



# **SNS COLLEGE OF TECHNOLOGY**

**An Autonomous Institution  
Coimbatore - 35**

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## **DEPARTMENT OF FOOD TECHNOLOGY**

**19FTT304 BAKING AND CONFECTIONERY TECHNOLOGY**

**III – YEAR VI SEMESTER**

**UNIT 1-INTRODUCTION TO BAKING AND CONFECTIONERY**

**TOPIC 2- Essential and optional**



# INTRODUCTION

## 1. Activity

List the ingredients used in Baking and Confectionery





# INTRODUCTION



## FLOUR:

Also called as refined flour, white flour or *maida* is obtained from wheat. It is the basic structural component of most bakery products. Wheat flour contains two proteins- gliadin and glutenin which form gluten by addition of water. No other cereal flours form gluten.

- Hard wheat flour has high protein content and forms a strong gluten framework when mixed with water. This strong gluten framework provides the structure needed for bread.
- Soft wheat flour contains less protein and cannot form strong gluten but is suitable for cakes, quick breads and pastries, where a tender product is desirable.
- All purpose flour is obtained by blending different types of wheats during milling to achieve medium protein content. This flour may be used for all baking purposes.
- Whole wheat flour contains the nutritious wheat germ, bran and the starchy endosperm which make smaller, heavier but nutritious baked products.







## EGG:

Perform many vital functions in baking. Egg protein can be readily whipped into foam that gives volume to cake-batters. On heating, the egg protein network coagulates and contributes rigidity thereby holding the structure. Egg-yolk exerts a tenderizing function and accounts for the softness in the cake.

- contribute to the structure of the baked product
- incorporate air when beaten
- add colour and flavour
- provide protein, fat and liquid
- emulsify fats to achieve characteristic texture, mouth feel and taste to the product.





# FATS:



Fats are used in bakery for the following reasons:

- Make the dough more pliable
- Prevent stickiness and reduce the amount of dusting flour required or the make-up process
- Prevent formation or toughness of gluten according to the method and the amount used
- Add to the food value as enriching agents adding to calories.
- Contribute and enhance flavour, moistness, mouth feel to baked products
- Make the crust more tender
- Improve keeping quality and produce a crumb that is soft and chewy.







# SUGAR

Sugar is another common ingredient used in bakery foods. Sugar, table sugar, cane sugar or beet sugars are principally same with sucrose being the component disaccharide. Sugar is used in a variety of products and in many ways in cakes, buns, biscuits, meringues, macaroons and for icing.

- Provides necessary sweetness
- Imparts golden brown color to the crust
- Improves the texture of the crumb
- Helps to retain moisture in the crumb and
- Adds to the nutritional value of the products

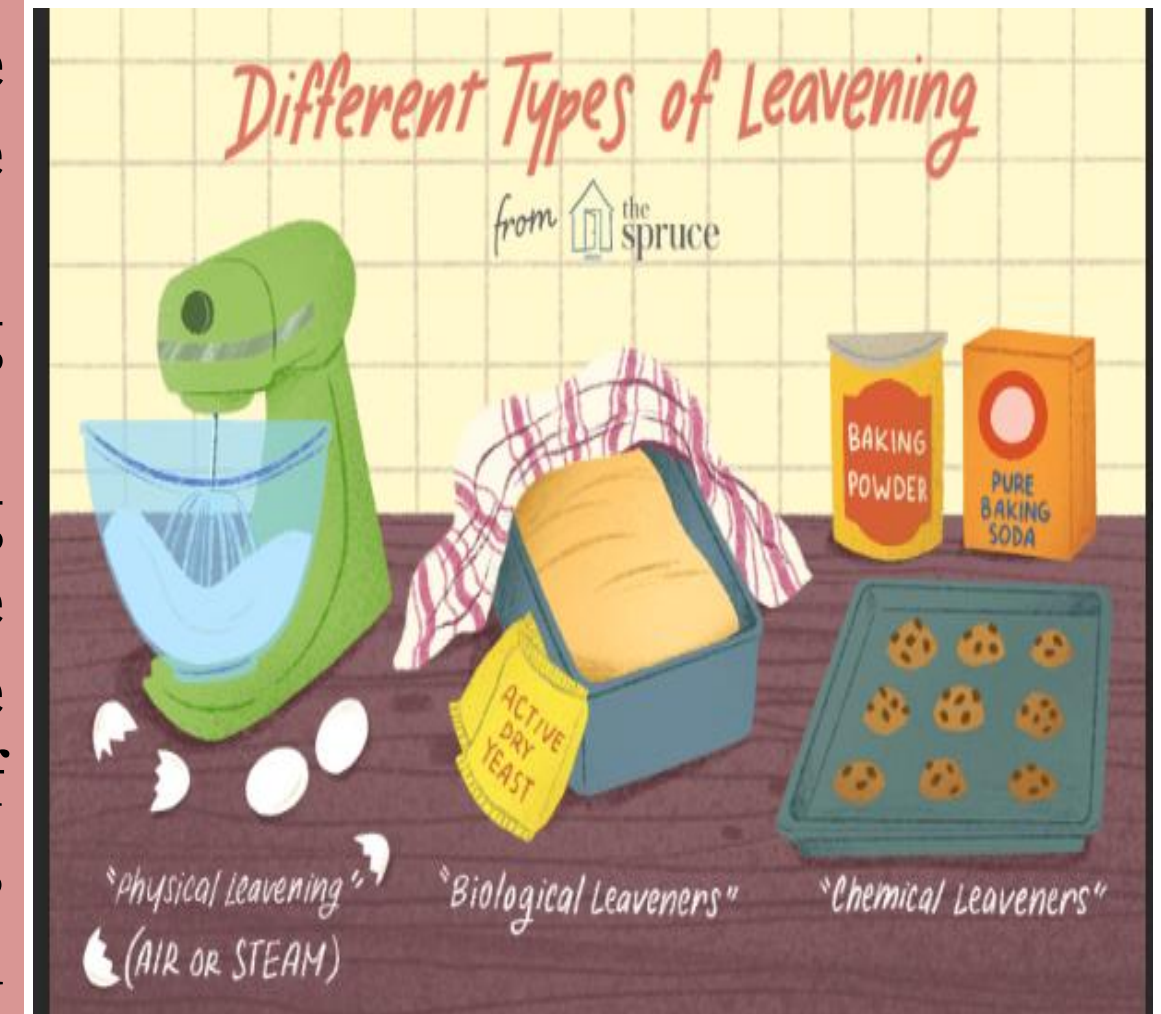




# LEAVENING AGENT:



**Levain** is a French word that refers to a substance that causes the volume of dough or batter to rise through incorporation of air. The function of leavening agents is to aerate the dough or batter to make it light and porous. The porosity of batter results in good volume, tender crumb, uniform cell and good aesthetic qualities. Leavening can be done biologically using yeast, mechanically by mixing, whipping or beating and chemically using baking powder and baking soda. Combining different leavening methods impart an adverse effect, as it may either lead to incorporation of excess air or kill the effect of one agent over the other. **Leavening** is a process of bringing expansion of volume in baked products. Leavening effect is brought by combinations of air, steam or carbon dioxide produced by yeasts or chemical substances.





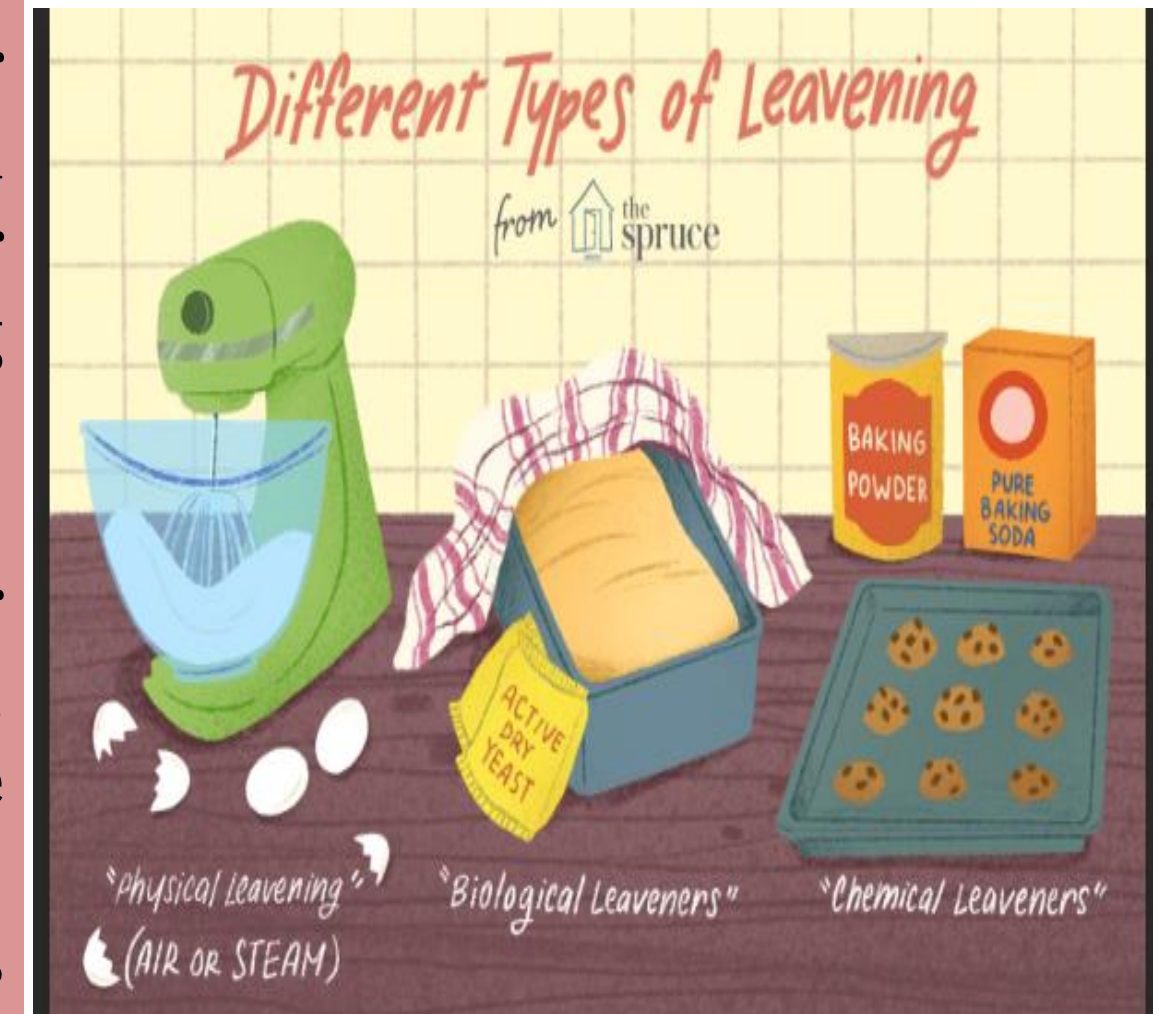


# LEAVENING AGENT:



**Air** incorporated during mixing begins to expand when heated during baking. Whipped egg (air incorporated) when added to batter with minimum manipulation brings this effect. Steam causes an appreciable leavening action because a volume of water in a batter or dough expands 1800 times when it is converted to steam during baking.

**Yeast** such as *Saccharomyces cerevisiae* grow and multiply under controlled conditions depending upon available nutrients, temperature, relative humidity, available water and pH and release gases. Yeast is used to leaven or raise the dough for bread and rolls. It gives a distinctive aroma and flavor to the product. This brings about textural changes in the products as in case of breads. Yeast is available in fresh, compressed form (which needs to be stored under refrigerated conditions) and also as active dry yeast.



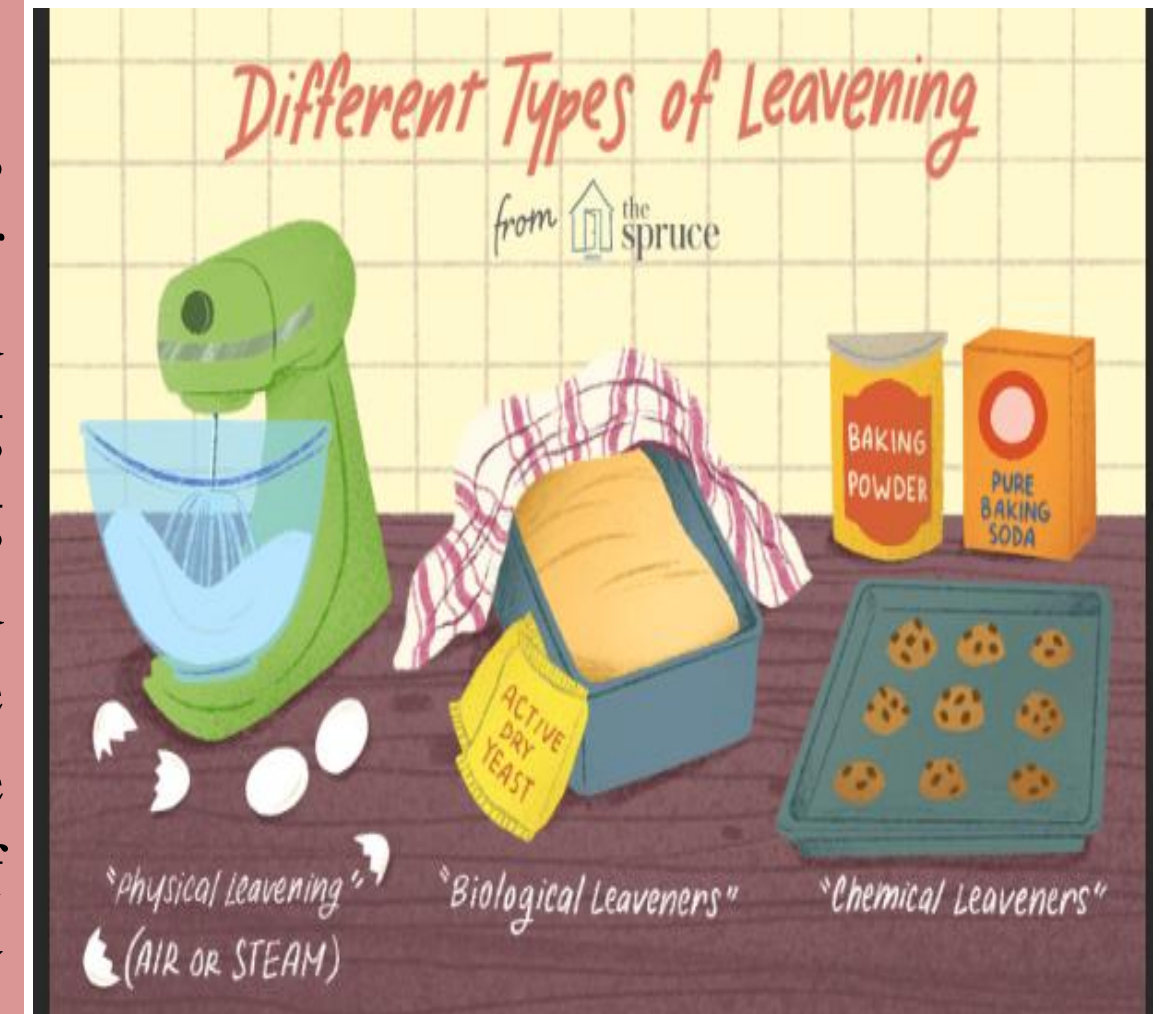




# LEAVENING AGENT:



Chemical leavening agents that produce gases during baking are mixtures of acid and alkalis that effect release of carbon dioxide during baking. Baking Soda (Sodium bicarbonate) is the common alkali in baking powders along with the acid ingredient such as sodium acid pyrophosphate or monocalcium phosphate, sodium aluminum phosphate, tartarate and sulphate phosphates. Baking soda releases carbon dioxide on being exposed to moisture and acid. In baking, it is used for leavening or giving volume to quick breads, cookies and cakes. Hence soda and acid are termed active ingredients in baking powder. These two active substances are suspended in starch which keeps them separated and keep reaction of the acid and soda to a minimum in the package. Starch also adds to the body of the baking powder. The volume and texture of the product depend largely on the amount added to the batter or dough. Besides damaging the volume and texture, excess use of baking soda leaves an after- taste and gives a light color to the finished product.

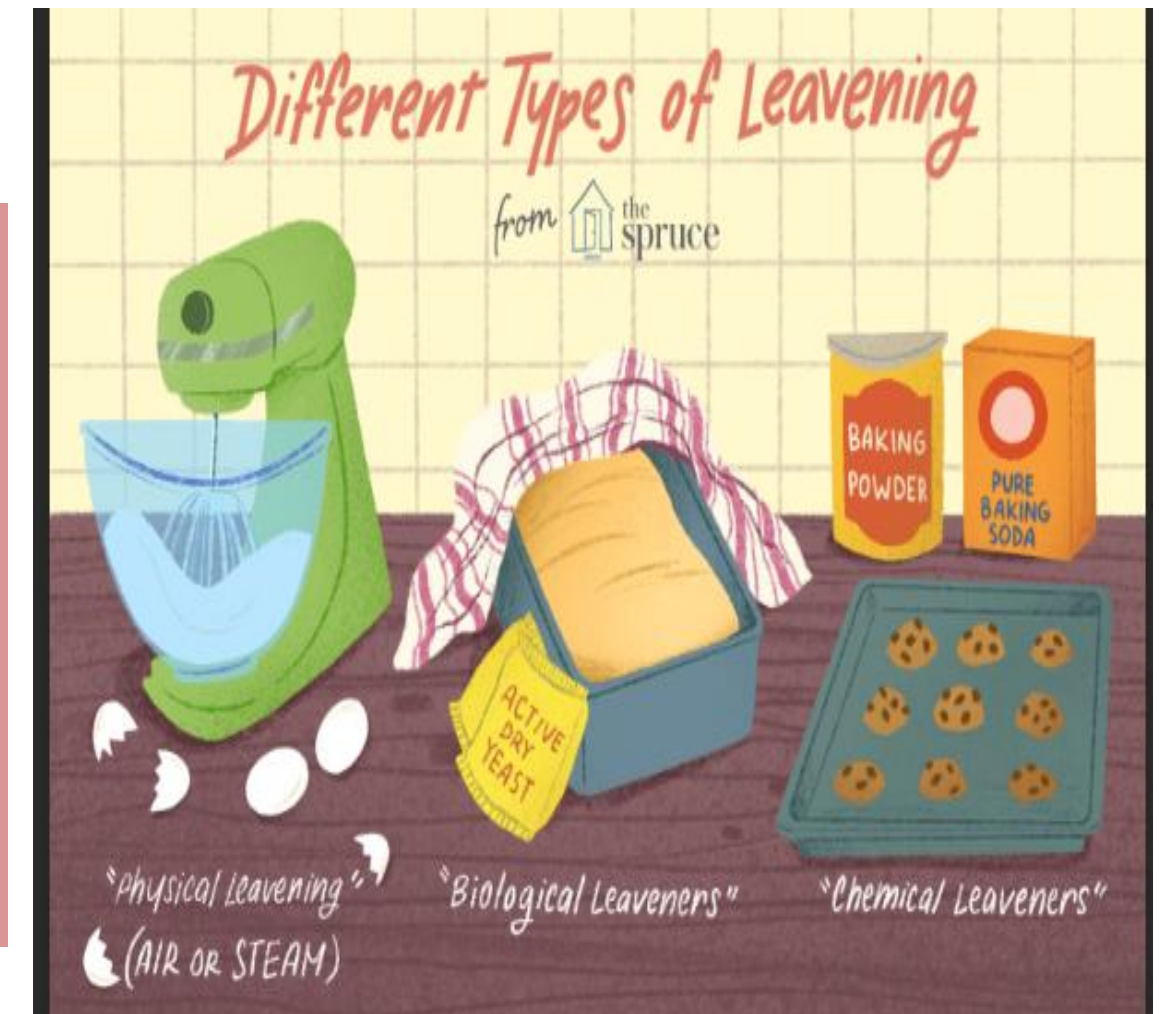




# LEAVENING AGENT:



**Salt:** Primarily used for flavor in baked products. It forms a taste contrast in the background, which enhances the sweetness from the sugars present in the dough or batter. It has a water binding or hygroscopic capability enabling it to regulate fermentation. Too little salt causes the dough to ferment too fast and wild, while too much salt slows down the fermentation process. Salt is also a toughening agent because it strengthens the gluten (protein). In proper amounts, salt produces good grain and texture







# SALT:

Salt is an essential ingredient almost used in all bakery products to enhance the sweetness of the product and also to retard the fermentation process. The salt is composed of 40% Sodium and 60% Chlorine.

## Types of Salt:

- Kosher Salt
- Table Salt
- Black Salt





# YEAST:

Yeast is a single-celled living organism widely used in baking, brewing, winemaking and other industries. *Saccharomyces cerevisiae* can ferment and metabolize a variety of sugars under anaerobic conditions with preference for glucose, fructose and maltose. As a result, it produces carbon dioxide, ethanol and other organic compounds.<sup>1,2</sup> In baking, the most common forms used are:

- Compressed
- Cream
- Active or Inactive Dry







# MILK:



Milk is a nutrient-rich white fluid secreted from the mammary glands of female mammals. In baking, it moistens batter or dough, and adds protein, color and flavor to baked goods. The Maillard reaction can be produced from the combination of proteins and lactose (fast-browning milk sugar) in milk at high temperature. Milk also reacts with flour in strengthening gluten formation. So, it is considered a dough strengthener.

- Liquid milk
- Non fat Dairy milk
- Evaporated Milk
- Condensed Milk





# Optional Ingredients:



Mold Inhibitors  
Mineral Yeast Food  
Mineral Salt  
Malt Products  
Dough Improvers







## Optional Ingredients:

**Mold inhibitors** prevent bread from becoming molded.

**Mineral yeast food** helps to stabilize water by adding mineral salts, which are essential in dough fermentation and conditioning.

**Mineral salts** when added to water condition the soft water; antacid salts neutralize alkaline water which is harmful to yeast and gluten. Doughs made with mineral yeast foods are soft but not sticky and thus enable proper molding in machines free of air pockets.

### **Malt Products :**

These are obtained from cereal grains usually barley. It is classified as malt flour, malt syrups and dried malt syrup. Each of, which is further, classified as non-diastatic and diastatic malt. They provide nutrients to yeasts. Malt syrups are concentrated products made by evaporating the water extract of malted barley and other cereal grains. They contain diastases and proteases that convert starch to dextrins and maltose sugar while protease enzymes condition the gluten in dough.



## Optional Ingredients:

**Non-diastatic malt** is used principally to impart flavour and colour to baked products. They also have some effects on texture and supply fermentable carbohydrates and other nutrients to yeast. These are high in sugars.

**Diastatic malts** have considerable enzyme activity. Malted grain from which these products are derived, is a source of enzymes which convert starch to reducing substances.

### Dough Improvers

It is usually mixture of several inorganic salts together with starch or flour as an extender. Gluten oxidizing agents such as potassium bromate, potassium iodate or calcium peroxide. Calcium salts usually as phosphate or sulphate which corrects any lack of hardness in dough water and provide buffering action to partially offset alkaline condition of water. Ammonium salts supply nitrogen which can be used by yeast for protein building.





## Optional Ingredients:

### **Dough Strengthening**

Enzymes strengthen doughs by breaking down the pentosans present in flour and improve the baked product

### **Oxidizing Agents**

Proper use of oxidizing agents results in larger volume, brighter crumb, better texture and improved appearance of finished loaf, e.g. potassium bromate, calcium oxide and potassium iodate.

### **Yeast Foods**

Use of ammonium salts, phosphates and sulphate in dough improvers and yeast foods improves the fermentation capacity of yeast in dough.