How to Extract Fat from Food Samples that Do Not Require Acid Hydrolysis on the EDGE

Introduction

Fat extractions are required by food manufacturers for quality assurance and nutrition facts. Some foods do not require an acid prehydrolysis step to achieve optimal recoveries. Please use this method to extract foods that do not require acid hydrolysis.

Sample Types

Foods with unbound fat.

Sample Preparation

1. Mill or homogenize the food sample.
   Note: Is the food wet? Please pre-dry your sample in an oven at 100◦C for 1 hour prior to milling.
2. Prepare the EDGE by priming a solvent line with petroleum ether and programming in the EDGE method at the bottom of this protocol.
3. Place a S1 stack of Q-Discs (C9+G1+C9) into the bottom of a Q-Cup.
4. Weigh 3 g or less of the food sample into a Q-Cup. Record the weight.
   Note: Use lower sample sizes (2 g or less) for fatter foods like nut butters.
5. Place the Q-Cup in the EDGE rack. Place pre-weighed vials with weight recorded in rack.
   Note: This method requires two 40 mL or 60 mL vials.

EDGE Extraction

6. Prepare the EDGE by priming a solvent line with petroleum ether or the desired solvent and programming in the EDGE method at the bottom of this protocol.
7. Extract the sample using the EDGE method at the bottom of this protocol.

Post Extraction Work Up

8. Remove the extract vials from the rack.
   Note: The resulting extract may have a yellow tint if the sample is higher fat content.
9. Place vials in an evaporator at 60◦C, and allow all solvent to evaporate.
   Note: Fat will remain as an oily, viscous layer at the bottom of the vial.
10. Place vial in an oven for 1 hour at 100◦C to remove any residual moisture or solvent.
11. Allow vial to cool, and weigh.
    Note: % Recovery = ((Vial1 after – Vial1 before)+ (Vial2 after – Vial2 before))/Sample weight x 100%
    Where vial after is the weight of the vial after evaporation and vial before is the weight of the vial before extraction

Method Development Tips

- The method below is a conservative method applicable to most sample types, please note that a more optimized method for specific samples may be available. Please contact Molecular Support for more information.
- For high salt containing samples, it is recommended that a daily system wash with water and then a system wash with petroleum ether are done to prevent salt buildup.
- Other extraction solvents, such as diethyl ether and hexane, can be used to extract fat.
- If recovery is lower than expected with this method, increase hold time for each cycle by 1 minute. Also, be sure that your sample is milled before extracting and that the filters are adequately compressed by the Q-Screen.
- If increasing hold time does not improve recovery, it may be that your sample requires acid hydrolysis for optimal recovery. Please consult the application guide “How to Extract Fat from Food Samples that Require Acid Hydrolysis on the EDGE.”

Cycle	Solvent	Top add (mL)	Bottom add (mL)	Rinse (mL)	Temperature (°C)	Hold
1	Petroleum ether	30	0	10	140	5 min
2	Petroleum ether	30	0	10	140	5 min
Wash	Petroleum ether	20	-	-	30	15 s