

WHAT IS CLAIMED IS:

1. A pharmaceutical composition comprising a therapeutically effective amount of calcium lactate as an active agent for treating cancer and a pharmaceutically acceptable polysaccharide, polymer, lipid, or combinations thereof.
2. The composition of claim 1, comprising the calcium lactate and the polysaccharide.
3. The composition of claim 2, wherein a weight ratio of the calcium lactate and the polysaccharide is 1:<0.2 to 1:5.
4. The composition of claim 2, wherein a weight ratio of the calcium lactate and the polysaccharide is 1:<0.2.
5. The composition of claim 2, wherein a weight ratio of the calcium lactate and the polysaccharide is 1:0.2 to 1:5.
6. The composition of any one of claims 1-5, further comprising a polymer and/or lipid.
7. The composition of claim 6, further comprising the polymer and lipid, wherein the weight ratio of the polymer and lipid is 1:0.1 to 1:50.
8. The composition of any one of claims 6-7, wherein the weight ratio of the calcium lactate and the polymer and/or lipid is at least 1:5.
9. The composition of claim 8, wherein a weight ratio of the calcium lactate and the polymer and/or lipid is 1:5 to 1:30.
10. The composition of claim 1, comprising the calcium lactate and the polymer and/or lipid.

11. The composition of claim 10, comprising the polymer and lipid, wherein the weight ratio of the polymer and lipid is 1:0.1 to 1:50.
12. The composition of any one of claims 10-11, wherein a weight ratio of the calcium lactate and the polymer and/or lipid is at least 1:5.
13. The composition of any one of claims 10-12, wherein the weight ratio of the calcium lactate and the polymer and/or lipid is 1:5 to 1:30.
14. The composition of any one of claims 1-13, wherein the composition is short-acting.
15. The composition of any one of claims 1-13, wherein the composition is long-acting.
16. The composition of any one of claims 1-15, wherein the composition is an injectable composition.
17. The composition of any one of claims 1-16, comprising a polysaccharide that is a cellulose derivative, pectin, hyaluronic acid, starch, guar gum, chitosan, gelatin, collagen, alginate, alginic acid or combinations thereof.
18. The composition of any one of claims 1-17, comprising a polymer that is a poloxamer series, polyvinylpyrrolidone, polyethylene glycol (PEG), polyglycolic lactic acid (PLGA) series, or combinations thereof.
19. The composition of any one of claims 1-18, comprising a lipid that is a mono- or tri-fatty acid glycerin ester or polyethylene glycol complexes thereof, polyethylene glycol esters of vegetable oils, fatty acid propylene glycol esters, sesame oil, soybean oil, castor oil, corn oil, palm oil, peanut oil, cacao oil, cottonseed oil, sunflower seed oil, safflower oil, almond oil, olive oil, hydrogenated oil, oleic acid, linolenic acid, linoleic acid, palmitic acid, palmitoleic acid,

arachadonic acid, myristic acid, capric acid, caprylic acid, lauric acid, stearic acid, ethyl oleate, isopropyl palmitate, octyldodecyl myristate, cetyl palmitate, lauryl alcohol, oleyl alcohol, cetyl alcohol, stearyl alcohol, or combinations thereof.

20. The composition of any one of claims 1-14 and 16-19, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, at least about 40% of the active agent is released after 6 hours.

21. The composition of any one of claims 1-14 and 16-20, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, at least about 60% of the active agent is released after 12 hours.

22. The composition of any one of claims 1-14 and 16-21, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, at least about 80% of the active agent is released after 24 hours.

23. The composition of any one of claims 1-14 and 16-22, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, at least about 90% of the active agent is released after 48 hours.

24. The composition of any one of claims 1-3, 5-13 and 15-19, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, less than about 40% of the active agent is released after 24 hours.

25. The composition of any one of claims 1-3, 5-13, 15-19, and 24, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, less than about 60% of the active agent is released after 48 hours.

26. The composition of any one of claims 1-3, 5-13, 15-19, and 24-25, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, less than about 80% of the active agent is released after 72 hours.

27. The composition of any one of claims 1-3, 5-13, 15-19, and 24-26, wherein upon placement of the composition in an in vitro dissolution test comprising an elution test method at 300 rpm in 200 ml having a pH of 6.8 at 37°C using a nylon filter having a pore size of 45 µm, less than about 90% of the active agent is released after 144 hours.

28. A sterile glass or polyolefin container comprising the composition of any one of claims 1-27.

29. A pharmaceutical composition comprising a therapeutically effective amount of calcium lactate as an active agent for treating cancer, wherein the calcium lactate is coated with a pharmaceutically acceptable enteric coating.

30. The composition of claim 29, wherein the enteric coating comprises hydroxypropyl methyl cellulose phthalate (HPMCP), cellulose acetate phthalate (CAP), polyvinyl acetate phthalate (PVAP), shellac, polymer of methacrylic acid and an ester thereof, or combinations thereof.

31. The composition of any one of claims 29-30, wherein the weight ratio of the calcium lactate and the enteric coating is 10:0.5 to 1:1.5.

32. The composition of any one of claims 29-31, wherein in an in vitro dissolution test comprising a USP Paddle method at a paddle speed of 50 rpm at 37°C, when the composition is placed in 0.1 HCl for 120 minutes followed by adjusting to pH 6.8 with phosphate buffer for 60 minutes, less than about 20% of the active agent is released after 30 minutes.

33. The composition of any one of claims 29-32, wherein in an in vitro dissolution test comprising a USP Paddle method at a paddle speed of 50 rpm at 37°C, when the composition is placed in 0.1 N HCl for 120 minutes followed by adjusting to pH 6.8 with phosphate buffer for 60 minutes, less than 30% of the active agent is released after 60 minutes

34. The composition of any one of claims 29-33, wherein in an in vitro dissolution test comprising a USP Paddle method at a paddle speed of 50 rpm at 37°C, when the composition is placed in 0.1 N HCl for 120 minutes followed by adjusting to pH 6.8 with phosphate buffer for 60 minutes, less than 50% of the active agent is released after 120 minutes.

35. The composition of any one of claims 29-33, wherein in an in vitro dissolution test comprising a USP Paddle method at a paddle speed of 50 rpm at 37°C, when the composition is placed in 0.1 N HCl for 120 minutes followed by adjusting to pH 6.8 with phosphate buffer for 60 minutes, less than 10% of the active agent is released after 120 minutes.

36. A method of treating cancer in a subject in need thereof, comprising administer the composition of any one of claims 1-35.

37. The method claim 36, wherein the cancer is lung cancer, breast cancer, colorectal cancer, stomach cancer, brain cancer, pancreatic cancer, thyroid cancer, skin cancer, bone cancer, lymphoma, uterine cancer, cervical cancer, kidney cancer, or melanoma.

38. The method of any one of claims 36-37, further comprising administering a second anticancer agent.

39. The method of claim 37, wherein the second anticancer agent is Imatinib, 5-FU (5-Fluorouracil), Irinotecan, Sunitinib, Oxaliplatin, Paclitaxel, Lapatinib, Trastuzumab (Herceptin), Gefitinib, Erlotinib, Methotrexate, Carboplatin, Docetaxel, Everolimus, Sorafenib, a carbonic anhydrase inhibitor, and a monocarboxylate transporter inhibitor.

40. The method of any one of claims 38-39, wherein the calcium lactate and the second anticancer agent are administered simultaneously.

41. The method of any one of claims 38-39, wherein the calcium lactate and the second anticancer agent are administered sequentially.

42. The method of any one of claims 36-41, further comprising administering radiation.

43. The method of claim 42, wherein the radiation is provided to the subject in an amount of 2 Gy to 10 Gy per day.

44. A food or nutrient composition comprising an effective amount of calcium lactate to reduce the risk of cancer.

45. The composition of claim 44, wherein the composition is an injectable nutritional supplement.