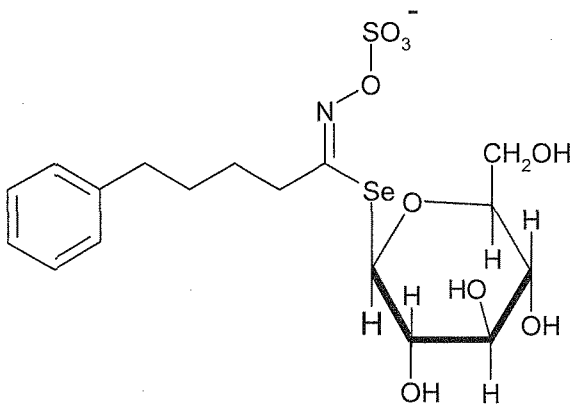
[0041] Commercial packages according to aspects of the present disclosure include cetuximab and the ISC-4 glucosinolate prodrug or a pharmaceutically acceptable salt thereof, wherein the cetuximab is provided as a first pharmaceutical formulation and the ISC-4 glucosinolate prodrug or pharmaceutically acceptable salt thereof is provided as a separate second pharmaceutical formulation in the commercial package.

[0042] Compositions according to aspects of the present disclosure include the ISC-4 glucosinolate prodrug having the structural formula:



or a pharmaceutically acceptable salt thereof.

[0042a] In one aspect, there is provided the use of cetuximab and ISC-4 in the manufacture of a medicament for treating cancer in a subject in need thereof, wherein the cetuximab and ISC-4 are formulated as a combination or separately.

[0042b] In one aspect, there is provided the use of cetuximab and an ISC-4 prodrug in the manufacture of a medicament for treating cancer in a subject in need thereof, wherein the cetuximab and ISC-4 prodrug are formulated as a combination or separately.

[0042c] In one aspect, there is provided a pharmaceutical composition comprising: cetuximab and ISC-4; or cetuximab and an ISC-4 prodrug.

[0042d] In one aspect, there is provided a commercial package comprising cetuximab and ISC-4; or cetuximab and an ISC-4 prodrug.

[0043] Methods of assessing efficacy of treatment of cancer are provided according to aspects of the present disclosure which include: obtaining a first sample containing or suspected of containing cancer cells from a subject prior to administering cetuximab and ISC-4 together or separately; obtaining a second sample containing or suspected of containing cancer cells from the subject after administering the cetuximab and ISC-4; and assaying the first and second samples for one or more markers of apoptosis and/or assaying the first and second samples for phospho-Akt, wherein an increase in the one or more markers of apoptosis and a decrease in phosphor-Akt is indicative of therapeutic activity of administering both cetuximab and ISC-4 in combination, together or separately, thereby monitoring effectiveness of administering the combination of cetuximab and ISC-4.

[0044] Methods of assessing efficacy of treatment of cancer are provided according to aspects of the present disclosure which include: obtaining a first sample containing or suspected of containing cancer cells from a subject prior to administering cetuximab and an ISC-4 together or separately; obtaining a second sample containing or suspected of containing cancer cells from the subject after administering the cetuximab and the ISC-4 prodrug; and assaying the first and second samples for one or more markers of apoptosis and/or assaying the first and second samples for phospho-Akt, wherein an increase in the one or more markers of apoptosis and a

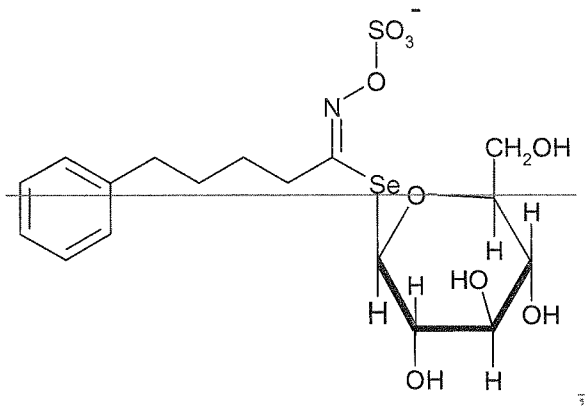
5. The commercial package of claim 3, wherein the cetuximab and ISC-4 are provided as a single pharmaceutical formulation.

6. The commercial package of claim 3, wherein the cetuximab and ISC-4 are provided as separate pharmaceutical formulations.

7. The commercial package of claim 3 or 4, wherein the cetuximab; and the ISC-4 prodrug are provided as a single pharmaceutical formulation.

8. The commercial package of claim 3 or 4, wherein the cetuximab; and the ISC-4 prodrug are provided as separate pharmaceutical formulations.

~~9. A composition comprising: ISC-4 glucosinolate prodrug having the structural formula:~~



~~or a pharmaceutically acceptable salt thereof.~~

~~10.~~9. Use of cetuximab and ISC-4 in the manufacture of a medicament for treating cancer in a subject in need thereof, wherein the cetuximab and ISC-4 are formulated as a combination or separately.

~~11.~~10. The use of claim ~~10~~9, wherein the medicament provides a synergistic effect.

~~12.~~11. The use of claim ~~10~~ 9 or ~~11~~10, wherein the cancer is characterized by wild-type KRAS.

~~13.~~12. The use of any of claims ~~10~~9-~~12~~11, wherein the cancer is colorectal cancer characterized by wild-type KRAS.

~~14.~~13. The use of any of claims ~~10~~9-~~13~~12, wherein the cetuximab and ISC-4 are to be administered simultaneously.

~~15.~~14. The use of any of claims ~~10~~9-~~13~~12, wherein the cetuximab and ISC-4 are to be administered sequentially.

~~16.~~15. The use of any of claims ~~10~~9-~~13~~ 12 and ~~15~~14, wherein the cetuximab and ISC-4 are to be administered sequentially within a period of time selected from: one hour, two hours, four hours, eight hours, twelve hours and twenty-four hours.

~~17.~~16. Use of cetuximab and an ISC-4 prodrug in the manufacture of a medicament for treating cancer in a subject in need thereof, wherein the cetuximab and ISC-4 prodrug are formulated as a combination or separately.

~~18.~~17. The use of claim ~~17~~16, wherein the medicament provides a synergistic effect.

~~19.~~18. The use of claim ~~17~~ 16 or ~~18~~17, wherein the cancer is characterized by wild-type KRAS.

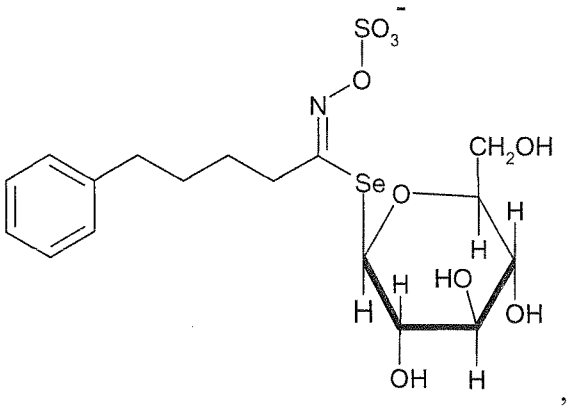
~~20.~~19. The use of any of claims ~~17~~16-~~19~~18, wherein the cancer is colorectal cancer characterized by wild-type KRAS.

~~21.~~20. The use of any of claims ~~17~~16-~~20~~19, wherein the cetuximab and ISC-4 prodrug are to be administered simultaneously.

~~22.~~21. The use of any of claims ~~17~~16-~~20~~19, wherein the cetuximab and ISC-4 prodrug are to be administered sequentially.

~~23.~~22. The use of any of claims ~~17~~16-~~20~~19 and ~~22~~21, wherein the cetuximab and ISC-4 prodrug are to be administered sequentially within a period of time selected from: one hour, two hours, four hours, eight hours, twelve hours and twenty-four hours.

~~24.~~23. The use of any of claims ~~17~~16-~~23~~22, wherein the ISC-4 prodrug is ISC-4 glucosinolate prodrug having the structural formula:



or a pharmaceutically acceptable salt thereof.

~~25.~~24. The use of any of claims ~~10~~9-~~24~~23, wherein the cancer is resistant to 5-fluorouracil.

~~26.~~25. The use of any of claims ~~10~~9-~~25~~23, wherein the cancer is resistant to 5-fluorouracil and characterized by wild-type KRAS.

~~27.~~26. The use of any of claims ~~10~~9-~~26~~23, wherein the cancer is resistant to 5-fluorouracil and characterized by wild-type KRAS such that the wild-type KRAS does not have an activating KRAS mutation, in codon 12, 13 or 61, with reference to human KRAS.

~~28.~~27. The use of any of claims ~~10~~9-~~27~~26, wherein the cancer is resistant to 5-fluorouracil and characterized by wild-type KRAS such that the wild-type KRAS does not have activating KRAS mutations Q61H, G12S, G12V, G12A or G13D, with reference to human KRAS.

~~29.~~28. Cetuximab and ISC-4 or cetuximab and an ISC-4 prodrug for use in the treatment of cancer.

~~30.~~29. A combination of cetuximab and ISC-4 or cetuximab and an ISC-4 prodrug for use as a medicament.