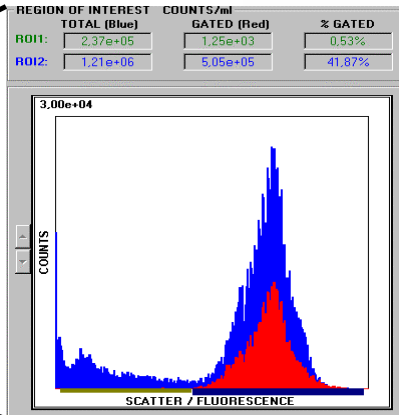
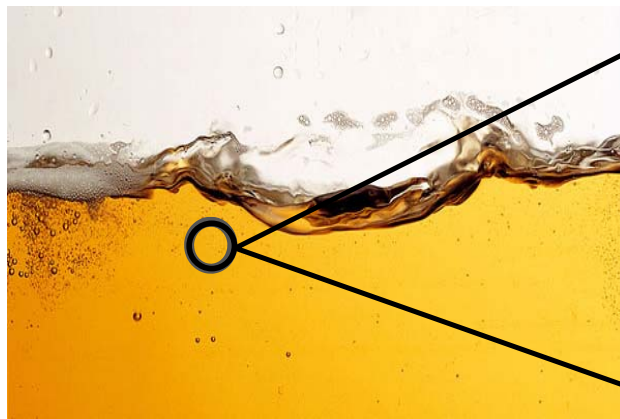


Feb. 6, 07: Application bulletin no 1.01

Yeast analysis for beer and wine



**”The ability of the Microcyte to determine total yeast count appeared to be more accurate than methylene blue staining method. The linearity and reproducibility were excellent”,
Brewing Research International, September 2002.**

Monitoring and controlling the yeast viability is of outmost importance for obtaining optimal quality beer and commercially beneficial production. Dead yeast cells have leaky membranes and will influence the taste of beer. Controlling the yeast viability after storage will help optimise storing conditions and make sure only the best yeast is used. *BioDETECT* provides a system for rapid enumeration and viability testing of yeast based on the MICROCYTE[®] cytometer technology and a specific line of reagents.

Proven technology - with reference customers within the brewing industry in Germany

Ease of use - simple, easy to use procedure and instrumentation

Rapid response - results obtained within minutes

Reliability - scientific method applied in health diagnostics, medicine and food production for several years

Instrument based analysis - reducing the risk of subjective human interpretation

Small - 12 kg moveable instrument with minimal space requirements

BioDETECT Instrument family

MICROCYTE[®] Field
MICROCYTE[®] Aqua
YEASTCYTE[®]

Easy to use instruments for accurate, rapid and cost effective bio-analysis for the pharmaceutical, biotech, food/beverage industry, military and universities.



MICROCYTE[®] Field &
MICROCYTE[®] Aqua

The number of yeast cells in pure cultures may be counted directly on the MICROCYTE[®] without any pretreatment (dilution may be necessary). In beer samples, containing other particles than yeast cells, the cells may be stained with fluorescent nucleic acid stains to distinguish them from the background. To determine total cell counts, a dye taken up by both live and dead cells, SYTO-62[™], is used. The number of fluorescent particles in the appropriate size range is the total number of yeast cells per ml. To test for viability in a sample, a "dye-exclusion test" is performed. Cells are stained with a fluorescent dye, TOPRO-3[™], that enters cells with leaky cell membranes only (i.e. dead cells). The sample is analysed on the MICROCYTE[®] and the result is given as number of dead yeast cells per ml and the percentage of dead cells.

Procedure

1. Sample preparation

- Withdraw an aliquot from the yeast culture or a fermentation broth and dilute in staining buffer. Analyse directly on the MICROCYTE[®] if no staining with fluorescent dye is required.

2. Staining

- For total cell counts, add one drop of SYTO-62[™] to 1 ml of diluted yeast cells.
- For dead cell counts, add one drop of TOPRO-3[™] to 1 ml of diluted yeast cells.
- Incubate at room temperature for 1-5 minutes.

3. Counting

- Vortex and count on the MICROCYTE[®].

For a more detailed application note, please do not hesitate to contact us.

* SYTO-62[™] and TOPRO-3[™] were obtained from Molecular Probes, Inc.

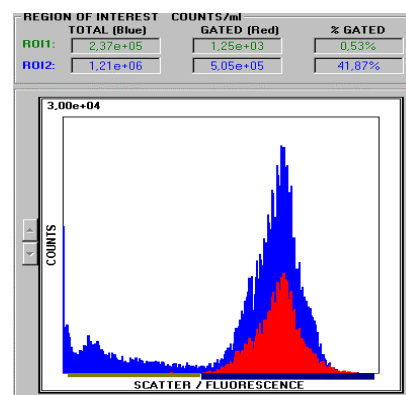


Figure 1: Yeast stained with TOPRO-3[™]

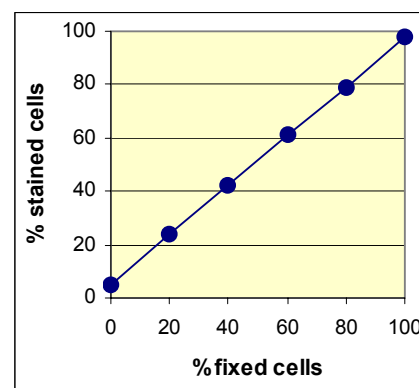
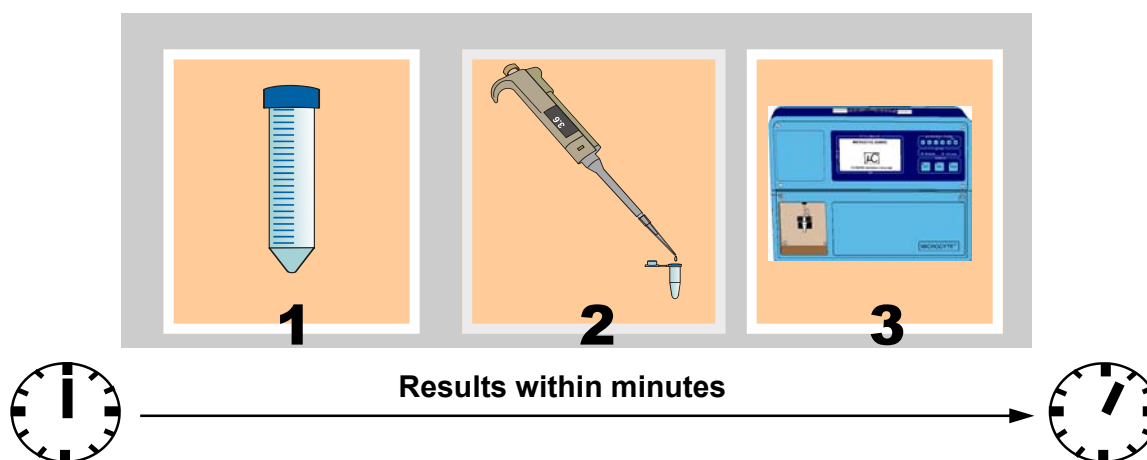


Figure 2: Fresh yeast cells were mixed with fixed yeast cells at defined ratios and stained with TOPRO-3[™]



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BioDETECT develops, manufactures and markets instruments and kits targeted at the pharmaceutical, beverage, water, military/civil defense and OEM markets. The products aim at offering robust, rapid and accurate enumeration and analysis of microorganisms from a liquid, air or powder sample.