TANBead® Nucleic Acid Extraction Kit

Environmental Microbiome DNA Auto Tube

(For use with the Maelstrom 8 series and Maelstrom 4800 series)

RUO

M6EMS46

(For Research Use Only) V1

1. Intended Use

This product is designed for isolating nucleic acid from various samples, which can be performed by using TANBead® Nucleic Acid Extractor and is intended for research use only.

2. Purpose

TANBead® Nucleic Acid Extraction Kit (M6EMS46) is mainly designed to automatically isolate DNA from environmental samples, such as soil (including clay, sand, silt, loam, etc.) and stool (including humans, dogs, cats, etc.) This kit can isolate microbial DNA from gram-positive or negative bacteria. Moreover, it can remove humic acid and other PCR inhibitors allowing for purified DNA to be suitable for PCR, 16S sequencing, and other applications.

3. The basic principle

The silicon dioxide layer coated on the magnetic beads can adsorb the negatively charged molecules to purify nucleic acids from samples.

4. Specification

Starting Materials	50 mg soil, stool
Elution Volume	50-80 µL
Total DNA yield	Up to 16 ug

5. Component Supplied with the Kit

Auto Tube	8 trays	Auto Tube with reagent buffers
Proteinase K	1.0 mL x 2	Proteinase K
Elution Buffer	1.5 mL x 1	Nuclease-Free Water
Incubation Buffer	120 mL x 1	Phosphate buffer
Enhancer	0.6 g x 2	Dissolve 10 mg of enhancer in 500 µL of Incubation Buffer per test.
Base	2	A rack for 8 Auto Tubes
Spin tips	48 tips x 2 boxes	Spin tip assembled box
Protocol	1	Instruction guide for user

6. Auto Tube Content

Well	Buffer	Volume (µL)
1 / 7	Lysis Buffer	600
2 / 8	Washing Buffer 1	800
3 / 9	Washing Buffer 2	800
4 / 10	Washing Buffer 2	800
5 / 11	Magnetic Beads	800
6 / 12	Elution Buffer	80

7. Kit Storage and Shelf Life

1) Components under room temperature (15~35°C) can be stored until the expiration date labeled on the box.
2) The proteinase K is transported at room temperature. Upon received, please store proteinase K at 2~8°C.

8. Precautions

1) For research use only.
2) Avoid using expired reagents.
3) When the temperature is below 20°C, place the Auto Plates / Auto Tubes in an oven (preheated 42~60°C) 5 to 10 minutes.
4) Avoid vigorous shaking, in order to avoid excessive formation of foam.
5) Carefully remove aluminum foil to avoid splashing.
6) Do not expose the opened reagents or Auto Plates / Auto Tubes to air. The evaporation would lead to pH change, or effect on the extraction effectiveness.
7) Please check the integrity of the Auto Plates / Auto Tubes and remember to mount the spin tips into the appropriate position of the suitable instrument before operating them.
8) Please wear a mask and disposable gloves when handling.
9) Use sterile consumables to avoid nuclease contamination.
10) Reagent solution contains guanidine salt, avoid using bleach containing detergent.
11) Avoid eyes, skin, and clothing contact with reagents. In case of any contact, flush with flowing water.
12) If any serious incident occurs, please report to the manufacturer and the competent authority of the member state in which the user and/or the patient is established.

9. Materials required, Not Supplied

1) TANBead® Nucleic Acid Extraction System
   Model: Maelstrom 8 series, Maelstrom 4800 series (non-sterile)
2) Disposable gloves
3) Scissors, utility knives
4) Micropipette, disposable tips (10 µL / 200 µL / 1000 µL)
5) 1.5 mL microcentrifuge tube
6) 15 mL / 50 mL conical tube

10. Nucleic Acids Extraction Protocol

1) Weight about 50 mg sample into a 1.5 mL tube.
2) Add **500 µL incubation buffer** and **20 µL Proteinase K** and mix well.
   Optional (inhibitor remover): Enhancer
   Note: In the case of a very dry sample, increase the incubation buffer volume (and PK proportionally) until the sample has been totally resuspended.
3) Incubate at **60°C for 10 minutes** on a heater.
4) Centrifuge at 9500 RPM for 5 minutes.
   Note: If solid suspension remains, centrifuge for another (3~5) minutes until the supernatant is clear.
5) Preparing the Assembled Auto Tubes by inserting Auto Tubes into the Base completely.
6) Carefully remove the aluminum foil on the Auto Tubes.
7) Transfer the supernatant into column **#1 / #7** of Auto Tubes.
   Note: If samples are difficult to transfer, please use a cut-off pipette tip and pipette gently.
8) Set up spin tip:
   Maelstrom 8 series: Hand to mount tips and make sure there is no gap between the neck of the spin tips and the spin shaft.
   Maelstrom 4800 series: Go to the Tip page and mount tips region by region.
9) Push Assembled Auto Tubes completely to the bottom of the plate rack. Make sure that the chamfer of the plate is at the lower left.
10) Select the program
    Maelstrom 8 series: Press "**6EM-1**" for input specimens at column #1 or "**6EM-7**" for input specimens at column #7.
    Maelstrom 4800 series: Press "**6EM**".
    The parameters are given in following section.
11) Carefully remove the Assembled Auto Tubes when the program is finished.
12) Use a micropipette to transfer the purified nucleic acids from **column #6 / #12** to a clean tube.
13) Discard used Auto Tubes and spin tips into the waste recycling bin.

11. Program

- **Maelstrom 8 series**

Program Name: 6EM-1 / 7						
Well	1 / 7	2 / 8	3 / 9	4 / 10	5 / 11	6 / 12
Volume	1100 (µL)	800 (µL)	800 (µL)	800 (µL)	800 (µL)	100 (µL)

Step	Well	Action	RPM	Time (Second)	CW/CCW (Second)	Temp.	Temp. Control
1	5/ 11	Collection	0	30	0	60	YES
2	1/ 7	Mixing	3000	600	0	60	YES
3	1/ 7	Collection	0	30	0	60	YES
4	2/ 8	Mixing	3000	60	0	45	YES
5	2/ 8	Collection	0	30	0	45	YES
6	3/ 9	Mixing	3000	60	0	45	YES
7	3/ 9	Collection	0	30	0	45	YES
8	4/ 10	Mixing	3000	60	0	45	YES
9	4/ 10	Collection	0	30	0	45	YES
10	4/ 10	Vapor	0	600	0	45	YES
11	6/ 12	Mixing	3000	300	0	45	YES
12	6/ 12	Collection	0	30	0	45	YES
13	5/ 11	Mixing	3000	60	0	0	YES

- **Maelstrom 4800 series**

Program Name: 6EM				Model: Maelstrom 4800 series			
Temp1	Temp2						
40	40						
Well	Name	Volume	Action	Mixing	Collect		
1 / 7	LB	1100	Rev. U/D	Low	Low		
2 / 8	WB1	800	For.	Low	Low		
3 / 9	WB2	800	For.	Low	Low		
4 / 10	WB2	800	For.	Low	Low		
5 / 11	MB	800	For.	Low	Low		
6 / 12	EB	100	For.	Low	Low		
Step	Well	Temp (°C)	Mixing (M)	Mixing Speed (RPM)	Collect (M)	Vapor (M)	Pause
1	5	-	0.5	2500	0.5	0	Off
2	1	55	12	2500	0.5	0	Off
3	2	-	2	2500	0.5	0	Off
4	3	-	1	1500	0.5	0	Off
5	4	-	1	1500	0.5	10	Off
6	6	OFF	5	2500	1.5	0	Off
7	3	-	0.5	2500	0	0	Off

12. Reagent performance

- **Broad Sample type**
  This kit enables DNA extraction from various environmental samples, such as soil (clay, sand, silt, and loam) and stool.
- **Time-Efficient**
  This kit with the walk-away system only requires 15-20 minutes of pretreatment followed by 45 minutes of automated extraction.
- **High throughput**
  This kit can perform up to 48 DNA extractions simultaneously when used with TANBead® Automated Nucleic Acid Extraction Instruments.

13. Troubleshooting

- **Inhibitor carryover**
  A possible inhibitor carryover is sometimes, although not necessarily, identified by a colored eluate. Use the enhancer to remove the inhibitor from starting material pretreatment or dilute the sample at least 1:10 or use an enhancer before PCR analysis.
- **Insufficient or excess DNA used in downstream application**
  Optimize the amount of DNA used in the downstream application, if necessary. Downstream applications can be adversely affected by insufficient or excess DNA.

14. Explanation of Symbols

	Manufacturer		Consult instructions for use
15°C 35°C	Temperature limit		Contains sufficient for test
REF	Catalogue number		Caution
LOT	Batch code	NON STERILE	Non-sterile
	Do not re-use		Keep away from sunlight
	Date of manufacture		Use-by date
RUO	For research use only		

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