

## Food safety, quality and HACCP – Roots and tubers

### Technologies used for rendering food safe

1. Heat treatment – for thousands years this has been the most effective and best method for man to combat undesirable organisms in food. Heat treatment technologies could be classified in two groups:
  - Boiling, cooking, frying, baking and roasting are steps in many food preparation and food manufacturing processes at household and industrial levels;
  - Pasteurization and commercial sterilization are widely applied at industrial level.
2. Freezing
3. Irradiation
4. Disinfecting with chemical agents is one of the most important technologies applied in the public health control of disease, notably in the treatment of water supplies.
5. High pressure technology is now under development and makes use of high pressures to kill microorganisms.

Sometimes food technologies used for decontamination can be very simple. For example, the grating and mincing of cassava tubers during *gari* preparation is crucial for the detoxification of cassava. The disruption of tissues which occurs during this process increases the contact of an endogenous enzyme (linamarase) with the substrate (linamarin) and leads first to the production of cyanohydrins and later on of cyanide, which is subsequently removed from the product during “garification” or roasting in a hot pan.

### Technologies used to control contaminants

1. Cold holding, chilling, hot holding
2. Acidification
3. Fermentation
4. Use of salt or sugar
5. Drying
6. Freezing
7. Use of antimicrobial agents
8. Combined technologies: for example microbial safety of smoked foods is achieved by a combination of heat treatment, drying and sometimes antimicrobial agents which are present in the smoke.

Source: “Food technologies and public health”- WHO/FNU/FOS/95.12 – Food Safety Unit – Division of Food and Nutrition – World Health Organization, 1995.