

Introduction to Agri-food products alterations

Distinguish between food infection and/or food poisoning. Knowledge incubation period and minimum infective dose. Identify between direct and indirect contamination

Food poisoning is caused by consuming foods that contain toxins. These toxins can be produced by microorganisms (for example *Staphylococcus aureus* and *Clostridium botulinum*), can occur naturally in the food (for example, in certain mushrooms) or can be a contaminant. Toxins directly affect the biological reactions taking place in the body. At sufficiently high concentrations, the effects are acute and take place a few hours after consumption. Symptoms can include nausea and vomiting. Most of these toxins are resistant to heat, so they are not eliminated by cooking.

A food infection is caused by infectious pathogens (microorganisms that cause infections) in the food. These microorganisms multiply in the intestine. The consequences are stomach ache and diarrhoea within some hours or several days after eating the contaminated food. The bacteria causing most food infections are Salmonella, Campylobacter and *E. coli*. Proper heating of food can prevent food borne infections.

<http://www.food-info.net/uk/qa/qa-saf13.htm>

Infectious dose is the amount of pathogen required to cause an infection in the host.

Incubation period is the time elapsed between exposure to a pathogenic organism and when symptoms first appear.

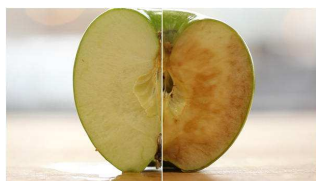
Direct contamination – occurs when there is physical contact between an infected person and a susceptible person (for example touching).

Indirect contamination – occurs when there is no direct human-to-human contact. For example when an infected person sneezes, sending infectious droplets into the air and healthy person inhales the infectious droplets.

Knowledge of enzymatic and non-enzymatic oxidation, deepening the resulting food modification

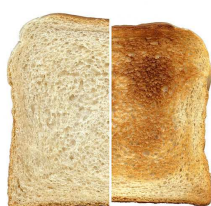
Fruits like apples, bananas and avocado contain polyphenols – a group of chemical substances that act as antioxidants and play an important role during enzymatic browning.

Enzymatic browning is a chemical process which occurs in fruits and vegetables after they



are cut or bruised. The enzyme polyphenoloxidase, in the presence of air, initiates oxidation of phenols and production of brown pigments (melanines). Enzymatic browning is detrimental to food quality. (<http://www.entwellbeing.com.au/food-science-fruit-facts/>)

Non-enzymatic browning (Maillard reaction) is a process where brown compounds pigments are produced when amino acids and sugars react over heat (100 – 166 °C). The browning



reactions produce changes in food colour, taste and smell which are often desirable.

(<https://upload.wikimedia.org/wikipedia/commons/thumb/3/35/Toast-3.jpg/655px-Toast-3.jpg>)