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(54) Titre : MATRICES ET DISPOSITIFS DE COLLECTE D'ECHANTILLONS A BASE DE PROTEINES
(54) Title: PROTEIN-BASED SAMPLE COLLECTION MATRICES AND DEVICES

(57) Abrégé/Abstract:
Provided herein are methods and compositions to effectively isolate nucleic acids using protein-based sample collection matrices.

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(54) Title: PROTEIN-BASED SAMPLE COLLECTION MATRICES AND DEVICES

(57) Abstract: Provided herein are methods and compositions to effectively isolate nucleic acids using protein-based sample collection matrices.

We claim:

1. A kit for isolating nucleic acids from a sample, the kit comprising:

a) a protein-based matrix configured to collect sample;

b) a solution comprising about 3-6 M chaotrope, about 0.5-10% detergent, about 50-500 mM reducing agent, and buffer maintaining pH of the solution at about 5-8.

2. The kit of claim 1, wherein the protein-based matrix forms a swab or a strip to collect liquid.

3. The kit of claims 1 or 2, further comprising processing vessels.

4. The kit of any one of claims 1-3, further comprising filter tubes or magnetic glass beads (MGPs).

5. The kit of any one of claims 1-4, further comprising wash buffer and elution buffer.

6. The kit of any one of claims 1-5, wherein the protein-based matrix is silk.

7. The kit of any one of claims 1-6, wherein the chaotrope is a guanidinium salt.

8. The kit of any one of claims 1-7, wherein the detergent is a non-ionic detergent.

9. The kit of any one of claims 1-8, wherein the reducing agent is dithiothreitol.

10. The kit of any one of claims 1-9, wherein the buffer is a citrate buffer.

11. The kit of any one of claims 1-10, wherein the pH of the solution is 6-7.

12. The kit of any one of claims 1-11, further comprising a container for storing the protein-based matrix and sample.

13. A method for collecting nucleic acids in a sample, the method comprising:

contacting a sample containing nucleic acids on a protein-based matrix,

thereby collecting nucleic acids.

14. The method of claim 13, further comprising placing the protein-based matrix in a container for storage.

15. The method of claim 13 or 14, further comprising contacting the protein-based matrix with a solution comprising about 3-6 M chaotrope, about 0.5-10% detergent, about 50-500 mM reducing agent, and buffer maintaining pH of the solution at about 5-8, thereby solubilizing the protein-based matrix in the solution.

16. The method of claim 15, wherein the protein-based matrix is silk.

17. The method of claim 15 or 16, wherein the chaotrope is a guanidinium salt.

18. The method of any one of claims 15-17, wherein the detergent is a non-ionic detergent.

19. The method of any one of claims 15-18, wherein the reducing agent is dithiothreitol.

20. The method of any one of claims 15-19, wherein the buffer is a citrate buffer.

21. The kit of any one of claims 15-20, wherein the pH of the solution is 6-7.

22. The method of anyone of claims 15-21, wherein the protein-based matrix is immersed in the solution for at least 10 minutes.

23. The method of any one of claims 15-22, further comprising contacting the solution with a filter tube or with magnetic glass beads (MGPs), washing the filter tube or MGPs with wash buffer, and eluting the nucleic acids from the filter tube or MGPs with elution buffer, thereby isolating the nucleic acids from the sample.

24. The method of any one of claims 15-23, wherein the sample is a liquid sample.