



FREQUENTLY ASKED QUESTIONS

Q.1 Define Putrefaction?

Answer. Putrefaction is protein degradation, where decomposition of animal proteins is carried out especially by anaerobic microorganisms described as putrefying bacteria.

Q.2 What is food poisoning?

Answer. Food poisoning is illness caused by any harmful amount of a natural or contaminating substance in a food, but especially illness caused by some highly infective kinds of bacteria. If not prevented as it can be by care and good hygiene -- some kinds of bacteria can grow to large numbers in food and produce toxins (poisons) some of which are difficult to destroy by cooking. Other kinds can cause illness by growing to large numbers in the digestive system. Symptoms include abdominal pain, diarrhoea and vomiting, and may last from a few hours to a few days. In extreme cases food poisoning can prove fatal, especially to babies, the elderly and others with weakened immune systems.

Q.3 What are spoilage bacteria?

Answer. Spoilage bacteria are microorganisms too small to be seen without a microscope that cause food to deteriorate and develop unpleasant odors, tastes, and textures. These one-celled microorganisms can cause fruits and vegetables to get mushy or slimy, or meat to develop a bad odor.

Q.4 Do spoilage bacteria make people sick?

Answer. Most people would not choose to eat spoiled food. However, if they did, they probably would not get sick. Pathogenic bacteria cause illness. They grow rapidly in the “Danger Zone” – the temperatures between 40 and 140 °F – and do not generally affect the taste, smell, or appearance of food. Food that is left too long at unsafe temperatures could be dangerous to eat, but smell and look just fine. E. coli O157:H7, Campylobacter, and Salmonella are examples of pathogenic bacteria.

Q.5 How do bacteria spoil food?

Answer. There are different spoilage bacteria and each reproduces at specific temperatures. Some can grow at the low temperatures in the refrigerator or freezer. Others grow well at room temperature and in the “Danger Zone.” Bacteria will grow anywhere they have access to



nutrients and water. Under the correct conditions, spoilage bacteria reproduce rapidly and the populations can grow very large. In some cases, they can double their numbers in as little as 30 minutes. The large number of microorganisms and their waste products cause the objectionable changes in odor, taste, and texture.

Q.6 Define Ezymatic Browning?

Answer. Enzymatic browning is a chemical process which occurs in fruits and vegetables by the enzyme polyphenoloxidase, which results in brown pigments. Enzymatic browning can be observed in fruits (apricots, pears, bananas, grapes), vegetables (potatoes, mushrooms, lettuce) and also in seafood (shrimps, spiny lobsters and crabs).

Q.7 What are Polyphenols?

Answer. Polyphenols, also called phenolic compounds, are group of chemical substances present in plants (fruits, vegetables) which play an important role during enzymatic browning, because they are substrates for the browning-enzymes. Phenolic compounds are responsible for the colour of many plants, such as apples, they are part of the taste and flavour of beverages (apple juice, tea), and are important anti-oxidants in plants.

Q.8 How is enzyme browning inhibited?

Answer. PPO-catalyzed browning of fruits and vegetables can be prevented by heat inactivation of the enzyme, exclusion or removal of one or both of the substrates (O_2 and phenols), lowering the pH to 2 or more units below the pH optimum, by reaction inactivation of the enzyme or by adding compounds that inhibit PPO or prevent melanin formation.

Q.9 Define Cell wall?

Answer. A cell wall is a structural layer surrounding some types of cells, situated outside the cell membrane.

Q.10 Write down the composition of cell wall?

Answer. The composition of cell wall varies between species and many depend on cell type and developmental stage. The primary cell wall of plants is composed of the polysaccharides cellulose, hemicelluloses and pectin.



Q.11 Why do plants have cell wall?

Answer. The advantage of having a cell wall is, it is primarily made up of cellulose, a tough substance that provides great protection from external injuries.

Q.12 What are microfibrils?

Answer. Microfibril is a ribbon like flat fibre of 25-30 nm in diameter. Each microfibril consists of three elementary fibrils. Elementary fibrils are made of many cellulose units.

Q.13 What are Hemicelluloses?

Answer. Hemicelluloses are short branched heteropolymers made up of various kinds of monosaccharides like xylose, mannose, glucose etc.

Q.14 Write down the different enzymes of cellulase complex?

Answer. There are three types of enzymes in the cellulase complex:

1. **β -glucosidases or cellobiases.** These enzymes hydrolyse cellobiose and other cellodextrins, also other β -linked glucose dimers and β -glucosides such as p-nitrophenyl- β -glucoside (PNPG) yielding glucose. They do not act on cellulose.
2. **Exo- β -Glucanases.** These enzymes attack cellulose molecules from the non-reducing end. The best known ones are the cellobiohydrolases of *Trichoderma*. Which remove cellobiose units, analogous to β -amylase. Exoenzymes removing glucose, analogous to glucoamylase, are apparently less common. Exo-enzymes barely hydrolyze CMC or other substituted cellulose derivatives because the substituents stop the action.
3. **Endo- β -glucanases.** These enzymes attack the cellulose molecule in a random fashion. These are the CX enzymes of Reese (1956). They are usually measured on CMC by production of reducing groups or reduction in viscosity.

Q.15 What are Xylolytic enzymes?

Answer. Two enzymes are known to be associated with the xylolytic activity of microorganisms, both of which are hydrolases: endo-xylanase, which attacks (1-4)- β -D-Xylan at random, giving rise to xylooligosaccharides, and exo-xylanase or β -xylosidase, cleaving the same substrate from the nonreducing end leading to the production of monosaccharide xylose.