BRIEF DESCRIPTION

[0007] There is provided a solid substrate for extraction, stabilization and elution of biomolecules, comprising a melezitose under a substantially dry state.

[0007a] In an aspect, there is provided a dry solid substrate for collection, stabilization and elution of a biomolecule, wherein the dry solid substrate comprises a material selected from the group consisting of cellulose, cellulose acetate, glass fiber, and a combination thereof; and wherein a trisaccharide is impregnated in the dry solid substrate or coated on the dry solid substrate.

[0007b] In another aspect, there is provided a dry solid substrate for collection, stabilization and elution of a biomolecule, the dry solid substrate consisting of

a. a material selected from the group consisting of cellulose, cellulose acetate, glass fiber and a combination thereof; and
b. a trisaccharide impregnated in the dry solid substrate or coated on the dry solid substrate.

[0008] In another embodiment, a solid substrate for collection, stabilization and elution of biomolecules, comprises a trisaccharide under a substantially dry state.

One example of a method for extracting, stabilizing and eluting biomolecules from a biological sample disposed on a solid substrate, comprises contacting the biological sample to the substrate; drying the biological sample to a substantially dry state; and eluting the biomolecules from the biological sample dried on the substrate by rehydrating the substrate in an elution buffer, wherein the solid substrate comprises melezitose under a substantially dry state, and optionally one

or more lysis reagents, nucleic acid denaturing reagents or combinations thereof, impregnated therein under a substantially dry state.

[0009a] In another aspect, there is provided a method for collecting, stabilizing and eluting a biomolecule from a sample, comprising:

contacting the sample to the dry solid substrate as defiend above;

drying the sample to a water content of less than 2%; and

eluting the biomolecule from the sample dried on the dry solid substrate by rehydrating the dry solid substrate in an elution buffer.

BRIEF DESCRIPTION OF DRAWING

[0009] FIG. 1 is a graph showing enhanced elution efficiency of active, non-denatured β -gal while recovered from a substrate with 15% melezitose compared to unmodified 31-ETF cellulose.

[C001] DETAILED DESCRIPTION

[0010] The embodiments provide suitable matrices and methods for extraction, stabilization and elution of biomolecules, such as proteins, peptides, amino acids, enzymes, and antibodies. Biomolecules which are prone to denaturation are therefore difficult to preserve in an intact form. One or more embodiments of the invention relate to a solid substrate for extraction, stabilization and elution of biomolecules, wherein the substrate comprises a trisaccharide, such as melezitose under a substantially dry state. The solid substrate is configured to collect a

Claims:

1. A dry solid substrate for collection, stabilization and elution of a biomolecule, wherein the dry solid substrate comprises a material selected from the group consisting of cellulose, cellulose acetate, glass fiber, and a combination thereof; and wherein a trisaccharide is impregnated in the dry solid substrate or coated on the dry solid substrate.

2. The dry solid substrate of claim 1, wherein the dry solid substrate comprises a paper.

3. The dry solid substrate of claim 1 or 2, wherein the material of the dry solid substrate is not configured to be solubilized.

4. A dry solid substrate for collection, stabilization and elution of a biomolecule, the dry solid substrate consisting of

    a. a material selected from the group consisting of cellulose, cellulose acetate, glass fiber and a combination thereof; and
    b. a trisaccharide impregnated in the dry solid substrate or coated on the dry solid substrate.

5. The dry solid substrate of any one of claims 1 to 4, wherein the trisaccharide is a non-reducing sugar.

6. The dry solid substrate of any one of claims 1 to 4, wherein the trisaccharide is melezitose, raffinose, maltotriulose, isomaltotriose, nigerotriose, maltotriose, kestose or a combination thereof.

7. The dry solid substrate of claim 6, wherein the trisaccharide is melezitose, raffinose, maltotriulose, isomaltotriose, nigerotriose, maltotriose, or a combination thereof.

8. The dry solid substrate of any one of claims 1 to 7, wherein the trisaccharide is melezitose.

9. The dry solid substrate of any one of claims 1 to 8, wherein the material is cellulose.

10. The dry solid substrate of any one of claims 1 to 9, wherein the material is cellulose acetate.

11. The dry solid substrate of any one of claims 1 to 10, wherein the material is glass fiber.

12. The dry solid substrate of any one of claims 1 to 11, wherein the trisaccharide is impregnated in the dry solid substrate.

13. The dry solid substrate of any one of claims 1 to 12, wherein the trisaccharide is coated on the dry solid substrate.

14. A method for collecting, stabilizing and eluting a biomolecule from a sample, comprising:

contacting the sample to the dry solid substrate of any one of claims 1 to 13;

drying the sample to a water content of less than 2%; and

eluting the biomolecule from the sample dried on the dry solid substrate by rehydrating the dry solid substrate in an elution buffer.

15. The method of claim 14, wherein 70% to 90% of the biomolecule is recovered from the dry solid substrate.

16. The method of claim 14 or 15, wherein the biomolecule is eluted in an intact form.

17. The method of any one of claims 14 to 16, wherein the biomolecule is a protein or peptide.

18. The method of any one of claims 14 to 17, wherein the sample is a biological sample.

19. The method of any one of claims 14 to 18, wherein the sample is a blood sample.

20. The method of any one of claims 14 to 18, wherein the sample is serum.

21. The method of any one of claims 14 to 18, wherein the sample is tissue.

22. The method of any one of claims 14 to 18, wherein the sample is saliva.

23. The method of any one of claims 14 to 22, further comprising storing the dried sample on the dry solid substrate for several weeks.

24. The method of any one of claims 14 to 23, further comprising washing the dry solid substrate before eluting the biomolecule.

25. The method of any one of claims 14 to 24, wherein the method does not comprise solubilizing the dry solid substrate.