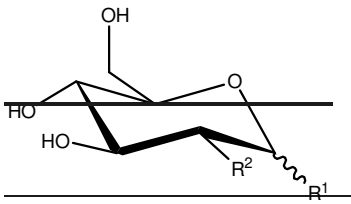
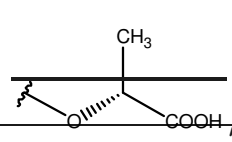
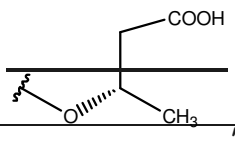
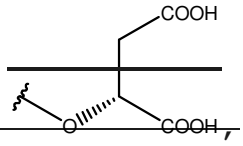
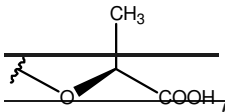
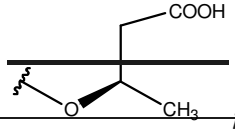
CLAIMS

What is claimed is:

1. A compound of the formula

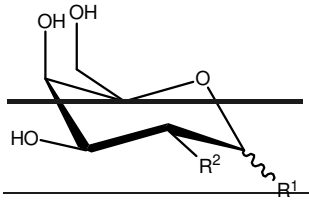


or a salt thereof,

wherein R^1 is , , , , or ; and

R^2 is -OH, $-N_3$, or $-N(H)C(=O)CH_3$.

2. A compound of the formula



or a salt thereof,

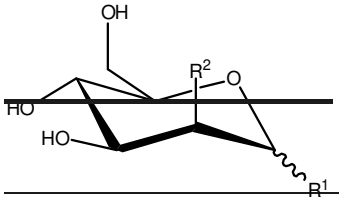
wherein R^1 is $-OC(H)(X)(CH_2)_nC(=O)OH$;

R^2 is -OH, $-N_3$, or $-N(H)C(=O)CH_3$;

X is $-CH_3$, $-CH_2OH$, or $CH_2C(=O)OH$; and

n is 0 or 1.

3. A compound of the formula



or a salt thereof,

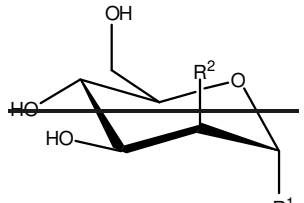
wherein R^1 is $-OC(H)(X)(CH_2)_nC(=O)OH$;

R^2 is $-OH$, $-N_3$, or $-N(H)C(=O)CH_3$; and

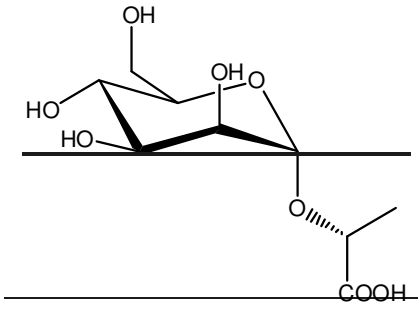
X is $-H$, $-CH_3$, $-CH_2OH$, or $CH_2C(=O)OH$; and

n is 0 or 1;

wherein when the compound is

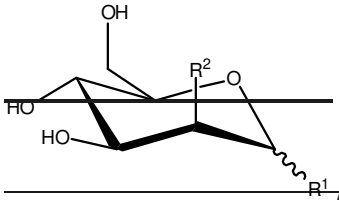


, and R^2 is OH, X is CH_3, and n is 0, then the compound is

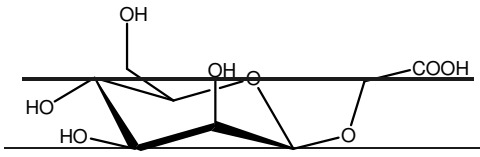


;

wherein when the compound is

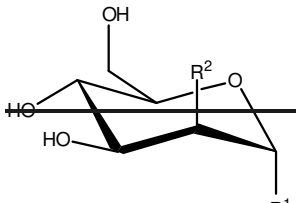


, and R^2 is OH, X is H, and n is 0, then the compound is

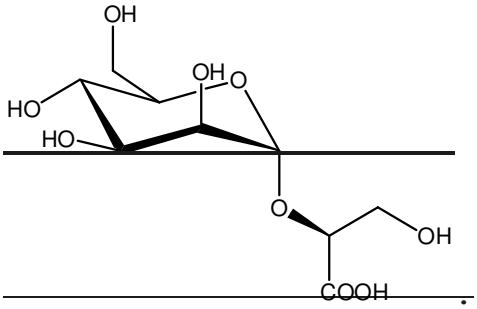


; and

wherein when the compound is



R1, and R2 is OH, X is CH2OH, and n is 0, then the compound is

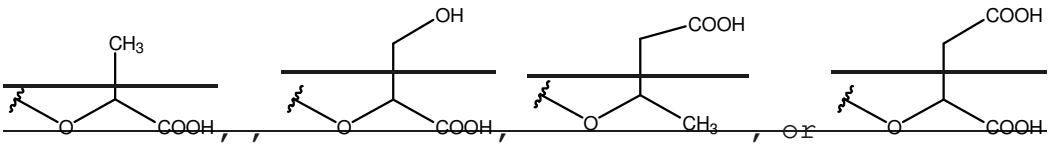


.

4. The compound of any one of claims 1–3 or a salt thereof, wherein the α/β anomer ratio of the compound is 1:1 to 99:1.

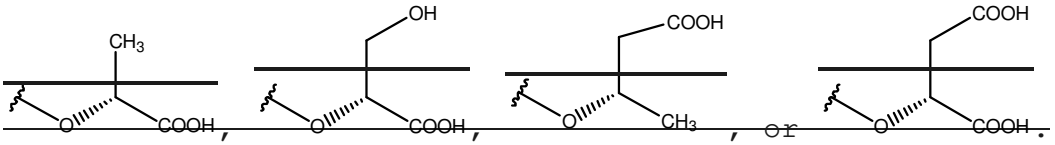
5. The compound of any one of claims 1–3 or a salt thereof, wherein the α/β anomer ratio of the compound is greater than 99:1.

6. The compound of claim 2 or a salt thereof, wherein R1 is

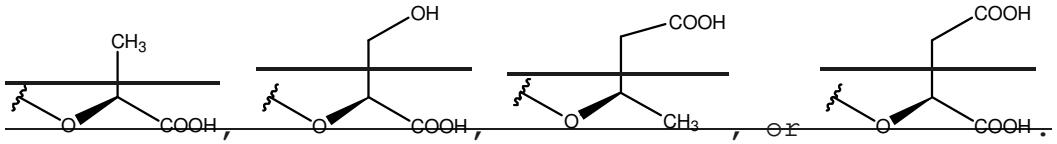


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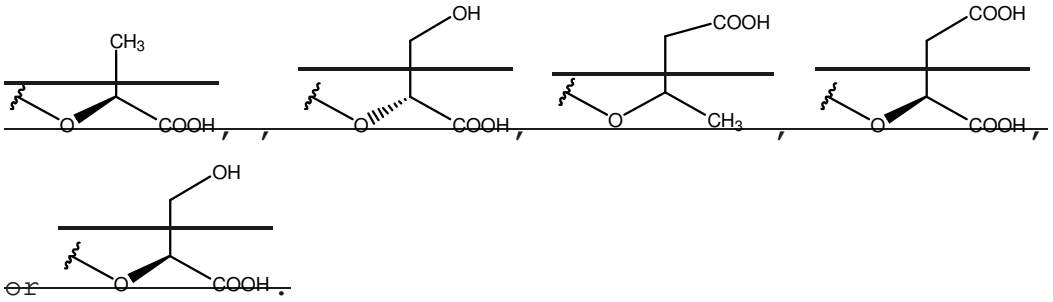
7. The compound of claim 2 or a salt thereof, wherein R1 is



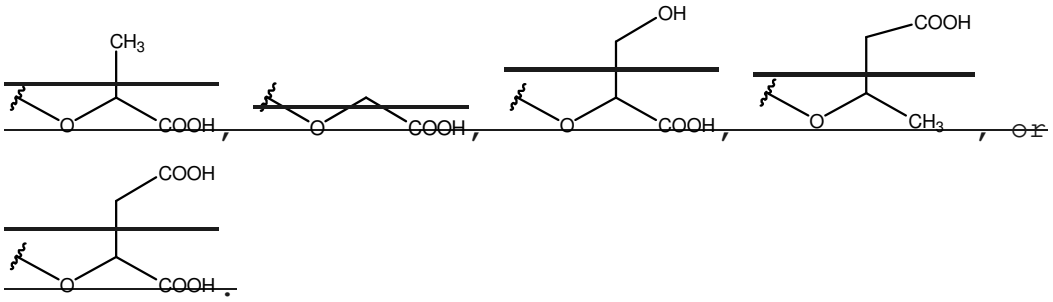
8. The compound of claim 2 or a salt thereof, wherein R1 is



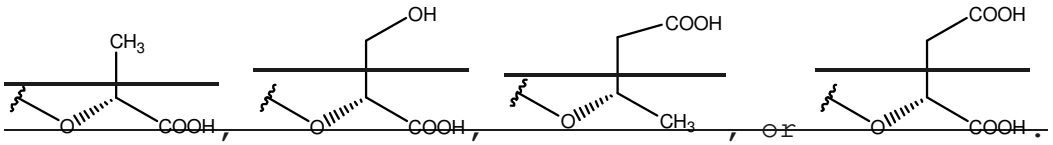
9. The compound of claim 2 or a salt thereof, wherein R^1 is



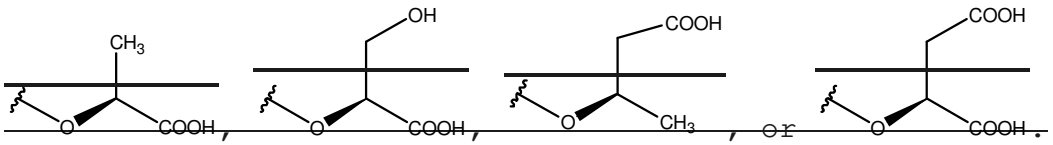
10. The compound of claim 3 or a salt thereof, wherein R^1 is



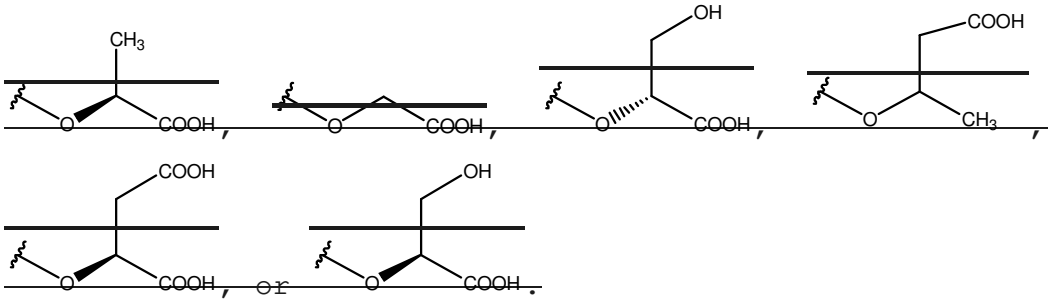
11. The compound of claim 3 or a salt thereof, wherein R^1 is



12. The compound of claim 3 or a salt thereof, wherein R^1 is



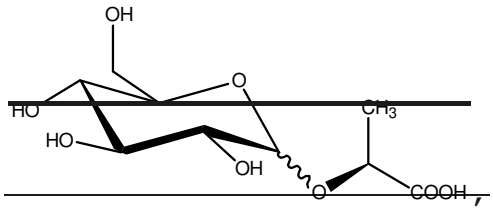
13. The compound of claim 3 or a salt thereof, wherein R^1 is

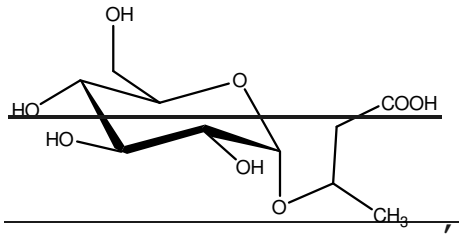


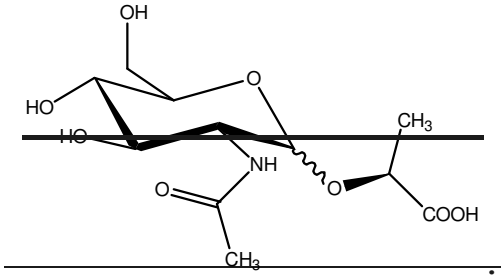
~~14. The compound any one of claims 1-13 or a salt thereof, wherein R^2 is -OH.~~

~~15. The compound any one of claims 1-13 or a salt thereof, wherein R^2 is -N(H)C(=O)CH$_3$.~~

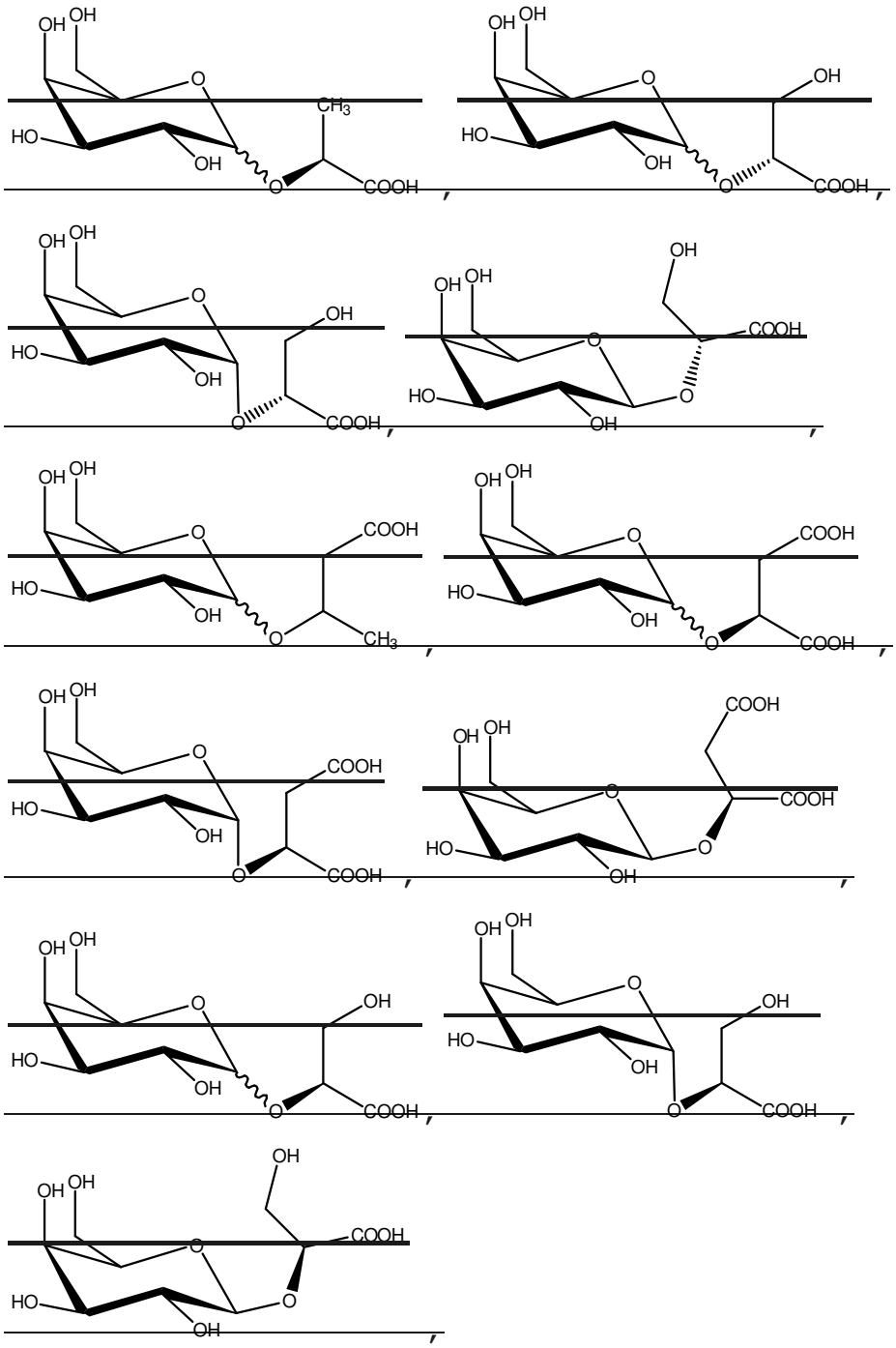
~~16. The compound of claim 1 or a salt thereof, wherein the compound is~~



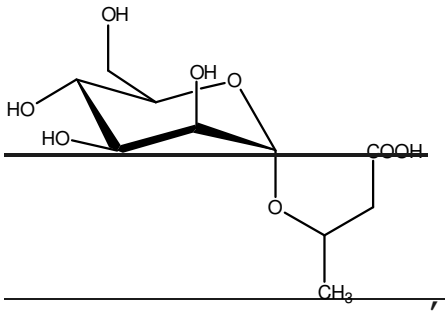




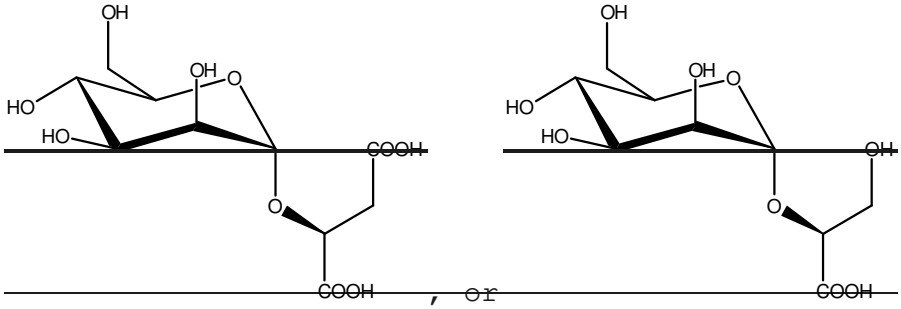
~~17. The compound of claim 2 or a salt thereof, wherein the compound is~~



18. ~~The compound of claim 3 or a salt thereof, wherein the compound is~~



,



, or

~~19. A composition comprising at least one compound of any one of claims 1-18, or a salt thereof, and a biological material.~~

~~20. The composition of claim 19, further comprising a buffer.~~

~~21. The composition of any one of claims 19-20, wherein the biological material is a polypeptide.~~

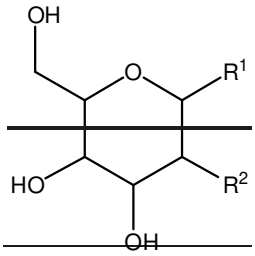
~~22. The composition of claim 21, wherein the polypeptide is an enzyme, an antibody, a plasma protein, or a hormone.~~

~~23. The composition of any one of claims 21-22, wherein the polypeptide is insulin, malate dehydrogenase, staphylococcal nuclease or lysozyme.~~

~~24. The composition of any one of claims 21-23, wherein the polypeptide is a recombinant polypeptide.~~

25. The composition of any one of claims claim 21-23, wherein the polypeptide is not a recombinant polypeptide.

26. A method of stabilizing a biological material, comprising adding at least one compound of formula I:



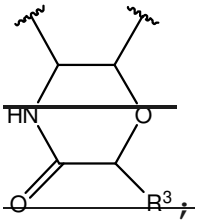
Formula I

or a salt thereof, to a solution containing the biological material to form a stabilized solution, wherein:

R^1 is $-OC(H)(X)(CH_2)_nC(=O)OH$;

R^2 is $-OH$, $-N_3$, or $-N(H)C(=O)CH_3$; or

R^1 and R^2 together with the carbon atoms to which they are attached form



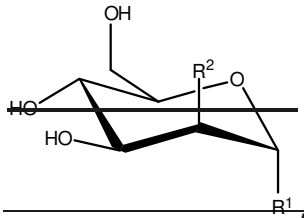
R^3;

R^3 is $-H$, $-CH_3$, $-CH_2C(=O)OH$, or $-CH_2OH$;

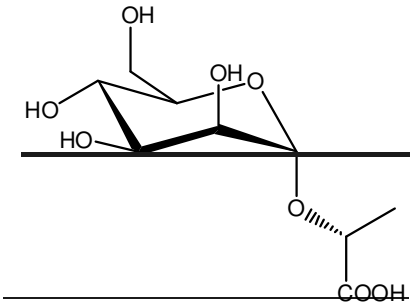
X is $-H$, $-CH_3$, $-CH_2OH$, or $CH_2C(=O)OH$; and

n is 0 or 1;

wherein when the compound is

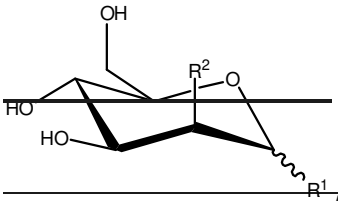


, and R^2 is OH, X is CH_3, and n is 0, then the compound is

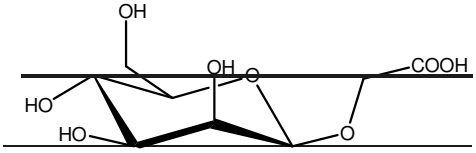


or a salt thereof;

wherein when the compound is

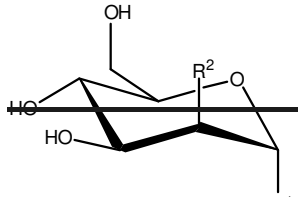


, and R^2 is OH, X is H, and n is 0, then the compound is

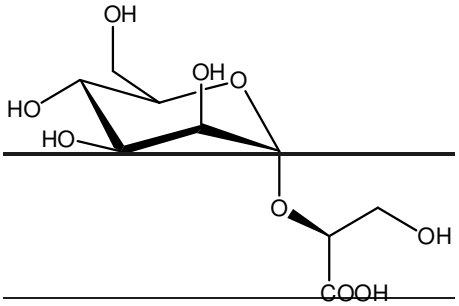


or a salt thereof;

wherein when the compound is

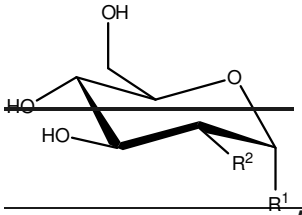


, and R^2 is OH, X is CH_2OH, and n is 0, then the compound is

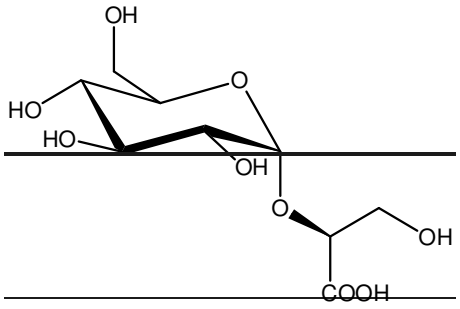


or a salt thereof;

and wherein when the compound is

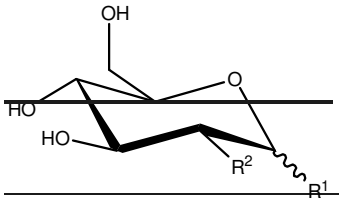


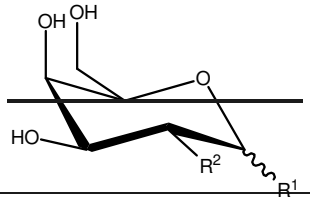
, and R^2 is OH, X is CH_2OH, and n is 0, then the compound is



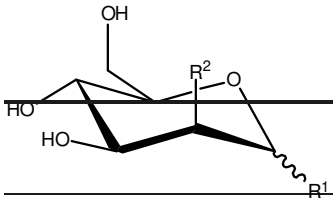
or a salt thereof.

27. The method of claim 26, wherein the compound is



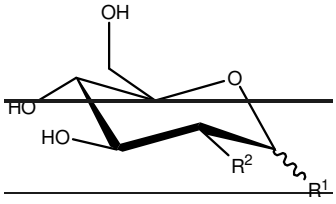
, 

, or



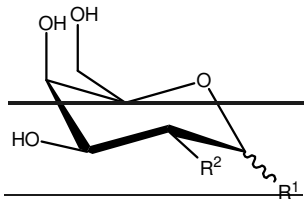
or a salt thereof.

28. The method of any one of claims 26-27 wherein the compound is



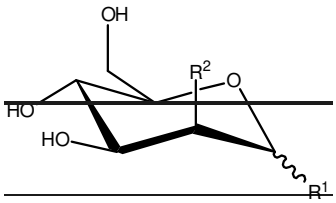
or a salt thereof.

29. The method of any one of claims 26-27 wherein the compound is



or a salt thereof.

30. The method of any one of claims 26-27 wherein the compound is

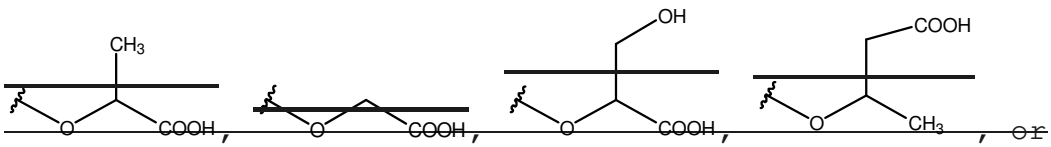


or a salt thereof.

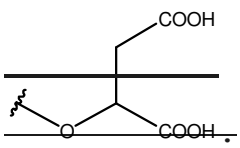
31. The method of any one of claims 26-30 wherein the α/β anomer ratio of the compound is 1:1 to 99:1.

32. The method of any one of claims 26-30 wherein the α/β anomer ratio of the compound is greater than 99:1.

33. The method of any one of claims 26-32 wherein R^1 is

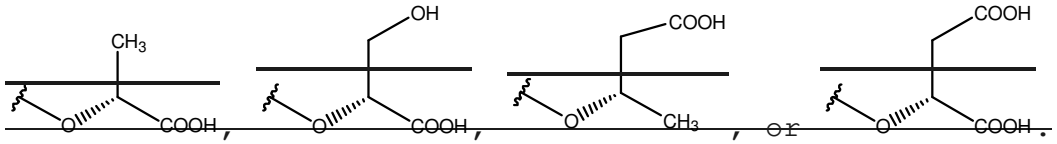


, or

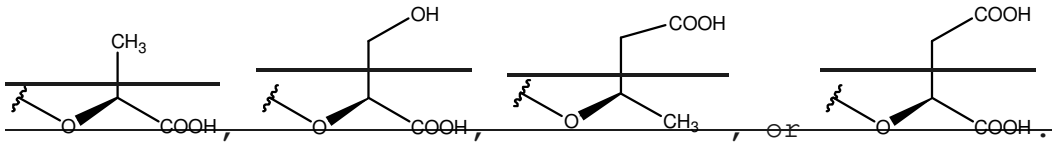


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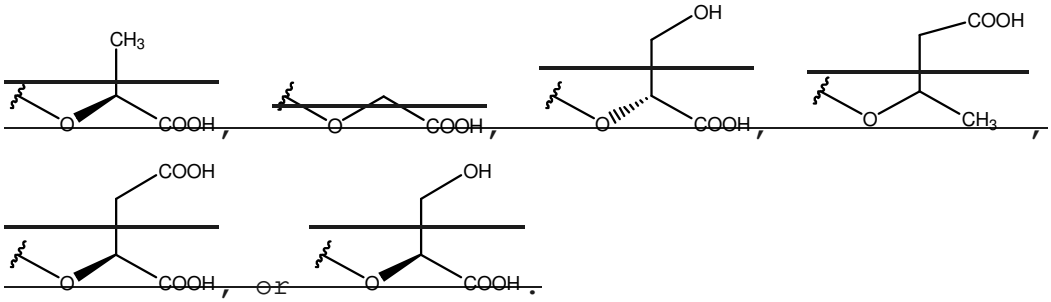
34. The method of claim 33 wherein R^1 is



35. The method of claim 33 wherein R^1 is



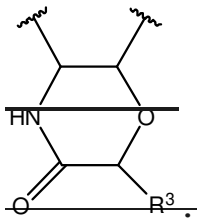
36. The method of claim 33 wherein R^1 is



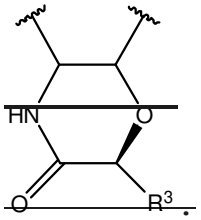
37. The method any one of claims 26-36 wherein R^2 is -OH.

38. The method any one of claims 26-36 wherein R^2 is -N(H)C(=O)CH_3.

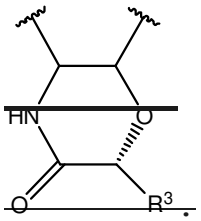
39. The method of any one of claims 26-32 wherein R^1 and R^2 together with the carbon atoms to which they are attached form



40. The method of claim 39, wherein R^1 and R^2 together with the carbon atoms to which they are attached form



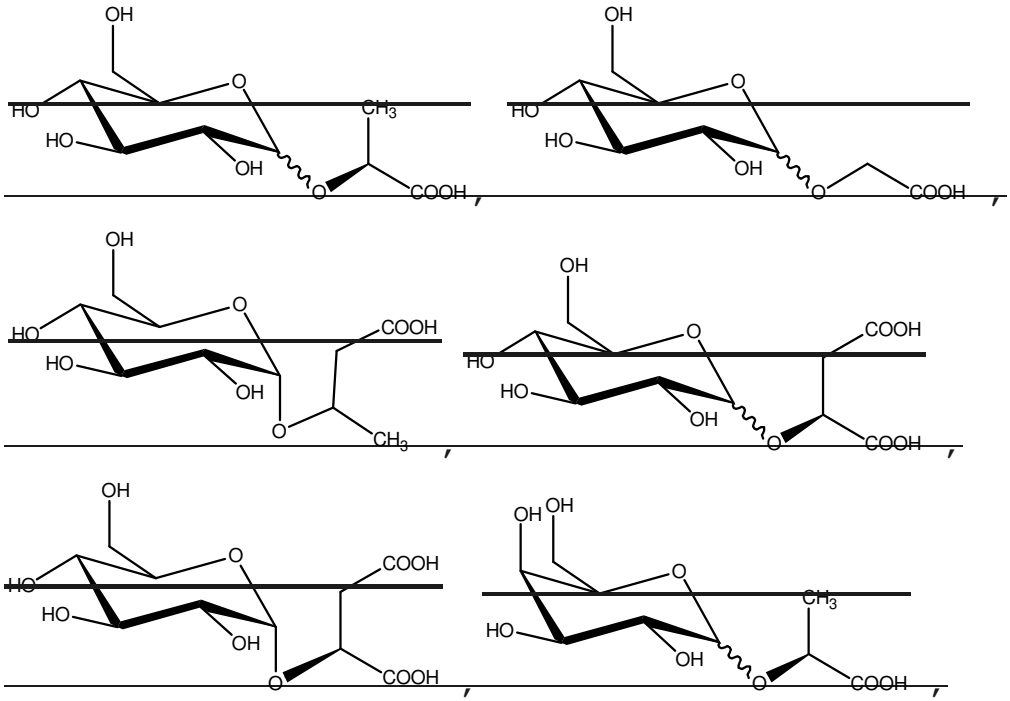
41. The method of claim 39, wherein R^1 and R^2 together with the carbon atoms to which they are attached form

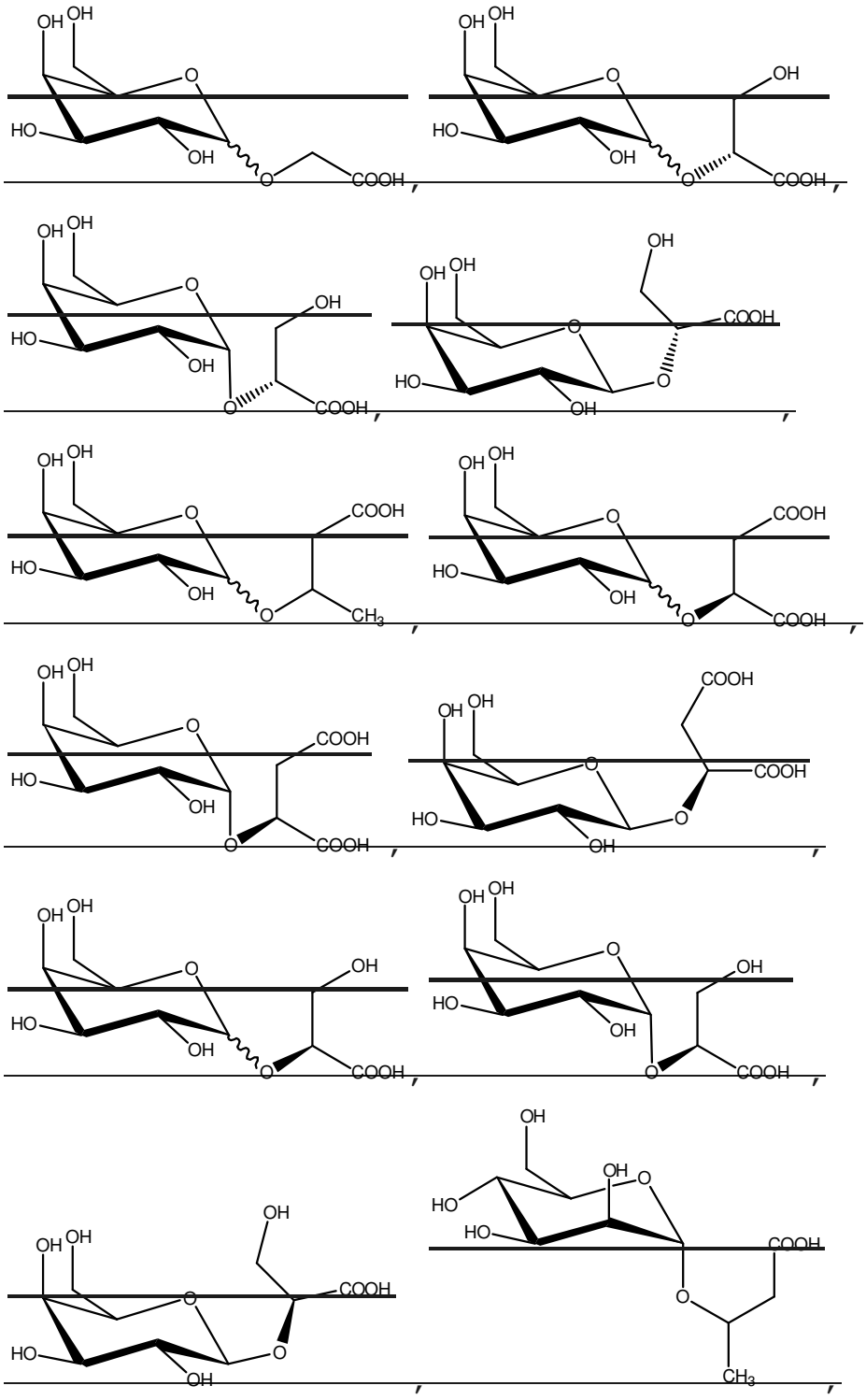


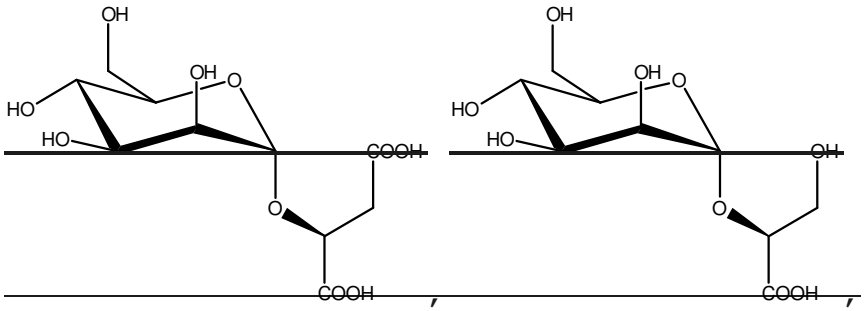
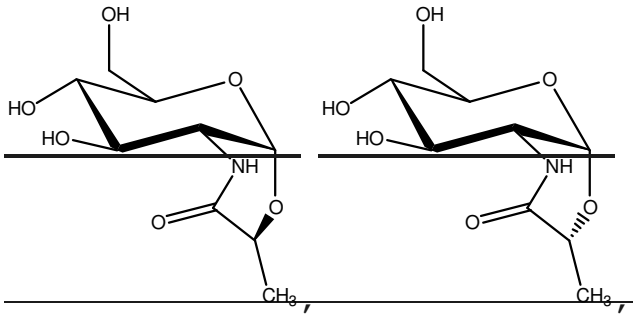
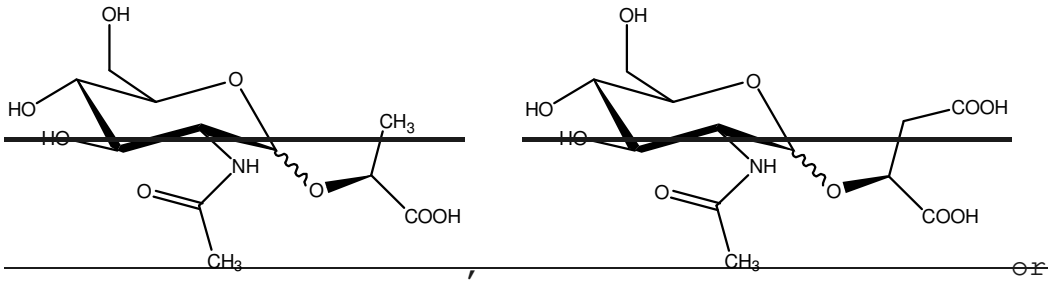
42. The method of any one of claims 39-41, wherein R^3 is $-CH_3$.

43. The method of any one of claims 39-41, wherein R^3 is $-CH_2OH$.

44. The method of claim 26, wherein the compound is





or a salt thereof.

45. The method of any one of claims 26-44, further comprising a step of drying the stabilized solution.

46. The method of any one of claims 26-45, wherein the biological material is a polypeptide.

47. The method of claim 46, wherein the polypeptide is an enzyme, an antibody, a plasma protein, or a hormone.

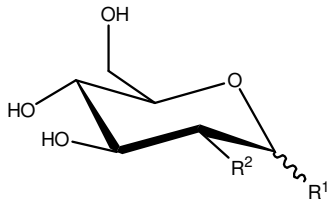
48. The method of any one of claims 46-47, wherein the polypeptide is insulin, malate dehydrogenase, staphylococcal nuclease or lysozyme.

~~49. The method of any one of claims 46-48, wherein the polypeptide is a recombinant polypeptide.~~

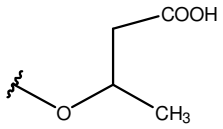
~~50. The method of any one of claims claim 46-48, wherein the polypeptide is not a recombinant polypeptide.~~

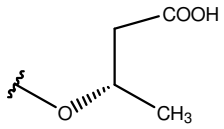
1. A compound of formula:

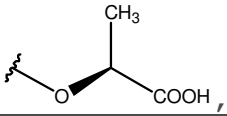
(A)

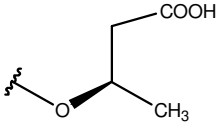


or a salt thereof,

wherein R^1 is 

, 

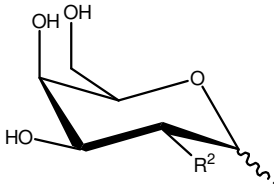
, 

, or 

; and

R^2 is –OH; or

(B)



or a salt thereof,

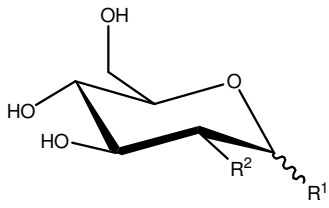
wherein R^1 is $-OC(H)(X)(CH_2)_nC(=O)OH$;

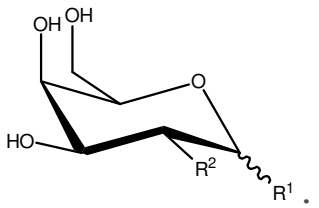
R^2 is –OH;

X is $-CH_3$ or $CH_2C(=O)OH$; and

n is 0 or 1.

2. The compound of claim 1 or a salt thereof, wherein the compound is

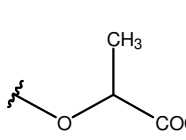


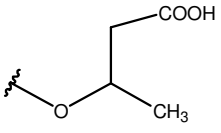
, or


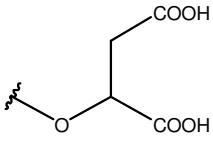
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3. The compound of any one of claims 1-2 or a salt thereof, wherein the α/β anomer ratio of the compound is 1:1 to 99:1, or the α/β anomer ratio of the compound is greater than 99:1.

4. The compound of any one of claims 1-2 or a salt thereof, wherein in compound (B) R^1 is

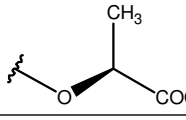


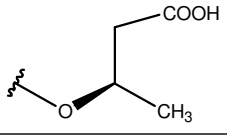
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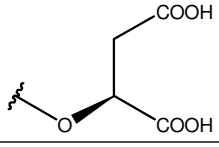
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5. The compound of claim 4 or a salt thereof, wherein R^1 is

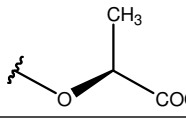


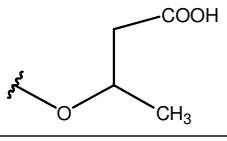
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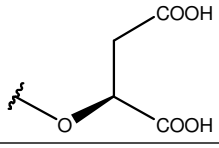
, or


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6. The compound of claim 4 or a salt thereof, wherein R^1 is



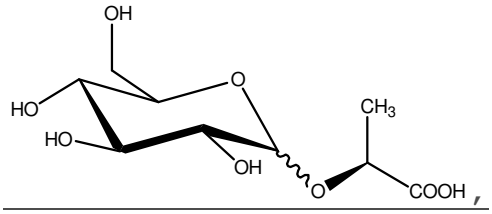
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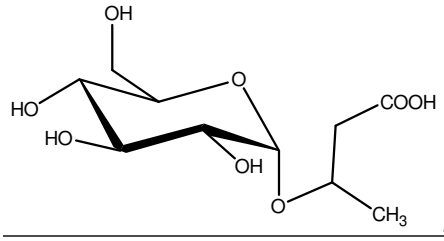
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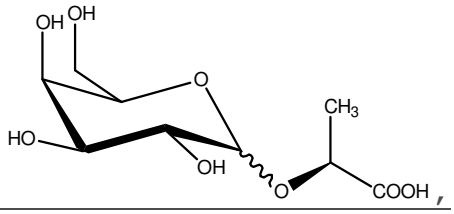
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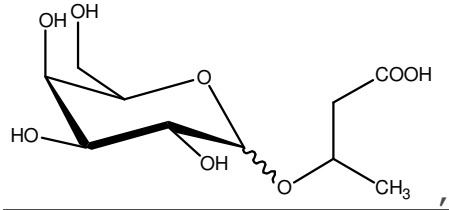
7. The compound any one of claims 1-2 or a salt thereof, wherein R^2 is -OH.

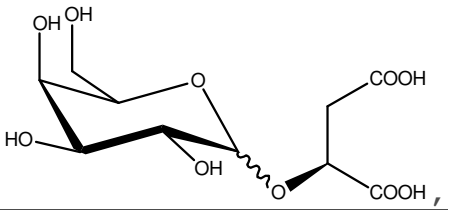
8. The compound of claim 1 or a salt thereof, wherein the compound is

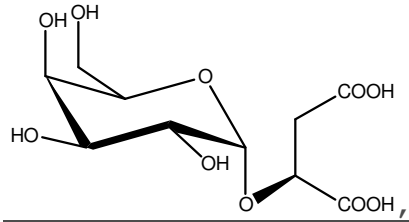


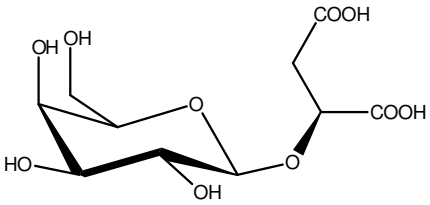












, or .

9. A composition comprising at least one compound of any one of claims 1-2, or a salt thereof, and a biological material selected from the group consisting of a nucleic acid, a polypeptide, a whole cell, a cell membrane, a cell component, a virus, a liposome, a tissue, and a mixture of any of the foregoing, the composition further comprising or not comprising a buffer.

10. The composition of claim 9, wherein the biological material is a polypeptide, an enzyme, an antibody, a plasma protein, or a hormone, insulin, malate dehydrogenase, staphylococcal nuclease, lysozyme, or a recombinant polypeptide.

11. A method of stabilizing a biological material, comprising adding at least one compound of any one of claims 1-2, or a salt thereof, to a solution containing the biological material selected from the group consisting of a nucleic acid, a polypeptide, a whole cell, a cell membrane, a cell component, a virus, a liposome, a tissue, and a mixture of any of the foregoing to form a stabilized solution, the method further comprising or not comprising a step of drying the stabilized solution.

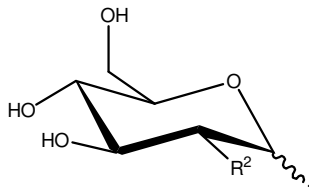
12. The method of claim 11, wherein the biological material is a polypeptide, an enzyme, an antibody, a plasma protein, or a hormone, insulin, malate dehydrogenase, staphylococcal nuclease, lysozyme, or a recombinant polypeptide.

13. The compound of any one of claims 1-2, or a salt thereof, for stabilizing a biological material selected from the group consisting of a nucleic acid, a polypeptide, a whole cell, a cell membrane, a cell component, a virus, a liposome, a tissue, and a mixture of any of the foregoing.

14. A diagnostic kit comprising a compound of any one of claims 1-2, or a salt thereof.

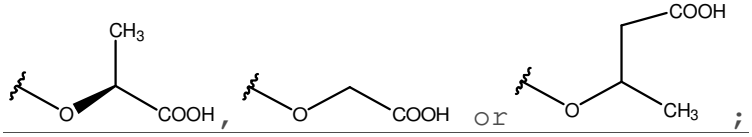
15. The diagnostic kit of claim 14, comprising a microarray, a biosensor, or an enzymatic preparation.

16. A method of stabilizing a biological material, comprising adding to a solution containing the biological material at least one compound of the formula (A) or (B):

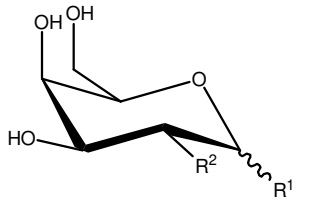


(A) or a salt thereof,

wherein R^1 is



; R^2 is –OH;

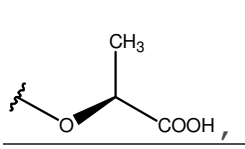


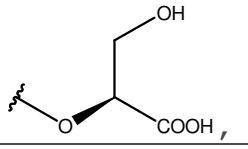
(B) or a salt thereof,

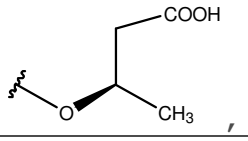
wherein R^1 is $-OC(H)(X)(CH_2)_nC(=O)OH$;
R^2 is –OH;
X is $-CH_3$, $-CH_2OH$, or $CH_2C(=O)OH$; and
n is 0 or 1,
so as to thereby form a stabilized solution of the biological material.

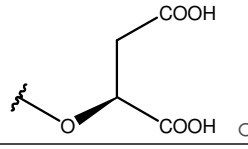
17. The method of claim 16 wherein the α/β anomer ratio of the compound is 1:1 to 99:1, or the α/β anomer ratio of the compound is greater than 99:1.

18. The method of claim 16 wherein in compound (B) R^1 is

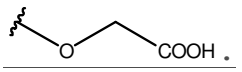


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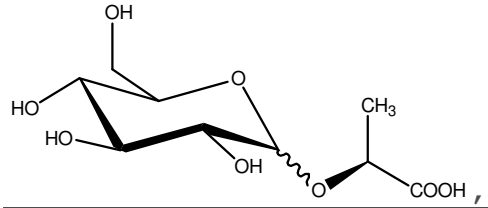
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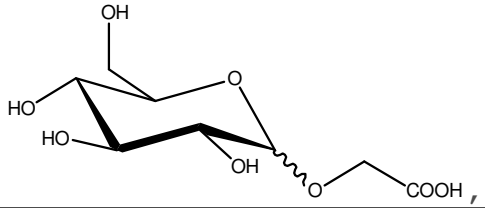
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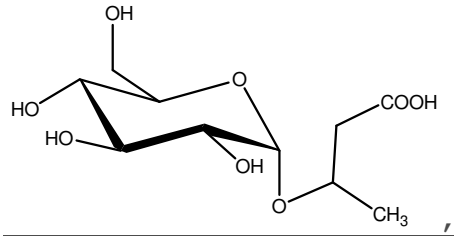
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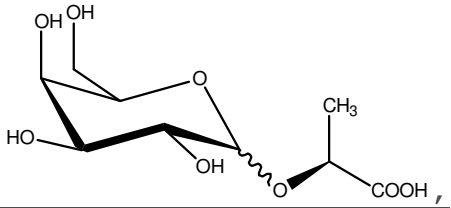
19. The method of claim 16, wherein the compound is



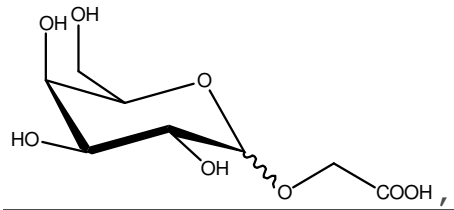
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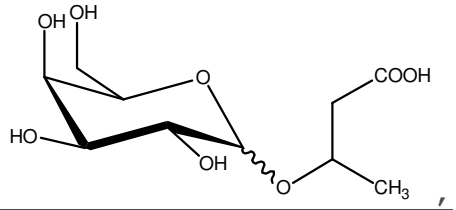
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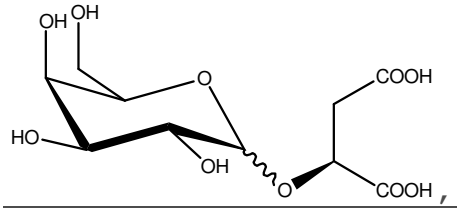
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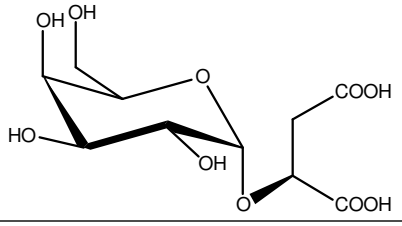
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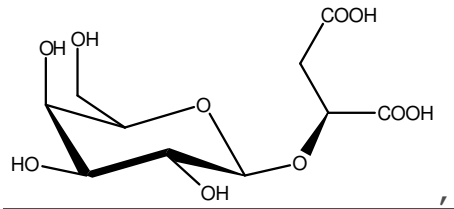
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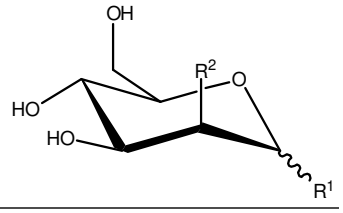
,

or a salt thereof.

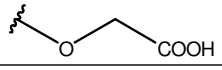
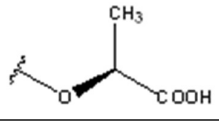
20. The method of claim 16, further comprising a step of drying the stabilized solution.

21. The method of claim 16, wherein the biological material is a polypeptide, an enzyme, an antibody, a plasma protein, a hormone, insulin, malate dehydrogenase, staphylococcal nuclease or lysozyme.

22. A method of stabilizing a biological material, comprising adding to a solution containing the biological material at least one compound of the following formula or a salt thereof,



wherein

R^1 is  or  ; and

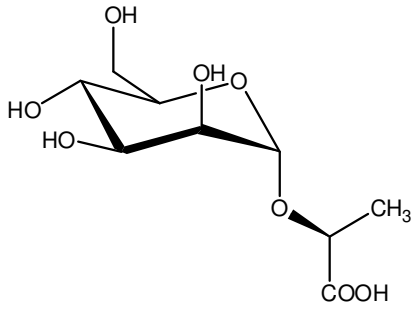
R_2 is OH,

so as to thereby form a stabilized solution of the biological material,

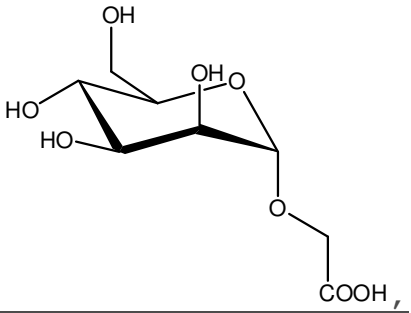
wherein the biological material is an antibody, a plasma protein, a hormone or insulin.

23. The method of claim 22, wherein the biological material is insulin.

24. The method of claim 22, wherein the compound is



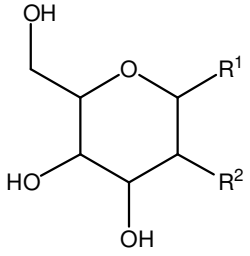
or



,

or a salt thereof.

25. A method of stabilizing a biological material, comprising adding to a solution containing the biological material at least one compound of the formula I:

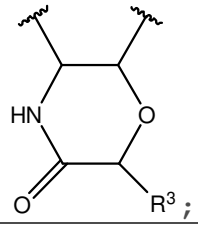


Formula I

or a salt thereof,

wherein:

R^1 and R^2 together with the carbon atoms to which they are attached form



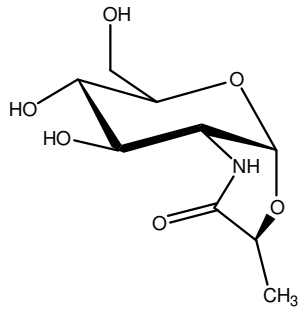
;

R^3 is –H, $-CH_3$, $-CH_2C(=O)OH$, or $-CH_2OH$;

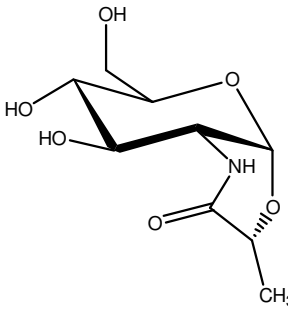
X is –H, $-CH_3$, $-CH_2OH$, or $CH_2C(=O)OH$; and

n is 0 or 1.

26. The method of claim 25, wherein the compound is



or



, or a salt thereof.

27. The method of claim 25 or 26, wherein the biological material is a polypeptide, an enzyme, an antibody, a plasma protein, a hormone, insulin, malate dehydrogenase, staphylococcal nuclease or lysozyme.