

Microorganisms in sugary foods & pickles

1. sugary foods :

- Only Osmophilic M.Os can tolerate & grow in high sugar foods such as: Honey , Debbis, Jams , chocolate & cake.

***Honey:**

M.Os that are responsible for honey spoilage are:

- Osmophilic yeasts: *Saccharomyces cerevisiae*, *Saccharomyces rouxii*.
- Osmophilic Molds: *Aspergillus*, *penicillium* & *mucor*.
- bacterial spores.
- Most microbes cannot spoil the sugary foods because they contain a high percentage of sugar (70-80)%.

***Debbis:**

Produced from dates , the sugar concentration reaches to 90%.

Example of M.O. that spoils the debbis is *Saccharomyces rouxii* → forming gases , alcohols & acids that change the taste.

***Jams:**

More susceptible to contamination in sugary foods because made from different kinds of fruits that may be spoiled.

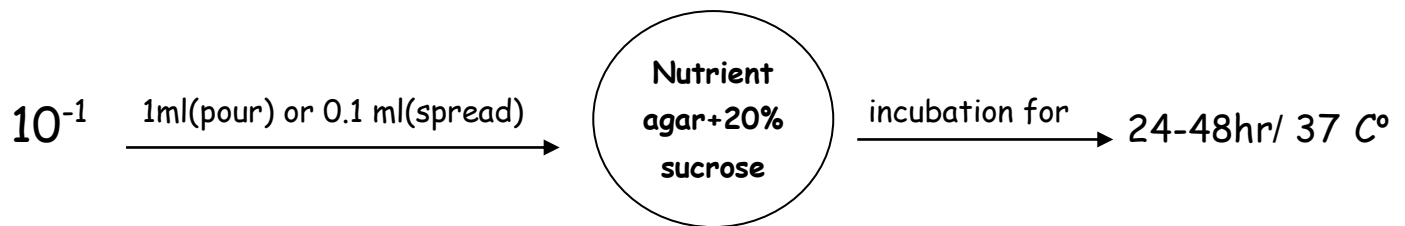
***Cake & chocolate:**

Contaminated with spores of bacteria & fungal toxins from milk or nuts.

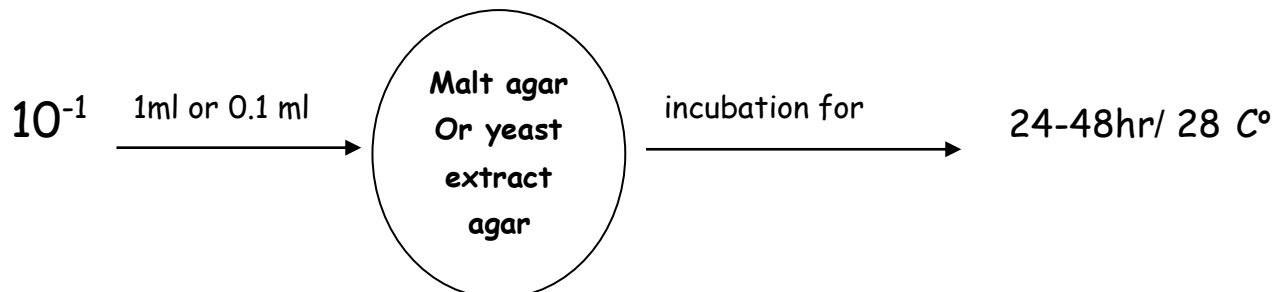
LABWORK

- To isolate osmophilic M.Os → Nutrient agar +20% sucrose.
- For sugary food used the diluents solution containing 15-20% sugar .

1- To isolate general M.Os use:



2- To isolate mold or yeast use:



2- Pickles :

- Pickles are made by lactic acid bacteria through fermentation process.
- Vegetable chopped into small pieces with 5-15% of NaCl.
- *Lactobacillus* sp. (the selective media MRS agar or broth) → Responsible for all stages of fermentation.

Pickles spoilage:

Spoil by different M.Os included:

1. Yeasts

such as *Candida* → cause oxidize the lactic acid to CO₂ & H₂O.

or *Torulopsis* → cause large amounts of gases.

2. Bacteria

Such as: *Leuconostoc* is a genus of Gram-positive bacteria. They are generally ovoid cocci. Cause slimy pickles.

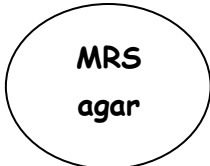
Or *Bacillus* spp. → Cause black pickle by H₂S production.

3. molds

Such as: *Penicillium* & *Cladosporium* → soft pickles.

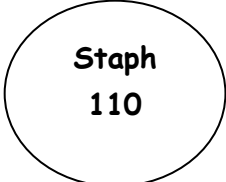
LABWORK

- To isolate Halophilic M.Os → nutrient agar +20%NaCl.
- For salted food used the diluents solution containing 15-20% NaCl.


1-To isolate LAB (lactic acid bacteria) → 

*MRS Agar= de Man Rogosa Sharpe agar.

2- To isolate Halophilic bacteria:

10^{-1} →  → incubated for $37\text{ c}^{\circ} / 24-48\text{hrs}$

3-To isolate molds:

10^{-1} →  → incubated for $28\text{ c}^{\circ} / 24-48\text{hrs}$