CLAIMS

1. An anticancer pharmaceutical composition with reduced cardiotoxicity, comprising an anticancer agent and a protective agent, wherein the protective agent is myricetin or salt thereof, wherein the anticancer agent is an anthracycline or salt thereof, a protein kinase inhibitor compound, or a proteasome inhibitor compound, and wherein the pharmaceutical composition is for intravenous administration.
2. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 1, wherein the molar ratio of the protective agent to the anticancer agent is from 1:1 to 1000:1, from 1:1 to 200:1, from 1:1 to 30:1, from 1:1 to 10:1, or from 1:1 to 5:1, or wherein the weight ratio of the protective agent to the anticancer agent is from 1:1 to 1000:1, from 1:1 to 200:1, from 1:1 to 100:1, from 1:1 to 20:1, from 1:1 to 10:1, from 1:1 to 5:1, or from 1:1 to 2:1.
3. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 1 or 2, wherein the anticancer agent is an anthracycline or salt thereof.
4. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 3, wherein the anthracycline is selected from the group consisting of doxorubicin, daunorubicin, epirubicin, idarubicin, mitoxantrone, and valrubicin.
5. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 3 or 4, wherein the anthracycline is doxorubicin, epirubicin, or idarubicin, optionally wherein the anthracycline is doxorubicin.
6. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 1 or 2, wherein the anticancer agent is a protein kinase inhibitor compound.
7. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 6, wherein the protein kinase inhibitor compound is selected from the group consisting of afatinib, axitinib, bosutinib, cabozantinib, carfilzomib, ceritinib, cobimetanib, crizotinib, dabrafenib, dasatinib, erlotinib, everolimus, gefitinib, ibrutinib, imatinib, lapatinib, lenvatinib, nilotinib, nintedanib, osimertinib, palbociclib, pazopanib, pegaptanib, ponatinib, regorafenib, ruxolitinib, sirolimus, sorafenib, sunitinib, tofacitinib, tofacitinib, temsirolimus, trametinib, vandetanib, vemurafenib, and vismodegib.

8. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 6 or 7, wherein the protein kinase inhibitor compound is a tyrosine kinase inhibitor compound.
9. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 8, wherein the tyrosine kinase inhibitor compound is selected from the group consisting of sorafenib, sunitinib, bosutinib, gefitinib, dasatinib, dabrafenib, vemurafenib, imatinib, lapatinib, and nilotinib.
10. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 8 or 9, wherein the tyrosine kinase inhibitor compound is sorafenib or sunitinib.
11. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 1 or 2, wherein the anticancer agent is a proteasome inhibitor compound, optionally wherein the proteasome inhibitor compound is bortezomib.
12. The anticancer pharmaceutical composition with reduced cardiotoxicity of any one of claims 1-11, consisting of the anticancer agent and the protective agent.
13. The anticancer pharmaceutical composition with reduced cardiotoxicity of any one of claims 1-11, further comprising a second protective agent.
14. The anticancer pharmaceutical composition with reduced cardiotoxicity of claim 13, wherein the second protective agent is dexrazoxane or salt thereof.
15. The anticancer pharmaceutical composition with reduced cardiotoxicity of any one of claims 1-14 for use in the treatment of cancer in a subject.
16. Use of an effective amount of a protective agent in the manufacture of a medicament for preventing, reducing, or eliminating cardiotoxicity induced by an anticancer agent in a subject suffering from cancer, wherein the administration of the medicament provides myricetin or salt thereof, wherein the anticancer agent is an anthracycline or salt thereof, a protein kinase inhibitor compound, or a proteasome inhibitor compound, and wherein the medicament is for administration prior to or simultaneously with the anticancer agent, thereby preventing, reducing, or eliminating the cardiotoxicity induced by the anticancer agent.
17. Use of an effective amount of a protective agent in the manufacture of a medicament for treating cancer in a subject, wherein the treatment comprises administration of said

medicament prior to or simultaneously with an effective amount of an anticancer agent, wherein the protective agent is myricetin or salt thereof, wherein the anticancer agent is an anthracycline or salt thereof, a protein kinase inhibitor compound, or a proteasome inhibitor compound, and wherein the medicament prevents, reduces, or eliminates cardiotoxicity induced by the anticancer agent in the subject during cancer treatment.

18. Use of an effective amount of an anticancer agent in the manufacture of a medicament for treating cancer in a subject, wherein the subject has an effective amount of myricetin or salt thereof, thereby preventing, reducing, or eliminating the cardiotoxicity induced by the anticancer agent in the subject, wherein the anticancer agent is an anthracycline or salt thereof, a protein kinase inhibitor compound, or a proteasome inhibitor compound.
19. The use of claim 18, wherein the treatment further comprises administration of an effective amount of a protective agent to the subject prior to the administration of the medicament, optionally wherein the protective agent is for administration to the subject at least about any of 5 minutes, 10 minutes, 30 minutes, or 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, or 48 hours prior to the administration of the medicament.
20. The use of claim 16 or 19, wherein the protective agent is myricetin or salt thereof.
21. The use of claim 16 or 17, wherein the medicament is for administration to the subject prior to the anticancer agent.
22. The use of claim 21, wherein the medicament is for administration to the subject at least about any of 5 minutes, 10 minutes, 30 minutes, or 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, or 48 hours prior to the administration of the anticancer agent.
23. The use of claim 16 or 17, wherein the medicament is for administration to the subject simultaneously with the anticancer agent.
24. The use of claim 23, wherein the medicament and the anticancer agent are for co-formulation in a liquid composition.
25. The use of any one of claims 16, 17, and 19-24, wherein the medicament or protective agent is for intravenous administration.

26. The use of any one of claims 16-25, wherein the cancer is selected from the group consisting of bladder cancer, bone cancer, a brain tumor, breast cancer, esophageal cancer, colorectal cancer, leukemia, liver cancer, lung cancer, lymphoma, myeloma, ovarian cancer, prostate cancer, a sarcoma, stomach cancer, and thyroid cancer.

27. The use of any one of claims 16-26, wherein the anticancer agent is an anthracycline or salt thereof.

28. The use of claim 27, wherein the anthracycline is selected from the group consisting of doxorubicin, daunorubicin, epirubicin, idarubicin, mitoxantrone, and valrubicin.

29. The use of claim 27 or 28, wherein the anthracycline is doxorubicin, epirubicin, or idarubicin, optionally wherein the anthracycline is doxorubicin.

30. The use of any one of claims 16-26, wherein the anticancer agent is a protein kinase inhibitor compound.

31. The use of claim 30, wherein the protein kinase inhibitor compound is selected from the group consisting of afatinib, axitinib, bosutinib, cabozantinib, carfilzomib, ceritinib, cobimetanib, crizotinib, dabrafenib, dasatinib, erlotinib, everolimus, gefitinib, ibrutinib, imatinib, lapatinib, lenvatinib, nilotinib, nintedanib, osimertinib, palbociclib, pazopanib, pegaptanib, ponatinib, regorafenib, ruxolitinib, sirolimus, sorafenib, sunitinib, tofacitinib, tofacitinib, temsirolimus, trametinib, vandetanib, vemurafenib, and vismodegib.

32. The use of claim 30 or 31, wherein the protein kinase inhibitor compound is a tyrosine kinase inhibitor compound.

33. The use of claim 32, wherein the tyrosine kinase inhibitor compound is selected from the group consisting of sorafenib, sunitinib, bosutinib, gefitinib, dasatinib, dabrafenib, vemurafenib, imatinib, lapatinib, and nilotinib.

34. The use of claim 32 or 33, wherein the tyrosine kinase inhibitor compound is sorafenib or sunitinib.

35. The use of any one of claims 16-26, wherein the anticancer agent is a proteasome inhibitor compound, optionally wherein the proteasome inhibitor compound is bortezomib.

36. The use of any one of claims 16-35, wherein the molar ratio of the protective agent or myricetin or salt thereof to the anticancer agent is from 1:1 to 1000:1, from 1:1 to 200:1, from 1:1 to 30:1, from 1:1 to 10:1, or from 1:1 to 5:1; or wherein the weight ratio of the protective agent or myricetin or salt thereof to the anticancer agent for administration is from 1:1 to 1000:1, from 1:1 to 200:1, from 1:1 to 100:1, from 1:1 to 20:1, from 1:1 to 10:1, from 1:1 to 5:1, or from 1:1 to 2:1.
37. The use of any one of claims 16-36, wherein the subject further has an effective amount of a second protective agent.
38. The use of any one of claims 16-37, wherein the treatment further comprises administration of an effective amount of a second protective agent to the subject prior to or simultaneously with the anticancer agent.
39. The use of claim 37 or 38, wherein the second protective agent is dexrazoxane or salt thereof.
40. The use of any one of claims 16-39, wherein the cardiotoxicity comprises one or more of cardiac tissue damage, electrophysiological dysfunction such as QT prolongation or QTc prolongation, contractile dysfunction such as reduced cardiac ejection fraction or reduced cardiac fractional shortening, DNA double strand break in cardiomyocytes, mitochondrial toxicity, apoptosis, and oxidative stress.
41. The use of any one of claims 16-40, wherein the administration of the medicament decreases QTc interval in the subject.