

## Microorganisms: Friend and Foe

### Method of Food Preservation

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What do you do with left-over food after dinner? It is kept in the fridge. If left outside, the food can get spoiled, and can cause food poisoning if eaten. We have seen how dangerous microorganisms can be. That is why it is very important for us to be careful about food quality and preservation. Different methods used to prevent spoilage of food, by limiting the growth of microbes are :

**Refrigeration :** Food is kept at low temperature to reduce the rate of reproduction of the microorganisms and prevent food spoilage.

**Dehydration or drying :** Food items are dried in the sun or by spraying or freezing. This process is commonly used for preserving fruits, although some nutrients are lost by drying.

**Addition of salt or sugar :** Microbes need water for growth. By adding salt or sugar, water is made unavailable, thereby controlling microbial growth. Pickles and jams are preserved food items (fruits and vegetables) and can be kept for many months.

**Freezing :** Frozen food is very popular nowadays as it has greater shelf life, without much loss of nutrients. Reduction in temperature and unavailability of water help to limit microbes.

**Smoking :** Meat products are preserved by the process of smoking which uses drying technique as well as some substances from smoke.

**Pasteurization and Homogenization :** Pasteurization is a process by which microorganisms are destroyed by high temperature and sudden cooling. Milk is heated to around 70°C and then suddenly cooled. It is commonly used for milk, since other food items can lose heat-sensitive nutrients. Homogenization is the process of passing a substance (usually milk) under high pressure through thin tubes, which reduces the tendency of creaming of fat.

**Canning :** Canned products are first subjected to high heat processing, then sealed in cans.

While canning increases shelf life, care must be taken to ensure that the cans are not damaged or bulging, which would indicate spoilage.

**Sterilization** : Ionizing radiations are used to destroy microorganisms without affecting heat-sensitive nutrients. This process is commonly used for preservation of mushrooms, strawberries, potatoes, etc.

The microbial world is fascinatingly vast, with different species and types of organisms, ranging from the helpful intestinal bacteria to the deadly viruses. The presence of microorganisms in food must be examined and care must be taken to ensure proper cooking and preservation of food.