

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.

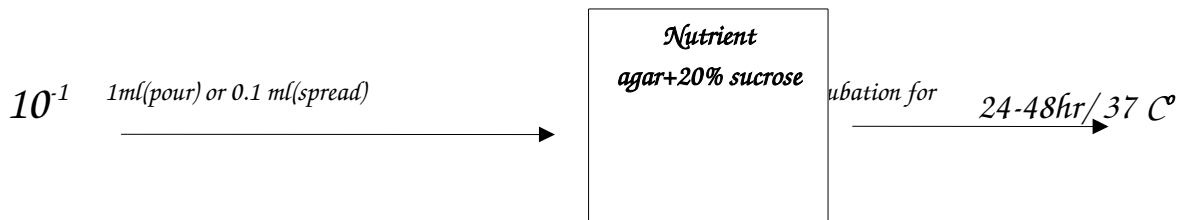
***Cake & chocolate:**

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

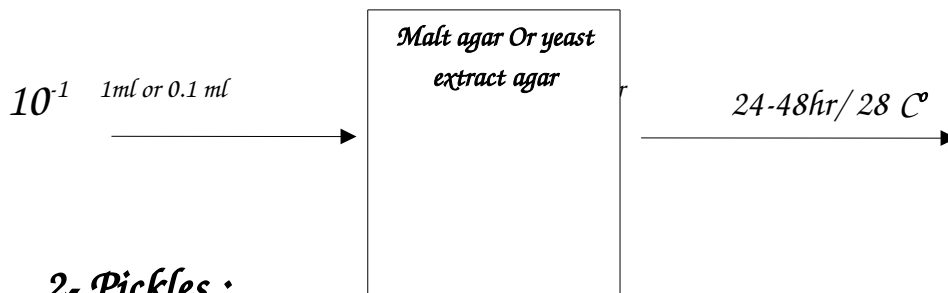
LABWORK

- 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.

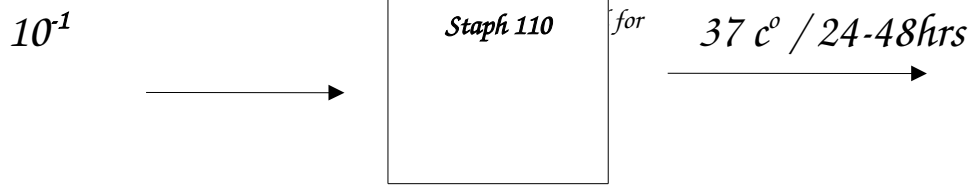
1- To isolate LAB (lactic acid bacteria)



MRS agar

*MRS Agar = de Man Rogosa Sharpe agar.

2- To isolate Halophilic bacteria:



3-To isolate molds:

