Magnetic Beads gDNA Kit (Food)

For research use only

Catalogue Numbers	Quantity
MF048	48 rxns
MF096	96 rxns

Geneaid

CERTIFICATE NO. QAIC/TW/50077

ISO 9001:2008 QMS

Introduction

The Magnetic Beads Genomic DNA Extraction Kit (Food) is designed for rapid isolation of DNA from a variety of raw and processed food samples. The unique MF1 Buffer when combined with Proteinase K is used to efficiently digest food tissue and proteins. PCR inhibitors such as polysaccharides and plant metabolites are removed by centrifugation. Chloroform treatment, separates residual inhibitors from the clear supernatant in the organic phase. DNA in the aqueous phase is then bound by the MF Magnetic Beads followed by wash and elution. The purified genomic DNA is ready for use in PCR, restriction enzyme digestion, and sequencing reactions.

Quality Control

The quality of the Magnetic Beads Genomic DNA Extraction Kit (Food) is tested on a lot-to-lot basis by isolating genomic DNA from 100 mg food samples. Following the purification process, the purified DNA (A260/A280 ratio 1.8-2.0) is analyzed by electrophoresis.

Advantages

- High Quality DNA: A260/A280 = 1.8-2.0
- Easily adapted to automated magnetic bead separation instruments and workstations
- Sample: up to 100 mg of raw or processed food
- Operation time: within 50 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 and Storage

Item	Volume	Product	Shipping	Storage
MF1 Buffer	2 ml x 2	MF004	room temperature	dry at room temperature (15-25ºC)
	50 ml	MF048		
	100 ml	MF096		
MF2 Buffer	2 ml x 2	MF004	room temperature	dry at room temperature (15-25ºC)
	50 ml	MF048		
	100 ml	MF096		
Proteinase K[1] (Add ddH_2O)	1 mg (100 µl)	MF004	room temperature	lyophilized powder and solutions 2-8ºC for extended periods
	5 mg (500 µl)	MF048		
	11 mg (1.1 ml)	MF096		
MW1 Buffer	2 ml x 2	MF004	room temperature	dry at room temperature (15-25ºC)
	45 ml	MF048		
	60 ml	MF096		
MW2 Buffer[2] (Add Absolute Ethanol)	1 ml (4 ml)	MF004	room temperature	dry at room temperature (15-25ºC)
	12.5 ml (50 ml)	MF048		
	25 ml (100 ml)	MF096		
MF Magnetic Beads	220 µl	MF004	room temperature	dry at room temperature (15-25ºC)
	2.5 ml	MF048		
	5 ml	MF096		
Elution Buffer	1 ml	MF004	room temperature	dry at room temperature (15-25ºC)
	10 ml	MF048		
	20 ml	MF096		

[1]Add ddH_2O to Proteinase K (see the bottle label for volume) then vortex to ensure it is completely dissolved. Check the box on the bottle. Once it is dissolved completely, centrifuge for a few seconds to spin the mixture down. For extended periods, the ddH_2O and Proteinase K mixture should be stored at 4ºC. Use only fresh ddH_2O as ambient CO_2 can quickly cause acidification.

[2]Add absolute ethanol (see the bottle label for volume) to Wash 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 Genomic DNA Extraction Kit Food Protocol Procedure

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 ddH_2O to Proteinase K (see the bottle label for volume) then vortex to ensure it is completely dissolved. Check the box on the bottle. Once it is dissolved completely, centrifuge for a few seconds to spin the mixture down. For extended periods, the ddH_2O and Proteinase K mixture should be stored at 4ºC. Use only fresh ddH_2O as ambient CO_2 can quickly cause acidification.
4. Add absolute ethanol (see the bottle label for volume) to Wash 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: ddH_2O, absolute ethanol, standard vortex, 60ºC incubator, magnetic separator, 1.5 ml microcentrifuge tubes, 2 ml centrifuge tubes (optional).

1. Homogenize **100 mg of food** using one of the following methods: A. Add liquid nitrogen to a mortar and grind the food samples thoroughly using a pestle. Transfer the food powder to a 1.5 ml centrifuge tube. B. Transfer the food samples to a 2 ml centrifuge tube containing ceramic beads or stainless steel beads then homogenize the sample with a TissueLyser, Disruptor Genie or similar. C. Transfer 100 µl of liquid samples directly to a 1.5 ml centrifuge tube.

Add **500 µl of MF1 Buffer and 10 µl of Proteinase K** to the microcentrifuge tube containing the homogenized food sample then vortex briefly. Incubate the sample lysate at 60ºC for 30 minutes. During incubation, invert the tube occasionally.
NOTE: For samples which swell from liquid absorbtion (e.g., starches, cornflakes), add 1 ml of MF1 Buffer to ensure the sample is completely submerged.

2. Facilitate inhibitor precipitation by cooling the sample to room temperature either on ice or at 4ºC. Centrifuge the sample at 2,500 x g for 5 minutes to remove cell debris. Transfer **350-400 µl of supernatant** to a new 1.5 ml microcentrifuge tube.
NOTE: Depending on the type of food, the supernatant may be colored. If a semi-solid layer floats on top of the supernatant, pierce it with a pipette and transfer only the clear supernatant to a clean 1.5 ml microcentrifuge tube, being careful NOT to touch any precipitate/pellet from the bottom of the tube.

Add **300 µl of Chloroform** then vortex for 15 seconds. Centrifuge at 16,000 x g for 10 minutes at room temperature. Carefully transfer **200 µl of the upper, aqueous phase** to a new 1.5 ml microcentrifuge tube.

3. Add **400 µl of MF2 Buffer** and mix well by vortex.
NOTE: For extracting small DNA fragments (100-200 bp) from highly processed food samples, add 800 µl of MF2 Buffer to 200 µl of the sample instead.

Vortex MF Magnetic Beads for 10 seconds to ensure they are kept in suspension then add **50 µl of MF Magnetic Beads** to sample mixture. Gently shake the tube for 5 minutes to mix. Be sure MF Magnetic Beads disperse completely in the sample mixture. Place the tube in a magnetic separator for 30 seconds or until MF Magnetic beads have pelleted. Remove and discard the supernatant.

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

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