Magnetic Beads Soil Genomic DNA Extraction Kit

For research use only

Catalogue Numbers	Quantity
MS048	48 rxns
MS096	96 rxns

Geneaid

CERTIFICATE NO. QAIC/TW/50077
ISO 9001:2008 QMS

Introduction

The Magnetic Beads Soil DNA Extraction Kit was designed specifically for rapid isolation of genomic DNA from microorganisms such as bacteria, archaea, fungi, and algae in soil samples. The soil sample is homogenized using a lysis buffer combined with ceramic beads. Insoluble particles, proteins and PCR inhibitors such as humic acid are then precipitated using a unique inhibitor removal buffer. Residual PCR inhibitors are further removed by passing through a specialized PCR inhibitor removal column. DNA is bound to the surface of the magnetic beads and released using a proprietary buffer system. The Magnetic Beads Soil Genomic DNA Extraction Kit can be easily adapted to automated magnetic bead separation instruments and workstations. The purified DNA can be used in qPCR and a variety of other downstream applications.

Quality Control

The quality of the Magenetic Beads Soil Genomic DNA Extraction Kit is tested on a lot-to-lot basis by isolating genomic DNA from 250 mg soil samples. Following the purification process, a yield of more than 2 µg of genomic DNA is obtained and the A260/A280 ratio is between 1.7-2.0. The purified genomic DNA is analyzed by electrophoresis.

Advantages

- High Yield, High Quality DNA: up to 5 µg of Genomic DNA, A260/A280 = 1.8-2.0
- Easily adapted to automated magnetic bead separation instruments and workstations
- Sample: 250-400 mg soil
- Operation time: within 40 minutes (manual)
- Storage: dry at room temperature (15-25ºC)

Caution

During operation, always wear a lab coat, disposable gloves, protective goggles and (anti-fog) procedure mask.

Components

Component	MS048	MS096
MS1 Buffer[1]	30 ml	60 ml
MS2 Buffer	6 ml	15 ml
MS3 Buffer[2] (Add Isopropanol)	34 ml (6 ml)	68 ml (12 ml)
MW1 Buffer	45 ml	60 ml
MW2 Buffer[3] (Add Ethanol)	12.5 ml (50 ml)	25 ml (100 ml)
MS Magnetic Beads	2.5 ml	5 ml
Beadbeating Tubes (Type C)	48	48 x 2
Inhibitor Removal Columns	48	48 x 2
2 ml Centrifuge Tubes	48	48 x 2
Elution Buffer	10 ml	20 ml

[1]If precipitates have formed in MS1 Buffer, warm the buffer in a 37ºC water bath, followed by gentle shaking to dissolve.
[2]Add isopropanol (see the bottle label for volume) to MS3 Buffer then mix by shaking for a few seconds. Check the box on the bottle. Be sure and close the bottle tightly after each use to avoid Isopropanol evaporation.
[3]Add absolute ethanol (see the bottle label for volume) to MW2 Buffer then mix by shaking for a few seconds. Check the box on the bottle. Be sure and close the bottle tightly after each use to avoid ethanol evaporation.

Magnetic Beads Soil Genomic DNA Extraction Kit Protocol

IMPORTANT BEFORE USE:

1. Vortex magnetic beads to ensure they are in suspension prior to initial use.
2. Be sure and allow magnetic beads to disperse completely during the binding, wash and elution steps.
3. Add isopropanol (see the bottle label for volume) to MS3 Buffer then mix by shaking for a few seconds. Check the box on the bottle. Be sure and close the bottle tightly after each use to avoid isopropanol evaporation.
4. Add absolute ethanol (see the bottle label for volume) to MW2 Buffer then mix by shaking for a few seconds. Check the box on the bottle. Be sure and close the bottle tightly after each use to avoid ethanol evaporation.

Additional requirements: absolute ethanol, microcentrifuge tubes, magnetic separator, isopropanol

1. Sample Lysis

Transfer **250-400 mg of soil to a Beadbeating Tube** containing ceramic beads. Add **500 µl of MS1 Buffer** then vortex briefly. NOTE: Very dry soil samples can soak up large amounts of MS1 Buffer. In this case, either reduce the soil amount or add additional MS1 Buffer to the Beadbeating Tube. For wet soil samples, after transferring to a Beadbeating Tube, centrifuge at 8,000 x g for 1 minute. Remove as much liquid as possible with a pipette before adding MS1 Buffer. For frozen soil samples, after adding MS1 Buffer and mixing well, incubate the sample mixture at 70ºC for 5 minutes to melt the soil samples. Attach the Beadbeating Tubes horizontally to a standard vortex by taping or using an adapter. Vortex at maximum speed for 10 minutes at room temperature. Centrifuge the Beadbeating Tubes at 8,000 x g for 2 minutes at room temperature to eliminate the foam caused by detergents present in MS1 Buffer. NOTE: Preheat the required Elution Buffer (200 µl per sample) to 60ºC for DNA elution.

2. PCR Inhibitor Removal

Add **100 µl of MS2 Buffer to the Beadbeating Tube** and vortex for 5 seconds. Incubate at 0-4ºC for 5 minutes. Centrifuge at 8,000 x g for 1 minute at room temperature to precipitate insoluble particles and PCR inhibitors. Place an **Inhibitor Removal Column** in a 2 ml Centrifuge Tube. Transfer **400 µl of clear supernatant** from the Beadbeating Tube to the Inhibitor Removal Column. Centrifuge at 16,000 x g for 1 minute at room temperature then discard the column. Save the flow-through in the 2 ml Centrifuge Tube for DNA Binding. NOTE: If a pellet is in the flow-through, transfer the clear supernatant to a new 1.5 ml microcentrifuge tube (not provided).

3. DNA Binding

Add **800 µl of MS3 Buffer (make sure isopropanol was added)** to the flow-through then mix IMMEDIATELY by shaking the tube vigorously for 5 seconds. Vortex MS Magnetic Beads for 10 seconds to ensure they are in suspension before use. Add **50 µl of MS Magnetic Beads** then shake gently for 5 minutes to ensure the MS Magnetic Beads disperse completely. Place the tube in a magnetic separator for 30 seconds or until MS Magnetic Beads have pelleted. Remove and discard the supernatant.

4. Wash

Add **600 µl of MW1 Buffer** then gently shake the tube for 1 minute. Place the tube in a magnetic separator for 30 seconds or until MS Magnetic Beads have pelleted. Remove and discard the supernatant. Add **600 µl of MW2 Buffer (make sure ethanol was added)** then gently shake the tube for 1 minute. Place the tube in a magnetic separator for 30 seconds or until MS Magnetic Beads have pelleted. Remove and discard the supernatant. Add **600 µl of MW2 Buffer (make sure ethanol was added)** then gently shake the tube for 1 minute. Place the tube in a magnetic separator for 30 seconds or until MS Magnetic beads have pelleted. Remove and discard the supernatant.

5. Elution

Incubate the tube at 60ºC for 3 minutes to dry the MS Magnetic Beads. Add **50~200 µl of Elution Buffer**. Pipette the sample to mix then incubate at room temperature for 3 minutes. During incubation, keep the MS Magnetic Beads in suspension. Place the tube in a magnetic separator for 30 seconds or until MS Magnetic Beads have pelleted. Carefully transfer the supernatant containing the purified DNA to a clean 1.5 ml microcentrifuge tube.