CLAIMS

1. A pharmaceutical combination for use in treating leukemia comprising a therapeutically effective amount of a histone deacetylase (HDAC) inhibitor or a pharmaceutically acceptable salt thereof, and azacitidine or a pharmaceutically acceptable salt thereof.

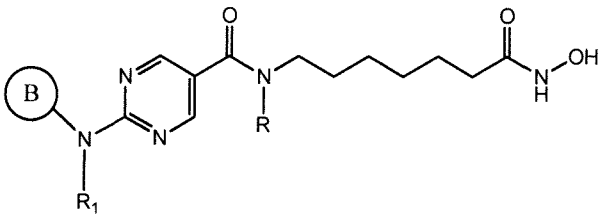
2. The combination of claim 1, wherein the leukemia is acute myelogenous leukemia (AML).

3. The combination of claim 1, wherein the HDAC inhibitor is an HDAC6-specific inhibitor.

4. The combination of claim 1, wherein the HDAC inhibitor is an HDAC1/2-specific inhibitor.

5. The combination of claim 1, wherein the HDAC inhibitor is an HDAC1/2/6-specific inhibitor.

6. The combination of claim 3, wherein the HDAC6-specific inhibitor is a compound of Formula I:



(I)

or a pharmaceutically acceptable salt thereof,

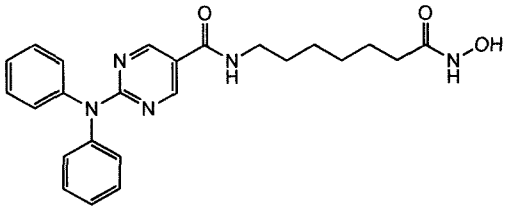
wherein,

ring B is aryl or heteroaryl;

R_1 is an aryl or heteroaryl, each of which may be optionally substituted by OH, halo, or C_{1-6}-alkyl; and

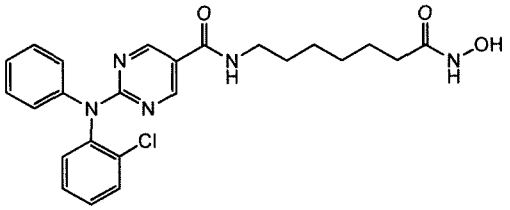
R is H or C_{1-6}-alkyl.

7. The combination of claim 6, wherein the compound of Formula I is:



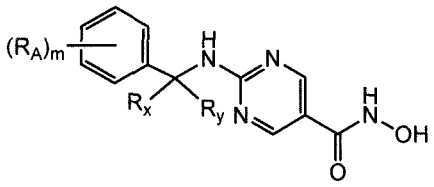
or a pharmaceutically acceptable salt thereof.

8. The combination of claim 6, wherein the compound of Formula I is:



or a pharmaceutically acceptable salt thereof.

9. The combination of claim 3, wherein the HDAC6-specific inhibitor is a compound of Formula II:



(II)

or a pharmaceutically acceptable salt thereof,

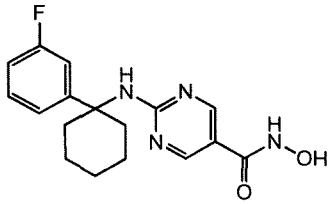
wherein,

R_x and R_y together with the carbon to which each is attached, form a cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl;

each R_A is independently C_{1-6}-alkyl, C_{1-6}-alkoxy, halo, OH, -NO_2, -CN, or –NH_2; and

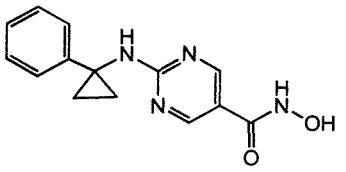
m is 0 or 1.

10. The combination of claim 9, wherein the compound of Formula II is:



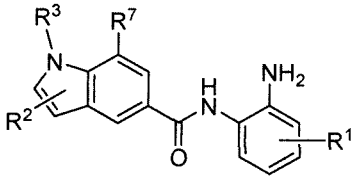
or a pharmaceutically acceptable salt thereof.

11. The combination of claim 9, wherein the compound of Formula II is:



or a pharmaceutically acceptable salt thereof.

12. The combination of claim 4, wherein the HDAC1/2-specific inhibitor is a compound of Formula III:



(III)

or a pharmaceutically acceptable salt thereof,

wherein,

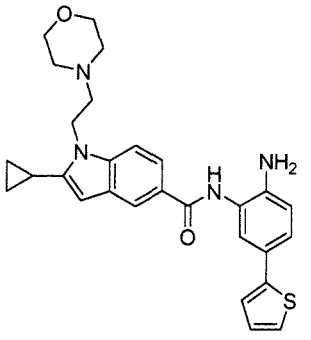
R^1 is aryl or heteroaryl;

R^2 and R^3 are each independently selected from C_{3-6}-cycloalkyl, C_{1-6}-alkyl-OR^6, C_{1-6}-alkyl-C_{3-6}-cycloalkyl, C_{1-6}-alkyl-heterocycloalkyl, C_{2-6}-alkenyl;

R^6 is H or C_{1-6}-alkyl; and

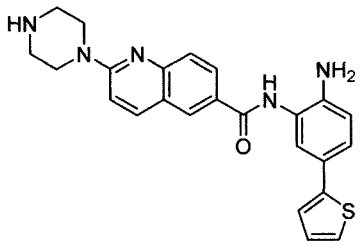
R^7 is H or C_{3-6}-cycloalkyl.

13. The combination of claim 12, wherein the compound of Formula III is:



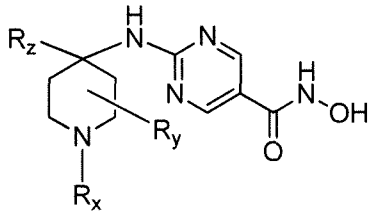
or a pharmaceutically acceptable salt thereof.

14. The combination of claim 4, wherein the HDAC1/2-specific inhibitor is the compound:



or a pharmaceutically acceptable salt thereof.

15. The combination of claim 5, wherein the HDAC1/2/6-specific inhibitor is a compound of Formula IV:



(IV)

or a pharmaceutically acceptable salts thereof,

wherein,

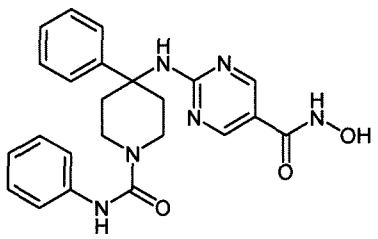
R_x is independently selected from the group consisting of $-C(O)R^1$, $-CO_2R^1$, and $-C(O)N(R^1)_2$;

R_y is selected from the group consisting of H, C_{1-6}-alkyl, C_{1-6}-alkoxy, halo, $-OH$, $-NO_2$, $-CN$, $-NH_2$, $-C(O)R^1$, $-CO_2R^1$, and $-C(O)N(R^1)_2$;

each R^1 is, independently for each occurrence, selected from the group consisting of H, C_{1-6}-alkyl, C_{3-8}-cycloalkyl, C_{3-7}-heterocycloalkyl, aryl, heteroaryl, C_{1-6}-alkyl-cycloalkyl, C_{1-6}-alkyl-heterocycloalkyl, C_{1-6}-alkyl-aryl, and C_{1-6}-alkyl-heteroaryl; and

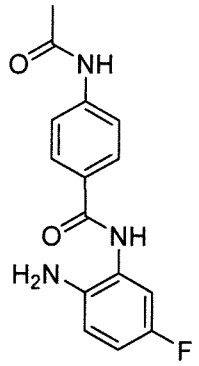
R_z is selected from the group consisting of C_{1-6}-alkyl, C_{3-8}-cycloalkyl, C_{3-7}-heterocycloalkyl, aryl, and heteroaryl.

16. The combination of claim 15, wherein the compound of Formula IV is:



or a pharmaceutically acceptable salt thereof.

17. The combination of claim 1, wherein the HDAC inhibitor is:



or a pharmaceutically acceptable salt thereof.

18. The combination of claim 1, wherein the combination further comprises a pharmaceutically acceptable carrier.

19. Use of a histone deacetylase (HDAC) inhibitor, or a pharmaceutically acceptable salt thereof, and azacitidine, or a pharmaceutically acceptable salt thereof, in the preparation of a combination therapeutic for treating leukemia in a subject in need thereof, wherein the combination therapeutic is for administering to the subject a therapeutically effective amount of the histone deacetylase (HDAC) inhibitor, or a pharmaceutically acceptable salt thereof, and azacitidine, or a pharmaceutically acceptable salt thereof.

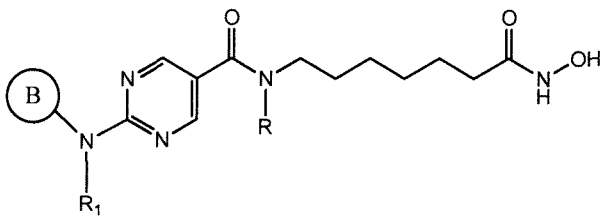
20. The use of claim 19, wherein the leukemia is acute myelogenous leukemia (AML).

21. The use of claim 19, wherein the HDAC inhibitor is an HDAC6-specific inhibitor.

22. The use of claim 19, wherein the HDAC inhibitor is an HDAC1/2-specific inhibitor.

23. The use of claim 19, wherein the HDAC inhibitor is an HDAC1/2/6-specific inhibitor.

24. The use of claim 21, wherein the HDAC6-specific inhibitor is a compound of Formula I:



(I)

or a pharmaceutically acceptable salt thereof,

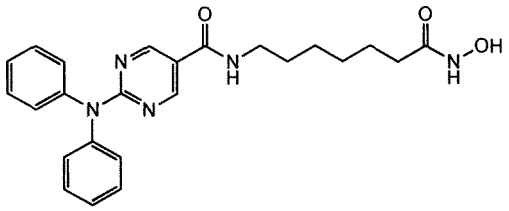
wherein,

ring B is aryl or heteroaryl;

R_1 is an aryl or heteroaryl, each of which may be optionally substituted by OH, halo, or C_{1-6}-alkyl; and

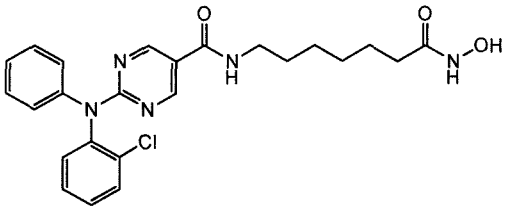
R is H or C_{1-6}-alkyl.

25. The use of claim 24, wherein the compound of Formula I is:



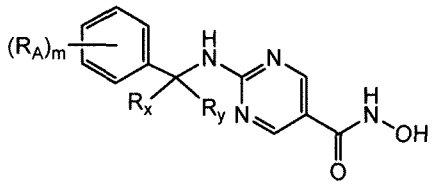
or a pharmaceutically acceptable salt thereof.

26. The use of claim 24, wherein the compound of Formula I is:



or a pharmaceutically acceptable salt thereof.

27. The use of claim 21, wherein the HDAC6-specific inhibitor is a compound of Formula II:



(II)

or a pharmaceutically acceptable salt thereof,

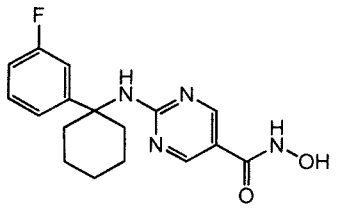
wherein,

R_x and R_y together with the carbon to which each is attached, form a cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl;

each R_A is independently C_{1-6}-alkyl, C_{1-6}-alkoxy, halo, OH, -NO_2, -CN, or –NH_2; and

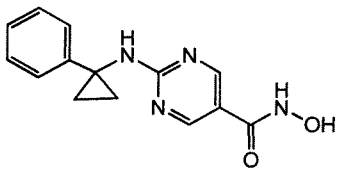
m is 0 or 1.

28. The use of claim 27, wherein the compound of Formula II is:



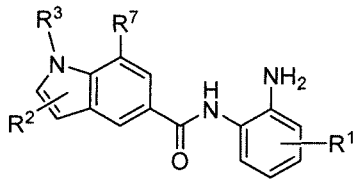
or a pharmaceutically acceptable salt thereof.

29. The use of claim 27, wherein the compound of Formula II is:



or a pharmaceutically acceptable salt thereof.

30. The use of claim 22, wherein the HDAC1/2-specific inhibitor is a compound of Formula III:



(III)

or a pharmaceutically acceptable salt thereof,

wherein,

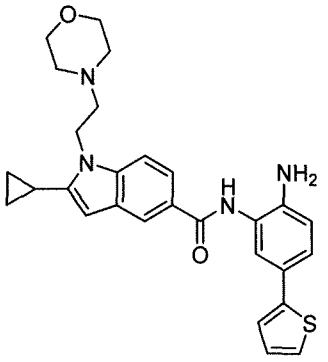
R^1 is aryl or heteroaryl;

R^2 and R^3 are each independently selected from C_{3-6}-cycloalkyl, C_{1-6}-alkyl-OR^6, C_{1-6}-alkyl-C_{3-6}-cycloalkyl, C_{1-6}-alkyl-heterocycloalkyl, C_{2-6}-alkenyl;

R^6 is H or C_{1-6}-alkyl; and

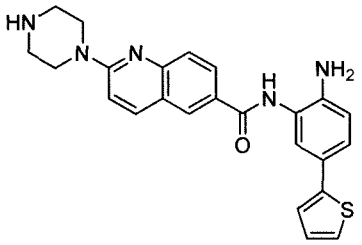
R^7 is H or C_{3-6}-cycloalkyl.

31. The use of claim 30, wherein the compound of Formula III is:



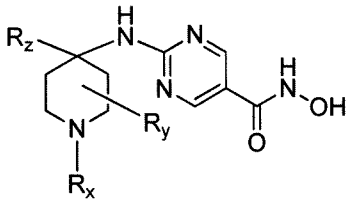
or a pharmaceutically acceptable salt thereof.

32. The use of claim 22, wherein the HDAC1/2-specific inhibitor is the compound:



or a pharmaceutically acceptable salt thereof.

33. The use of claim 23, wherein the HDAC1/2/6-specific inhibitor is a compound of Formula IV:



(IV)

or a pharmaceutically acceptable salts thereof,

wherein,

R_x is independently selected from the group consisting of $-C(O)R^1$, $-CO_2R^1$, and $-C(O)N(R^1)_2$;

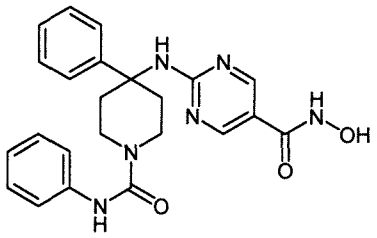
R_y is selected from the group consisting of H, C_{1-6}-alkyl, C_{1-6}-alkoxy, halo, –OH, $-NO_2$, –CN, $-NH_2$, $-C(O)R^1$, $-CO_2R^1$, and $-C(O)N(R^1)_2$;

each R^1 is, independently for each occurrence, selected from the group consisting of H, C_{1-6}-alkyl, C_{3-8}-cycloalkyl, C_{3-7}-heterocycloalkyl, aryl, heteroaryl, C_{1-6}-alkyl-cycloalkyl, C_{1-6}-alkyl-heterocycloalkyl, C_{1-6}-alkyl-aryl, and C_{1-6}-alkyl-heteroaryl; and

R_z is selected from the group consisting of C_{1-6}-alkyl, C_{3-8}-cycloalkyl, C_{3-7}-

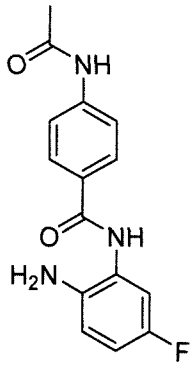
heterocycloalkyl, aryl, and heteroaryl.

34. The use of claim 33, wherein the compound of Formula IV is:



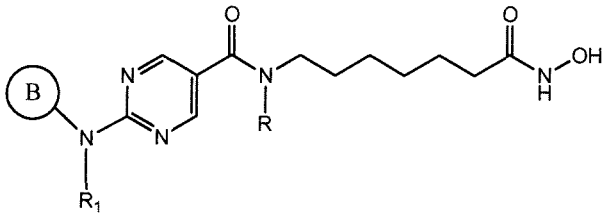
or a pharmaceutically acceptable salt thereof.

35. The use of claim 19, wherein the HDAC inhibitor is:



or a pharmaceutically acceptable salt thereof.

36. Use of a compound of Formula I:



(I)

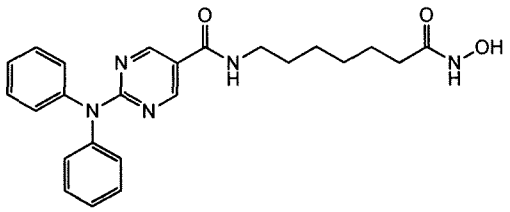
or a pharmaceutically acceptable salt thereof,

wherein,

ring B is aryl or heteroaryl;

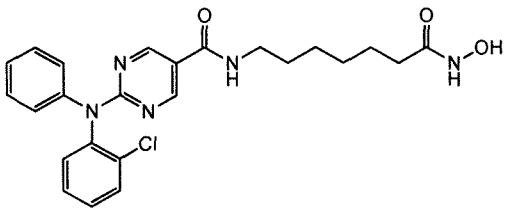
R_1 is an aryl or heteroaryl,each of which may be optionally substituted by OH, halo, or C_{1-6}-alkyl; and R is H or C_{1-6}-alkyl; in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof, wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of said compound or a pharmaceutically acceptable salt thereof.

37. The use of claim 36, wherein the compound of Formula I is:



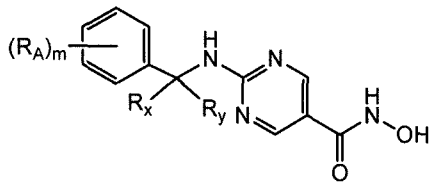
or a pharmaceutically acceptable salt thereof.

38. The use of claim 36, wherein the compound of Formula I is:



or a pharmaceutically acceptable salt thereof.

39. Use of a compound of Formula II:



(II)

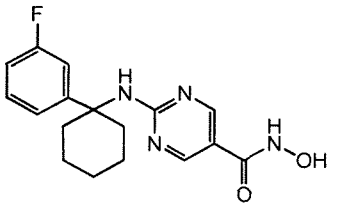
or a pharmaceutically acceptable salt thereof,

wherein,

R_x and R_y together with the carbon to which each is attached, form a cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl;

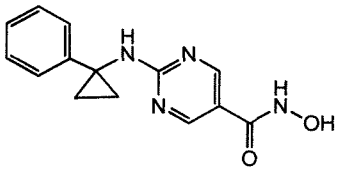
each R_A is independently C_{1-6}-alkyl, C_{1-6}-alkoxy, halo, OH, -NO_2, -CN, or –NH_2; and m is 0 or 1; in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof; wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of said compound or a pharmaceutically acceptable salt thereof.

40. The use of claim 39, wherein the compound of Formula II is:



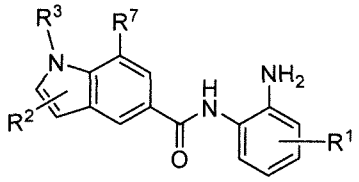
or a pharmaceutically acceptable salt thereof.

41. The use of claim 39, wherein the compound of Formula II is:



or a pharmaceutically acceptable salt thereof.

42. Use of a compound of Formula III:



(III)

or a pharmaceutically acceptable salt thereof,

wherein,

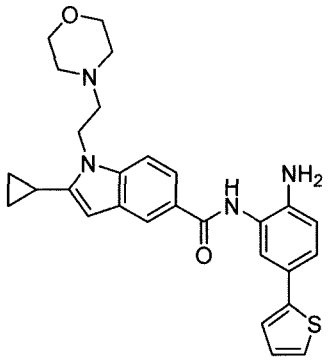
R^1 is aryl or heteroaryl;

R^2 and R^3 are each independently selected from C_{3-6}-cycloalkyl, C_{1-6}-alkyl-OR^6, C_{1-6}-alkyl-C_{3-6}-cycloalkyl, C_{1-6}-alkyl-heterocycloalkyl, C_{2-6}-alkenyl;

R^6 is H or C_{1-6}-alkyl; and

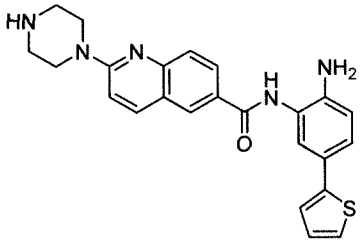
R^7 is H or C_{3-6}-cycloalkyl; in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof, wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of said compound or a pharmaceutically acceptable salt thereof.

43. The use of claim 42, wherein the compound of Formula III is:



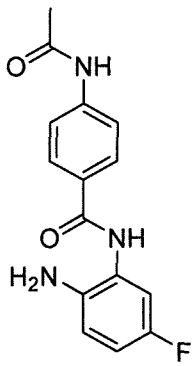
or a pharmaceutically acceptable salt thereof.

44. Use of the compound:



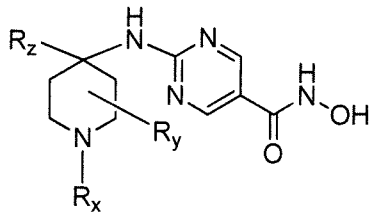
or a pharmaceutically acceptable salt thereof in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof; wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of said compound or a pharmaceutically acceptable salt thereof.

45. Use of the compound:



or a pharmaceutically acceptable salt thereof in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof, wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of said compound or a pharmaceutically acceptable salt thereof.

46. Use of a compound of Formula IV:



(IV)

or a pharmaceutically acceptable salt thereof,

wherein,

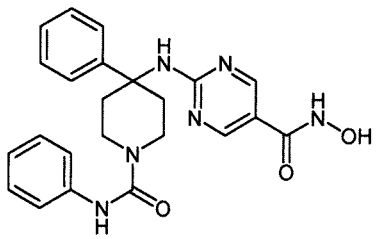
R_x is independently selected from the group consisting of $-C(O)R^1$, $-CO_2R^1$, and $-C(O)N(R^1)_2$;

R_y is selected from the group consisting of H, C_{1-6}-alkyl, C_{1-6}-alkoxy, halo, –OH, $-NO_2$, –CN, $-NH_2$, $-C(O)R^1$, $-CO_2R^1$, and $-C(O)N(R^1)_2$;

each R^1 is, independently for each occurrence, selected from the group consisting of H, C_{1-6}-alkyl, C_{3-8}-cycloalkyl, C_{3-7}-heterocycloalkyl, aryl, heteroaryl, C_{1-6}-alkyl-cycloalkyl, C_{1-6}-alkyl-heterocycloalkyl, C_{1-6}-alkyl-aryl, and C_{1-6}-alkyl-heteroaryl; and

R_z is selected from the group consisting of C_{1-6}-alkyl, C_{3-8}-cycloalkyl, C_{3-7}-heterocycloalkyl, aryl, and heteroaryl; in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof, wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of said compound or a pharmaceutically acceptable salt thereof.

47. The use of claim 46, wherein the compound of Formula IV is:



or a pharmaceutically acceptable salt thereof.

48. Use of a HDAC1/2-specific inhibitor in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof, wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of the HDAC1/2-specific inhibitor.

49. Use of a HDAC1/2/6-specific inhibitor in the preparation of a pharmaceutical for treating acute myelogenous leukemia in a subject in need thereof, wherein the pharmaceutical is for administering to the subject a therapeutically effective amount of the HDAC1/2/6-specific inhibitor.

50. The use of any one of claims 36-49, wherein the pharmaceutical further comprises azacitidine.

51. Use of a HDAC inhibitor and azacitidine in the preparation of a combination therapeutic for administering to a subject for decreasing cell viability of cancer cells.

52. Use of a HDAC inhibitor and azacitidine in the preparation of a combination therapeutic for administering to a subject for inducing differentiation of cancer cells.

53. Use of a HDAC inhibitor and azacitidine in the preparation of a combination therapeutic for administering to a subject for inducing apoptosis of cancer cells.

54. A combination comprising a HDAC inhibitor and azacitidine for use in decreasing cell viability of cancer cells.

55. A combination comprising a HDAC inhibitor and azacitidine for use in inducing differentiation of cancer cells.

56. A combination comprising a HDAC inhibitor and azacitidine for use in inducing apoptosis of cancer cells.

57. An *in vitro* method for decreasing cell viability of cancer cells comprising administering a combination comprising an HDAC inhibitor and azacitidine.

58. An *in vitro* method for inducing differentiation of cancer cells comprising administering a combination comprising an HDAC inhibitor and azacitidine.

59. An *in vitro* method for inducing apoptosis of cancer cells comprising administering a

combination comprising an HDAC inhibitor and azacitidine.