



RAPID CONCENTRATION FOR SPOILAGE ORGANISMS IN BEER

INTRODUCTION

Microbiological testing for beer spoilage is necessary throughout the brewing process to ensure product quality. Rapid microbiological analytical methods such as qPCR offer great potential for increasing the reliability of spoilage detection in beverages while reducing labor costs and product hold times; however, small analysis volumes limit the usefulness of these methods. Overnight pre-enrichment is often used to overcome this limitation, but the significant time advantage of rapid analysis is then lost.

In an effort to eliminate culture-based enrichment steps, InnovaPrep has developed a rapid “mechanical concentration” approach using a single-use high-flow membrane filter tip and a novel elution process to allow for fast, straight-forward, user-friendly concentration of spoilage organisms from beverages.

The concentration process uses microfiltration to capture organisms on the surface of a membrane filter within the Concentrating Pipette’s single-use tip. After the sample has been processed and the organisms have been trapped, InnovaPrep’s patented Wet Foam Elution™ process is employed with a button press to wash the organisms off of the membrane surface into a very small liquid volume to better match the input volumes of rapid detection methods such as immunoassay, PCR, or sequencing. The one-pass method provides rapid sample volume reduction and simultaneous clean buffer exchange. Nowhere is this more important than for trace analysis of spoilage organisms and other particle contaminants.



Concentrating Pipette Select™

THE METHOD

The Concentrating Pipette Select is fast and easy to use for the concentration of spoilage organisms in carbonated beverages. Process volumes will vary according to beverage type, temperature, and amount of carbonation remaining in the sample.

MATERIALS REQUIRED

- InnovaPrep Be Flat™ Degassing Jar
- InnovaPrep Concentrating Pipette
- CP Elution Fluid (HC08000 or HC08001)
- Concentrating Pipette Tip (CC08018)



Be Flat Degassing Jar™



STEP 1 CHOOSE APPROPRIATE FLUID TYPE

Select from the below elution fluid formulations according to your method of analysis.

ITEM	FORMULATION	NOTES
HC08000	0.075% Tween 20 PBS	Recommended for analysis by classical culture
HC08001	0.075% Tween 20 Tris	Recommended for analysis by rapid methods

STEP 2 DECARBONATE SAMPLE

It is necessary to decarbonate beverages before processing on the Concentrating Pipette as CO₂ in the liquid interferes with the flow sensor and tends to blind the membrane. InnovaPrep has developed a specialized jar (patent pending) with optimized nucleation etching to rapidly degas carbonated beverages, as shown above.

To degas, dump room temperature beer into the Be Flat jar very rapidly to release as much CO₂ as possible. Place jar in refrigerator for 10 minutes (some beer types can forgo refrigeration, some beers require up to 20 minutes refrigeration time).

STEP 3 CONCENTRATION

1. Set up the Concentrating Pipette (CP) as instructed in Section 4 of the CP Select User Guide.
2. Insert a Concentrating Pipette Tip (CPT) and select a menu protocol as instructed in Section 5.2 of the CP Select User Guide for the chosen CPT type.
3. Lower the CPT into the sample.
4. Press “Start Run” on the user screen. When the entire sample has been processed the CP will stop.
5. Place a clean final sample container under the CPT. The menu screen will prompt you to press “Elute”.
6. Press “Elute”. The sample will dispense from the pipette tip into the sample container. The sample is ready for subsequent sample preparation and analysis steps.

STEP 4 ANALYSIS METHOD OF CHOICE

SAMPLING SUPPLIES

Purchase sampling supplies directly from the InnovaPrep website, <https://www.innovaprep.com/store#!/Concentrating-Pipette-and-Supplies>