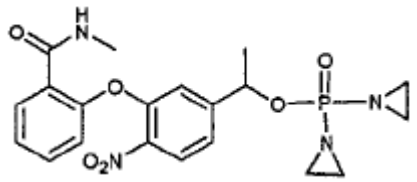
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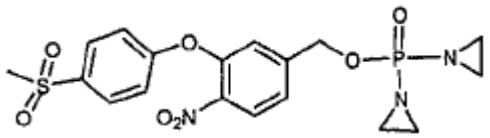
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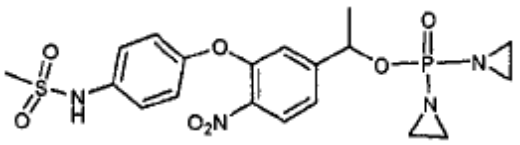
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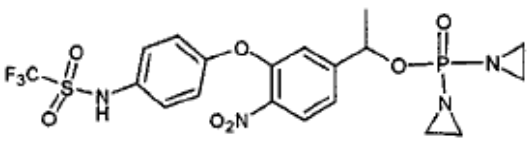
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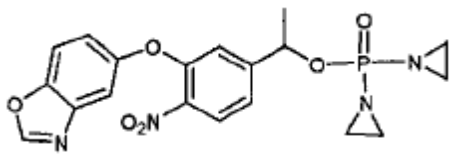
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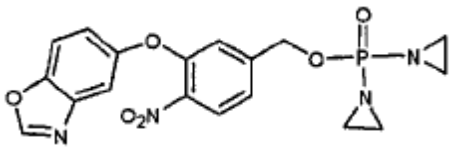
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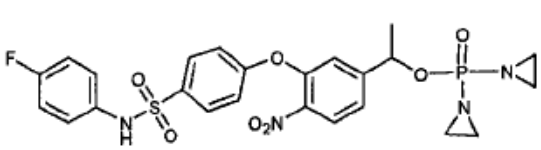
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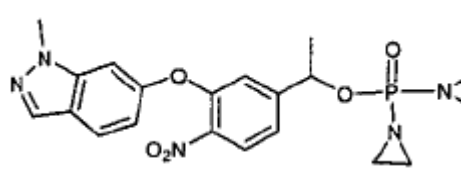
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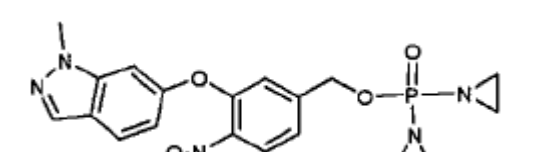
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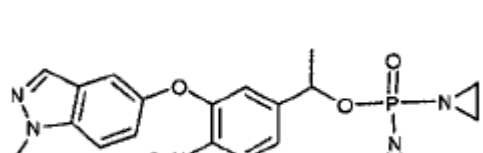
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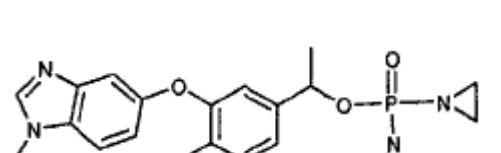
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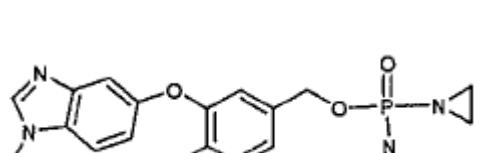
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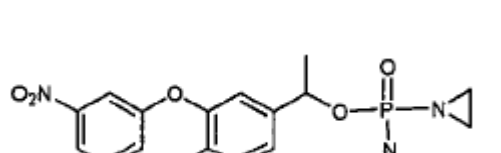
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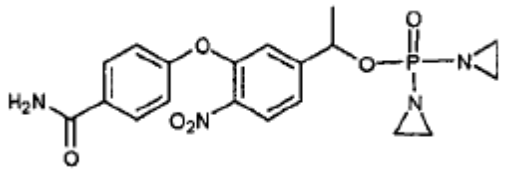
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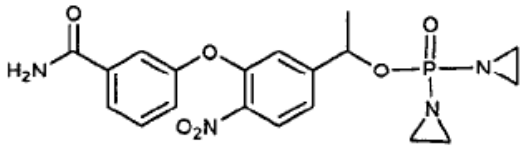
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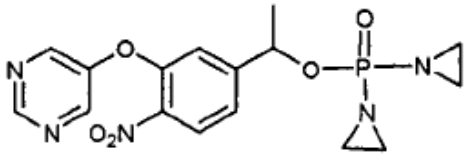
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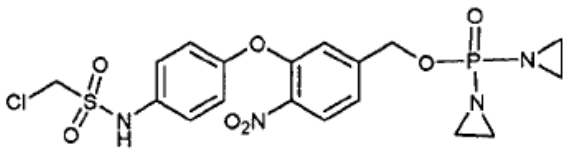
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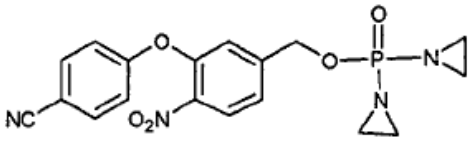
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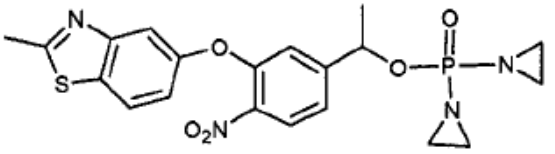
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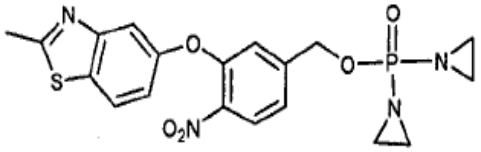
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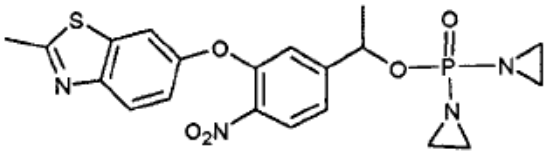
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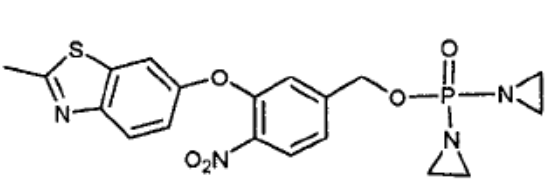
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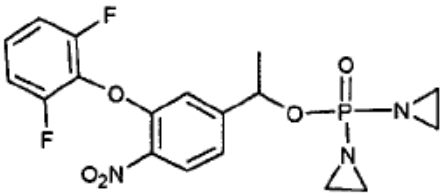
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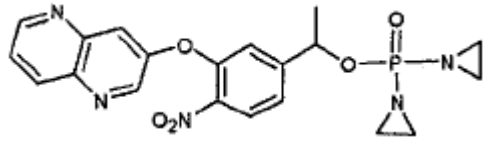
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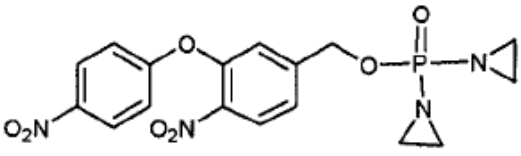
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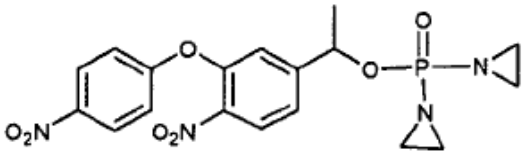
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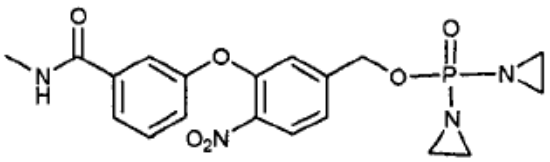
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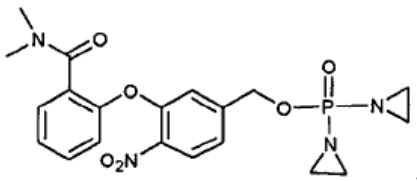
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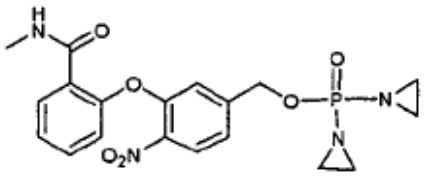
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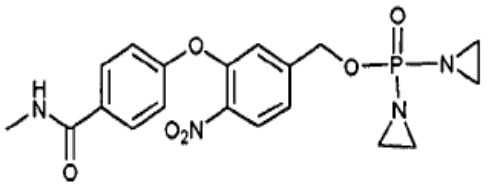
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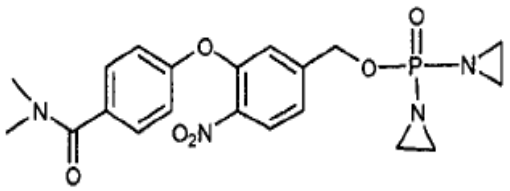
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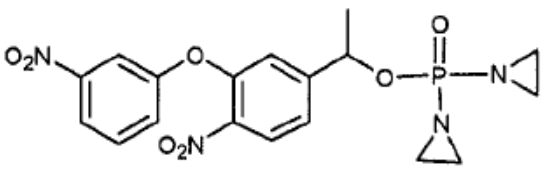
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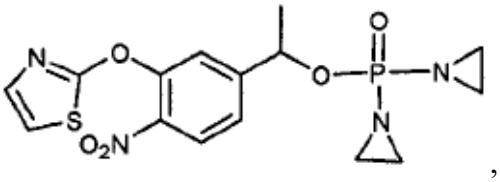
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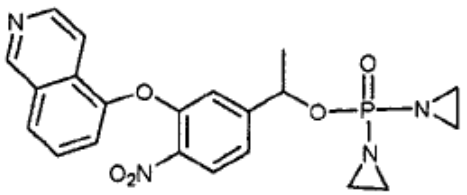
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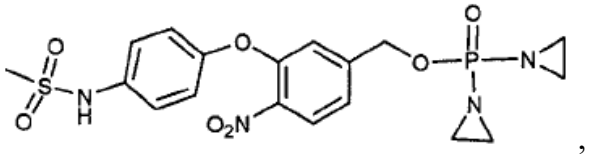
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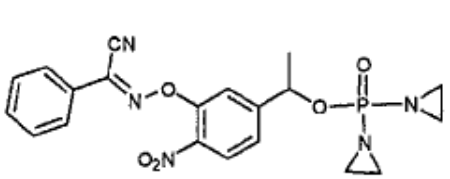
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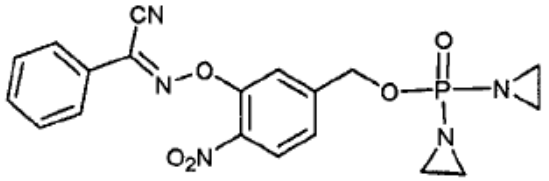
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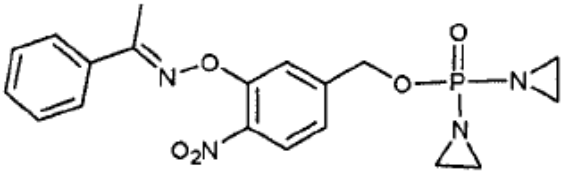
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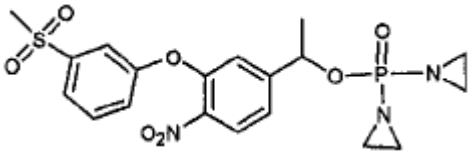
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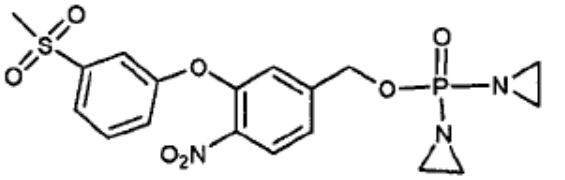
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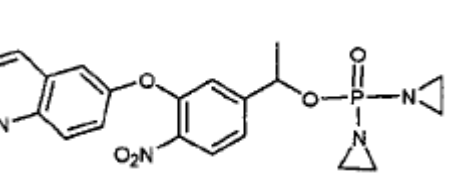
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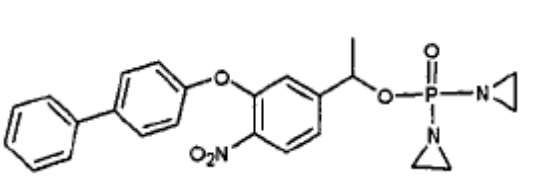
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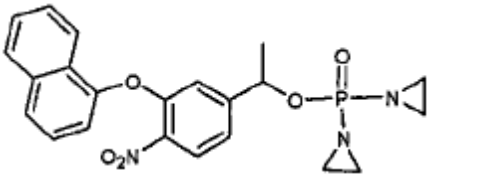
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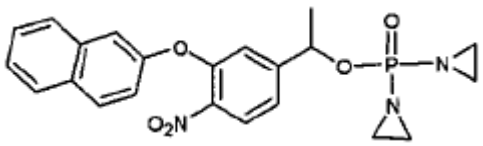
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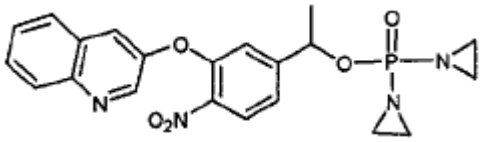
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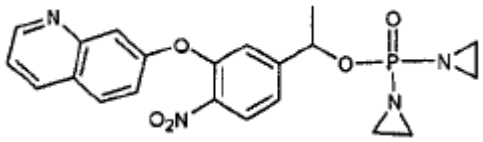
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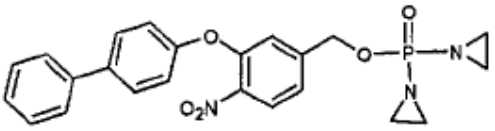
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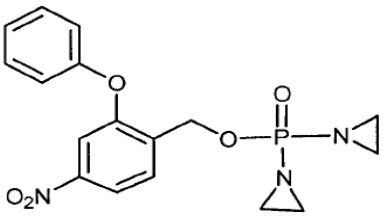
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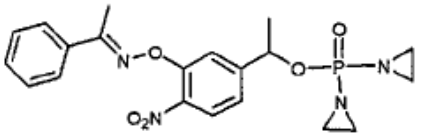
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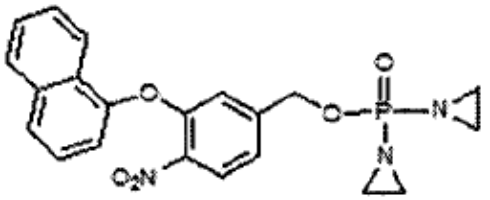
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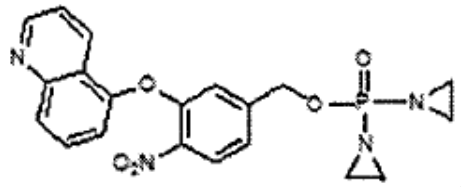
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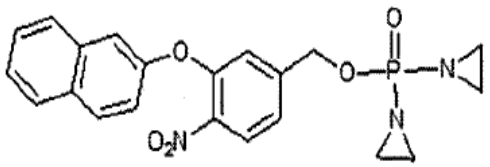
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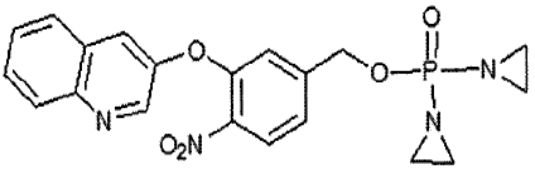
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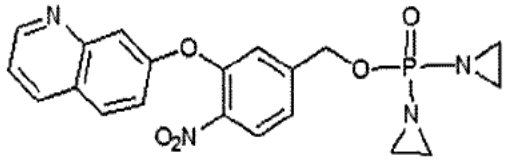
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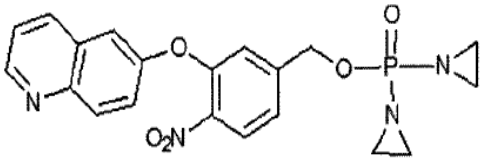
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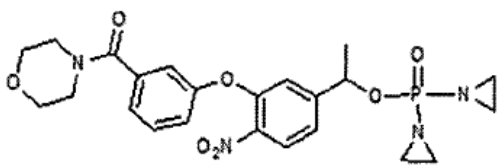
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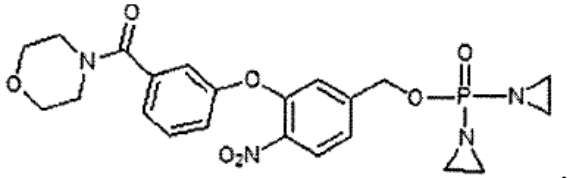
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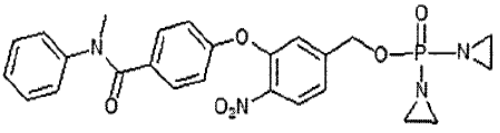
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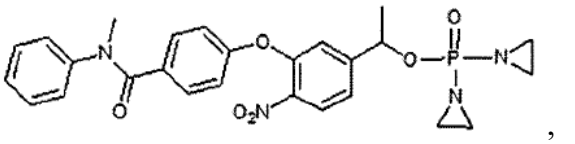
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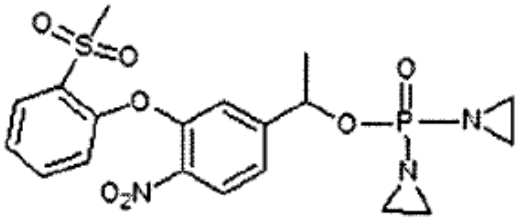
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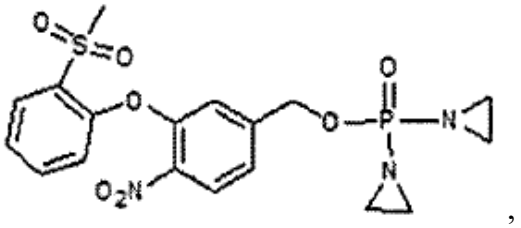
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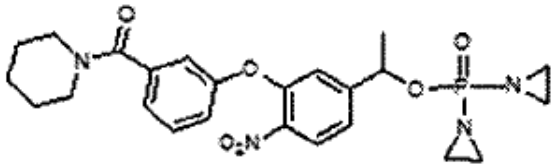
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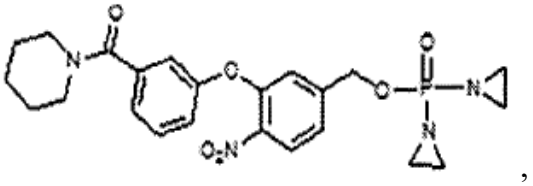
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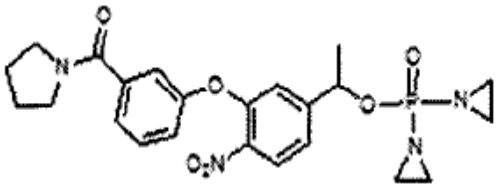
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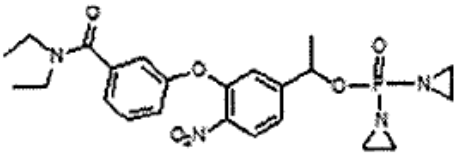
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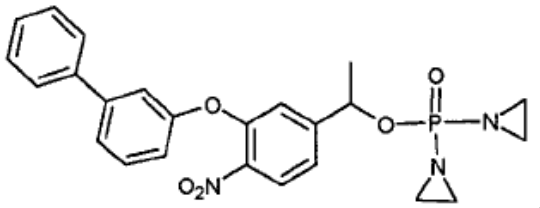
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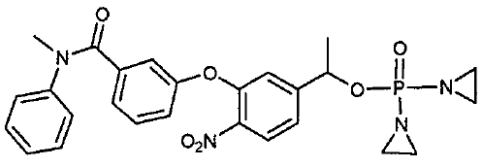
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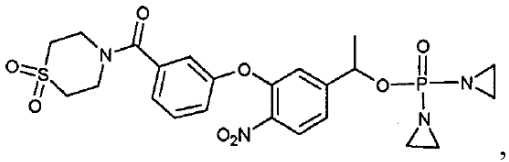
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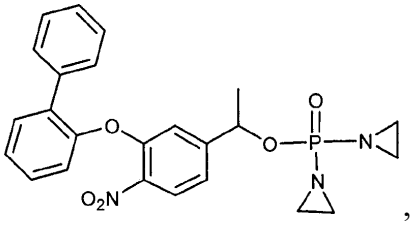
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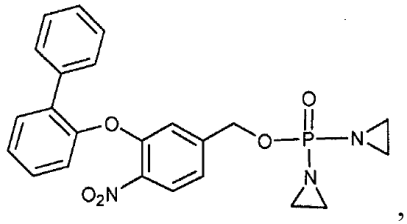
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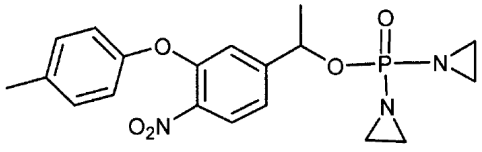
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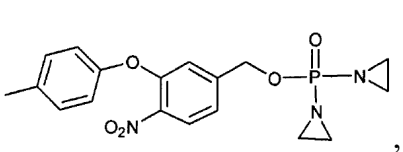
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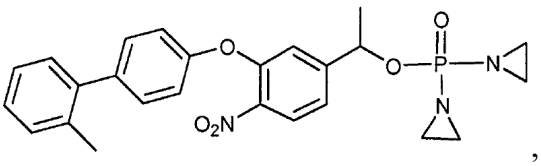
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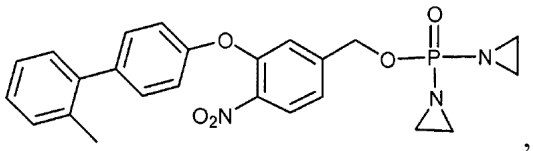
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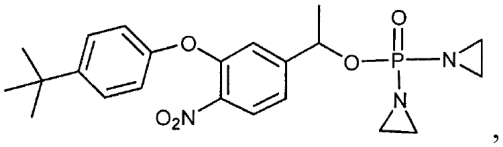
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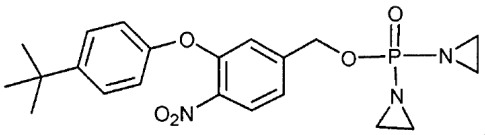
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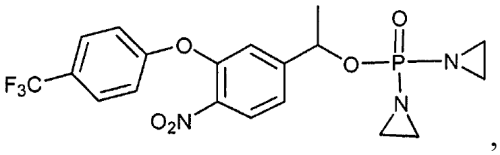
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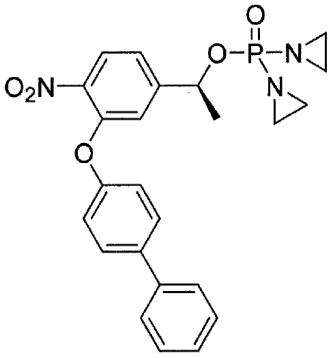
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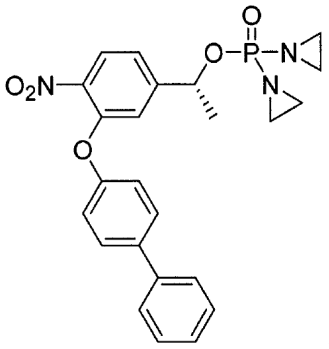
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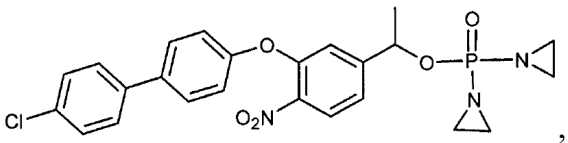
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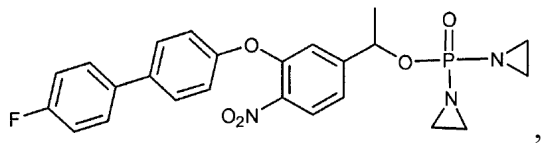
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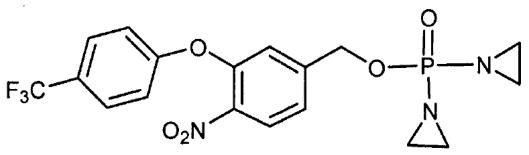
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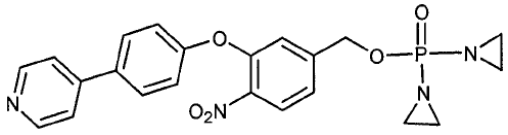
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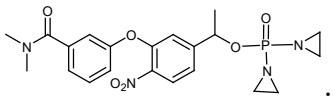
19. The compound of claim 1, wherein the compound is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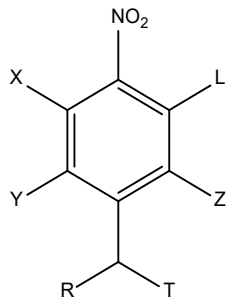
20. A pharmaceutically acceptable composition comprising a compound of any one of claims 1-19.

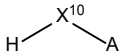
21. The pharmaceutically acceptable composition of claim 20 for treating cancer in a patient.

22. A process of making the compound of formula I of claim 1 comprising contacting a compound of formula II:



II

wherein L is a leaving group, and the remaining variables are defined as in claim 1, with a compound of formula III:



III

wherein X^{10} is defined as in claim 1, to provide a compound of formula I.

23. The pharmaceutically acceptable composition of claim 20, wherein an AKR1C3 protein expression level of a cancer in a patient using an AKR1C3 antibody is detectable.

24. The pharmaceutically acceptable composition of claim 20, wherein an intratumoral AKR1C3 protein expression level of a cancer in a sample isolated from a patient using an AKR1C3 antibody is detectable.

25. A kit comprising a means for isolating a sample from a patient and determining an intratumoral AKR1C3 protein expression level of a cancer in the sample using an AKR1C3 antibody; and a means for indicating whether the intratumoral AKR1C3 protein expression level of the cancer is equal to or greater than a predetermined level at which a compound of any one of claims 1-19 or a composition of any one of claims 20-21 and 23-24 should be administered.