



# **SNS COLLEGE OF TECHNOLOGY**

**An Autonomous Institution Coimbatore – 35**

Accredited by NBA – AICTE and Accredited by NACC – UGC with 'A++ Grade  
Approved by AICTE , New Delhi and Affiliated to Anna University , Chennai.

**DEPARTMENT OF FOOD TECHNOLOGY**

**FOOD GROUPS AND ITS FUNCTIONS**





# INTRODUCTION



- Food is one of the basic necessities of life.
- Food contains nutrients—substances essential for the growth, repair, and maintenance of body tissues and for the regulation of vital processes.
- Nutrients provide the energy our bodies need to function.
- The energy in food is measured in units called calories



# FUNCTIONS OF FOOD

- It is something that people or animals eat to get energy
- It provides energy to do work
- It helps in maintaining the temperature of the body
- It helps in repairing damaged cells and tissues.
- It maintains a water balance in the body.



# PHYSIOCHEMICAL PROPERTIES OF FOOD

- The physiochemical properties of food refer to characteristics such as pH, water activity, viscosity, density, texture, color, and aroma, which influence its behavior during processing, storage, and consumption.
- These properties play a crucial role in determining the quality, safety, and shelf life of food products.



## pH

- pH is a measure of the acidity or alkalinity of a solution, ranging from 0 to 14.
- In food, pH influences various chemical reactions, microbial growth, texture, and flavor.
- For example, pH affects the stability of proteins, enzymatic activity, and the Maillard reaction (browning) during cooking.
- Different foods have different pH levels; for instance, acidic foods like citrus fruits have low pH values, while alkaline foods like baking soda have high pH values.



## Water Activity ( $a_w$ )

- Water activity is a measure of the amount of water available for microbial growth and chemical reactions in a food product.
- It ranges from 0 to 1, with pure water having an  $a_w$  of 1. Foods with high water activity levels are more prone to microbial spoilage and enzymatic reactions, leading to reduced shelf life.
- Controlling water activity is crucial in food preservation techniques like drying, salting, and sugar addition, which help inhibit microbial growth and prolong shelf life.



## Viscosity

- Viscosity refers to the resistance of a fluid to flow.
- In food, viscosity influences sensory attributes like texture, mouthfeel, and perceived quality.
- Foods with higher viscosity are thicker and more resistant to flow, while those with lower viscosity are more fluid.
- The viscosity of food products can be affected by factors such as temperature, composition, processing methods, and the presence of additives like thickeners or stabilizers.
- Examples of viscous foods include sauces, soups, and syrups. Control of viscosity is important in achieving desired product consistency and stability.



## Food Group Classification

Grains: Includes foods like bread, rice, pasta, and cereal.

Vegetables: Includes various types of vegetables such as leafy greens, root vegetables, and cruciferous vegetables.

Fruits: Includes fruits of all kinds, such as apples, oranges, bananas, and berries.

Dairy: Includes milk, cheese, yogurt, and other dairy products

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Protein: Includes meat, poultry, fish, eggs, beans, nuts, and seeds.





## Oil and Fat

- This category includes oils derived from plants (such as olive oil, coconut oil, and sunflower oil) as well as fats obtained from animal sources (such as butter, lard, and tallow).
- Oils and fats are primarily composed of triglycerides, which are molecules consisting of glycerol and three fatty acid chains.
- They are a concentrated source of energy, providing more than twice the calories per gram compared to carbohydrates or proteins.
- Oils and fats play essential roles in cooking, flavor enhancement, texture improvement, and nutrient absorption.



## **Milk**

Milk is a nutrient-rich fluid produced by female mammals, typically from cows, goats, and sheep, consumed by humans.

It contains a variety of essential nutrients such as protein, calcium, phosphorus, vitamin D, and vitamin B12.

Milk can be consumed fresh or processed into various dairy products such as cheese, yogurt, butter, and cream.

Different types of milk are available, including whole milk (full-fat), low-fat milk, and skim milk, with variations in fat content.



**THANK YOU**

