

1 **Food Deficiency**

"Nutritional inadequacy" involves an intake of nutrients that is lower than the estimated average requirement, whereas "nutritional deficiency" consists of severely reduced levels of one or more nutrients, making the body unable to normally perform its functions and thus leading to an increased risk of several diseases like cancer, diabetes, and heart disease.

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4 **What are Enzymes**

- Enzymes are highly specific for a particular substrate
- Enzymes help speed up chemical reactions in the human body.
- Enzymes are built of proteins folded into complicated shapes; they are present throughout the body.
- The chemical reactions that keep us alive – our metabolism – rely on the work that enzymes carry out.
- Enzymes digest food, heal wounds, grow hair, maintain the thought process, etc.

5 **Characteristics of an Enzymes**

- Speed up chemical reactions.
- They are required in minute amounts.
- They are highly specific in their action.
- They are affected by temperature.
- They are affected by pH.
- Some catalyze reversible reactions.
- Some require coenzymes.
- They are inhibited by inhibitors.

6 **What are the Classes of Enzyme**

- Hydrolases Break down –water – fire relationship of digestion
- Protease peptide - proteins
- Amylase carbohydrate – sugar
- Maltase maltose – simple sugar
- Lipase fats (lipids)
- Isomerase groups with the within the same molecule
- Ligases bonds between two substrate molecules through energy.
- Lyases splits double bonds in chemical groups.
- Oxidoreductases oxidation and reduction possible
- Transferases transfers chemical groups from one molecule to another.
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7 **Digestive Enzymes - Probiotics**

Though they both aid the digestive process, probiotics and digestive enzymes are not the same. Digestive enzymes are molecules which assist in the breakdown of the foods we eat, whereas probiotics are living micro-organisms which live in our gut and positively affect our body/physiological processes.

8 **Amylases**

- Amylase is a digestive enzyme predominantly secreted by the pancreas and salivary glands and is present in other tissues at minimal levels.
- The primary role of amylases is to break down the glycosidic bonds within starch molecules, transforming complex carbohydrates into simpler sugars.
- Amylase enzymes are categorized into 3 main classes—alpha-, beta-, and gamma amylases—each targeting distinct segments of the carbohydrate molecule.

9 **Proteolytic Enzymes**

- Proteolytic enzymes (proteases) are enzymes that break down protein. These enzymes are made by animals, plants, fungi, and bacteria.
- Proteolytic enzymes break down proteins in the body or on the [skin](#). This might help with digestion or with the breakdown of proteins involved in swelling and pain.

10 **Amino Acids**

Non-Essential

- Alanine
- Arginine
- Asparagine
- Aspartic Acid
- Cysteine
- Glutamic acid
- Glutamic
- Proline
- Serine
- Valine
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11 **Lipase**

- Lipases are a family of enzymes that break down triglycerides into free fatty acids and glycerol.
- There are expressed and active in multiple tissues.
- Lipases in pancreatic secretions are responsible for digestion and hydrolysis of fat and absorption of fat-soluble vitamins.

12 **Sucrase**

Sucrose is hydrolyzed by the enzyme sucrase an α -glucosidase in the human small intestine, to its component monosaccharides fructose and glucose. About 10–25% of the fructose is converted to glucose in the brush border of the upper gastrointestinal tract.

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