Food Technology practical

Lab7

BaKer's Yeast Production

It is one of the largest profits grossing industry. Since demand is directly associated with bread demand and there is an ever increasing demand for bread.

- Marketed in the form of cake, powder or cream.
- By-product is not required so…. Directed towards max. Biomass production.

- ***Saccharomyces cerevisiae*** is the most commonly used organism, unicellular, rich in protein and vit. B., Budding and has enzymes:- **Maltase:** converts maltose to glucose. **Invertase:** converts sucrose→ glucose+fructose and **Zymase complex:** converts sugars to Co2 & ethanol.

Yeast production:

- Pure Culture: S. cerevisiae
- Media: sugars (Molasses)
  Nitrogen (Urea, NH3 salts or NH3)
  phosphorus (phosphoric acid)
  Trace elements (Magnesium, iron, calcinm, Zinc)

S. cerevisiae

⬇️

Media

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Incubated for 2-4 days in flask

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Transferred to a large vessel (16-241) hr.

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Tranferred to intermediate fermenter. (1)

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Yeast separated through centrifugation (2)

1) Duration of final trade fermentation is about 19- 22 hrs., the yeast cells increase in number 5-18 fold., PH 4.5-5.5 and nutrient, and airflow must are monitored carefully . Temperature is Kept in 85F.

2) **A-** Yeast is separated and washed with water and re -centrifuged to yield **cream yeast**.
B- Yeast cream is pumped to rotary vacuum filter or plate fram filter and dewatered (Solid contort vacuum 30 - 32%. After this **2 types of Baker's yeast** is obtained.

Types of Baker's yeast

1) Cream Yeast: is characterized by :
   - Suspension of yeast cells.
   - Cream yeast in not termed as baker's yeast but is a marketable product.
   - Solid contents about 18 – 20.

2) Compressed yeast :
   Most of the moisture is removed and dried by passing through fluid - bed drier.
   - Emulsifiers and oils are added to texturize and aid in cutting process.
   - Solid contents range between 27-33%.
   - Shelf life of compressed yeast is about 1–2 years.
   - compressed yeast can be A form or B as follows:

A) Granular Yeast:
- Small granules.
- High age of live cells.
- Can be added to driest doughs.
- Small amount of ascorbic acid added as preservative.

B) Cake Yeast:
- Also known as active dry yeast.
- Long shelf life.

- Cells encapsulated in a thick jacket of dead cells.
- More sensitive.

Yeast Testing:

- Strain purity and trueness to type is tested.
- Strict adherence to **GMP** rules is required.
- Complete microbiological testing.
- Tested for gassing activity
- pH (4.5-5.5).
- Gm/ltr of yeast.

Application:

- Production of Co2 (cause expansion of Dough).
- Dough maturation (Result in light dry "leavening agent "physical structure).
- Development of flavor (characteristic flavor bread).

Yeast production stages

Vial 0.00001 (Pounds of yeast at 3% solids)

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Flask 0.1

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Pure culture 2.000

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Seed 20. 000

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Semi-solid 80. 000

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Production 50.000