One-Step Lipids Removal Kit

Introduction

Lipids are a family of organic compounds that include monoglycerides, diglycerides, triglycerides, etc. The presence of the lipids in the biological sample is usually poorly compatible with many downstream applications, including ELISA, protease digestion of proteins, isoelectric focusing, and mass spectrometry (MS). To enable downstream analysis, it is critical to remove the lipids from the biological sample such as ascites, serum, cell & tissue culture, bile, and organ homogenates. For such purposes, traditionally, chloroform or column has been the preferred method for Delipidation. However, using the solvent removal agent or spin column to remove the lipids is tedious, timing-consuming, suffering from sample losses, environmental concerns, and challenging to adapt to high-throughput automation. We develop a novel, super-efficient lipid-specific removal agent based on magnetic beads to overcome these limitations.

BcMag™ One-Step Lipids Removal Kit uses specially designed magnetic beads to efficiently bind and remove lipids from ascites, serum, cell & tissue culture, bile, and organ homogenates. The convenient single-step, one-tube purification protocol takes only 2 minutes with very little hands-on time (Fig.1). The beads enable 96 samples to be processed simultaneously in less than 10 minutes.

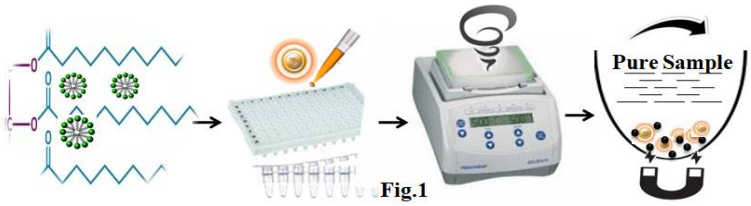

Fig.1
Workflow of lipid removal

Workflow

1. Add the beads to a sample solution.
2. Mix the beads with the sample by vortex or pipetting.
3. Magnetically remove the beads
4. Aspirate the supernatant containing a lipid-free sample.

Features and Advantages:

- Simple protocol: No liquid transfer, One-tube, One-step
- Ultrafast: Two-minute protocol
- Lipid-specific adsorption and high sample recovery: > 90%
- Cost-effective: Eliminates columns, centrifuge, filters, and laborious repeat pipetting
- High throughput: Compatible with many different automated liquid handling systems

Specification	
Composition	Silica-enclosed magnetic beads are modified with our proprietary chemistry.
Stability	Short Term (<1 hour): pH 4-11; Long-Term: pH 4-10 Temperature: 4°C -140°C; Most organic solvents
Magnetization	~40-45 EMU/g
Type of Magnetization	Superparamagnetic
Formulation	100 mg / ml in d_2H_2O
Binding Capacity	20 µg lipids / mg of Beads
Storage	Ship at room temperature, Store at 4° upon receipt.

Protocol

Materials Required

Item	Source
Magnetic rack for centrifuge tube ** Based on sample volume, the user can choose one of the following magnetic Racks	• BcMag rack-2 for holding two individual 1.5 ml centrifuge tubes (Bioclone, Cat. # MS-01)

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	• BcMag rack-6 for holding six individual 1.5 ml centrifuge tubes (Bioclone, Cat. # MS-02) • BcMag rack-24 for holding twenty-four individual 1.5-2.0 ml centrifuge tubes (Bioclone, Cat. # MS-03) • BcMag rack-50 for holding one 50 ml centrifuge tube, one 15 ml centrifuge tube, and four individual 1.5 ml centrifuge tubes (Bioclone, Cat. # MS-04)
BcMag 96-well Plate Magnetic Rack.	• BcMag 96-well Plate Magnetic Rack (side-pull) compatible with 96-well PCR plate and 96-well microplate or other compatible racks (Blioclone, Cat#: MS-06)
Adjustable Single and Multichannel pipettes	
Centrifuge with swinging bucket	
Vortex Mixer ** The user can also use other compatible vortex mixers. However, the user should optimize time and speed, and the mixer should be Orbit ≥1.5 mm-4 mm, Speed ≥ 2000 rpm	
Eppendorf™ MixMate™	Eppendorf, Cat#:5353000529
Tube Holder PCR 96	Eppendorf Cat#: 022674005
Tube Holder 1.5/2.0 mL, for 24 × 1.5 mL or 2.0 mL	Eppendorf, Cat#: 022674048
Smart Mixer, Multi Shaker	BenchTop Lab Systems, Cat#:5353000529
1.5/2.0 mL centrifuge tube	
96-well PCR Plates or 8-Strip PCR Tubes	
PCR plates/tubes ** ***IMPORTANT!*** Using other tubes or PCR plates, ensure that the well diameter at the bottom of the conical section of PCR Tubes or PCR plates must be ≥2.5mm.	

The following protocol is an example. The beads and sample volume can be rational Scale-up *(*or *down*). Do not use buffers containing organic solvents.

Procedure

1. Shake the bottle to resuspend the magnetic beads until it is homogeneous entirely.

   IMPORTANT! *It is essential to mix the beads before dispensing. Do not allow the beads to sit for more than 2 minutes before dispensing. Resuspend the magnetic beads every 2 minutes.*

2. Add 10µl magnetic beads to a 100 µl sample containing lipids.

   IMPORTANT*! Users need to optimize the ratio of beads and lipids based on the binding capacity of beads* ***(****20 µg lipids/mg of beads)*

3. Mix the sample with beads for 1-2 minutes by slowly pipetting up and down 20-25 times or vortex for 5 minutes at 2000 rpm for PCR plates or .800 rpm for Elisa plates.

   IMPORTANT! ***Users need to optimize the speed and time if using a vortex mixer.***

4. Place the sample plate or tube on the magnetic separation plate for 30 seconds or until the solution is clear.
5. Transfer the supernatant to a clean plate /tube while the sample plate remains on the magnetic separation plate. The sample is ready for downstream applications.

Related Products	
Product Name	Product Name
One-Step Lipids Removal Kit	Quick Albumin Removal Kit
One-Step Deproteinizing Kit	Quick HSA and IgG Depletion Kit
One-Step SDS Removal Kit	One-Step Dye Removal Kit
One-Step Detergent Removal Kit	Quick Endotoxin Removal Kit
EDTA Metal Ion removal Kit	Immobilized TCEP Disulfide Reducing Kit
EGTA Metal Ion removal Kit	One-Step PCR Inhibitor Removal Kit
One-Step DNA and RNA Cleanup Kit	One-Step DNA and RNA Removal Kit
One-Step Sequencing Cleanup Kit	One-Step Single-Stranded DNA Removal Kit
One-Step Fluorescent Labeling Cleanup Kit	One-Step RNA Removal Kit
One-Step NGS Cleanup Kit	One-Step PCR Cleanup Kit

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