Aseptic Technique in the Brewery

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Beer is Safer than Water

- Alcohol
- Hop Bittering Compounds
- Low pH
- Lack of Oxygen/ Carbonation
- Nutrient Deficient

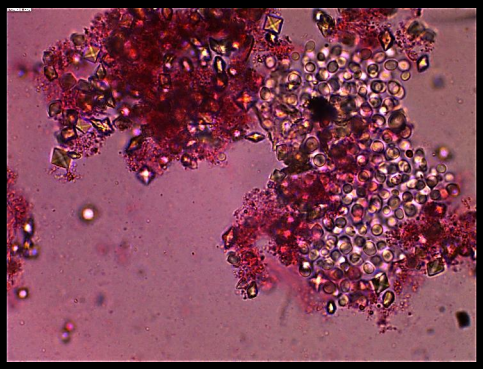
Consequences of Contamination

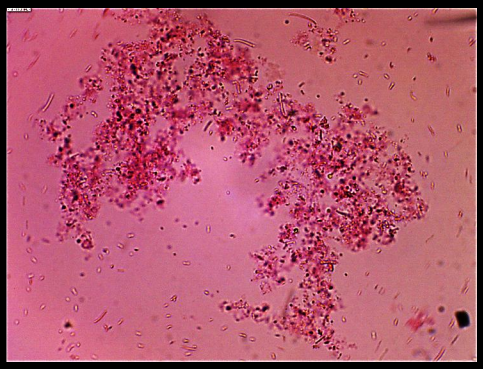
- Off Flavor Production
  - Diacetyl, Phenolics, Acids, Sulfur compounds, etc.
- Continued Fermentation
  - Flavor imbalance
  - Over-carbonation
- Visual Defects
  - Hazes, Sediments, Reduced Foam Stability

Assessing Stability

- Microscopy
  - Staining
- Classic Microbiology
  - Enrichment & Plating
  - Filtration
- ATP Test
- DNA Sequencing
  - PCR & Real Time PCR

Microscopy





Cell shape, arrangement, budding/cell division, & staining

Classic Microbiology

- Use of solid media & liquid broth for the enrichment and isolation of microscopic organisms
- Broth
  - Swab samples & Finished/in-process product
  - Enrichment, no isolation
- Media
  - Swab Samples & Finished/in-process product
  - Isolation & visualization of colonies

Media Considerations

- Selective
  - Encourages growth of organisms of interest while suppressing others
  - Ex- MRS
- Differential
  - Allows for visualization of biochemical differences through use of dyes and nutrients
  - Ex- NBB

Available Media for Breweries

- NBB
- MRS
- WLD
- WLN
- LCSM
- LWYM
- SDA
- LMDA
- CV
- UBA
- WA
- MAC
- HLP
- Raka-Ray
- VLB S-7
- OFS

What should you choose?

- Lactic Acid Bacteria
  - NBB, MRS
- Yeast
  - Wild Saccharomyces cerevisiae
    - LWYM, CV, WLD
  - Non- Saccharomyces species
    - LCSM, LA, WLD
  - Know your house yeast!

Plating Demonstration