International Journal of Home Science 2022; 8(2): 01-04

International Journal of Home Science

ISSN: 2395-7476
IJHS 2022; 8(2): 01-04
© 2022 IJHS
www.homesciencejournal.com
Received: 01-03-2022
Accepted: 04-04-2022

Gupta Alka
Assistant Professor, Department of Food Nutrition and Public Health, Sam Higginbottom University of Agricultural, Technology and Sciences, Prayagraj, Uttar Pradesh, India

Mandaloju Pooja
Research Scholar, Department of Food Nutrition and Public Health, Sam Higginbottom University of Agricultural, Technology and Sciences, Prayagraj, Uttar Pradesh, India

Corresponding Author:
Gupta Alka
Assistant professor, Department of Food Nutrition and Public Health, Sam Higginbottom University of Agricultural, Technology and Sciences, Prayagraj, Uttar Pradesh, India

A review paper on processing foods

Gupta Alka and Mandaloju Pooja

Abstract
Food processing is any deliberate change in a food that occurs before it's available for us to eat. It can be as simple as freezing or drying food to preserve nutrients and freshness, or as complex as formulating a frozen meal with the right balance of nutrients and ingredient. Historically, the most important reason to process or prepare foods has been to make them last longer before spoiling. The demand for eggs and poultry meat and milk products has significantly increased in recent years across large part of the world. The chicken meat and egg resource in India is play significant role. The major study of poultry production in India were meat and egg processing materials. Generally, the egg, poultry, meat, milk and milk products processing were; to safe products, processing ways, storage. Therefore, a comprehensive the poultry meat and egg processing, milk products processing, in the country seems to be appealing.

Keywords: Processing, poultry, egg, meat, milk & milk products

Introduction
India has emerged a leading producer of certain food products such as buffalo meat, black tea, milk, and fruit and vegetables. Also, India's food processing sector primarily covers fruit and vegetables; meat and poultry; dairy products, alcoholic beverages, fisheries, plantation, grain processing and other consumer product groups like confectionery, chocolates and cocoa products, Soya-based products, mineral water, high protein foods etc. Food processing began about many years ago when our distant ancestors put flame to food and "discovered" cooking. After that came fermenting, drying, preserving with salt and other primitive forms of food processing, this ultimately led to the modern food processing methods of today, which give us an abundant, safe, convenient, affordable and nutritious food supply Processing foods have, on the one hand, a strong influence on the quality of food, both on the nutritional quality as well as on food safety. On the other hand, one can use different processing methods to improve the quality of food, e.g., fermentation processes. (Senauer B 2019)
Food Processing is the process of transforming food items into a form that can be used. It can cover the processing of raw materials into food via different physical and chemical processes. Various activities covered in this process are mincing, cooking, canning, liquefaction, pickling, macerating and emulsification. It takes clean, harvested crops, or butchered and slaughtered animal products to produce attractive, marketable, and in several cases, life-long food products. However, food processing can also lower the nutritional value of the food and might include additives that might adversely affect health. Chickens and man have coexisted for several millennia. Humans keep chickens primarily as a source of food, consuming both their meat and eggs.
Adaptations to the modern fast-paced lifestyle have led to increased commercialization of processed pre-packaged food products to keep up with people's demand for convenience and variety. Some of the many changes in the way popular foods are produced include greater use of machines to reduce processing times, improve shelf life, and develop superior textural properties, but all of these advancements have also introduced many additional ingredients to the modern industrial recipes for pre-packaged foods. New ingredients or processing aids are used to help in machinability of products at intermediate steps of whereas others improve shelf life. Many new processing methods in these country formulations are known for food processing. (Alexandru Mihai *et al.*, 2018) [3].

Food Processing

Food processing is the transformation of agricultural products into food, or of one form of food into other forms. Food processing includes many forms of processing foods. Primary food processing is necessary to make most foods edible, and secondary food processing turns the ingredients into familiar foods, such as bread. Tertiary food processing has been criticized overnutrition and obesity, containing too much sugar and salt, too little fiber, and otherwise being unhealthful in respect to dietary needs of humans and farm animals.

- Primary food processing such as raw wheat kernels or livestock, into something that can eventually be eaten. Its processes such as drying, threshing, winnowing and milling grain, shelling, butchering animals for meat.
- It also includes deboning and cutting meat, freezing, and smoking meat, extracting and filtering oils, canning food, preserving food through food irradiation, and candling eggs, as well as homogenizing and pasteurizing milk.
- Secondary food processing is everyday processing,
- Sausages are a common form of secondary processed meat, formed by comminution (grinding) of meat that has already undergone primary processing.
- Tertiary food processing is the commercial production of what is commonly called processed food.

Why process foods?

- Prevent, reduce and eliminate infestation of food with microbes, insects or other vermin.
- Maintain and / or improve nutritional properties of food.
- Increase storage stability or shelf life of food.

Processing methods design to keep foods clean

- Packing (primary, secondary)
- Cleaning (mechanical, chemical)
- Milling grain

Egg Processing

Egg is a biological structure intended by nature for the production of a chick. Consists of three main parts yolk, albumen, and shell. To handle the problems of preservation and marketing of eggs a clear-cut idea about the information and structural details are necessary. Egg products are processed and convenience forms of eggs for commercial, food service and home use. These are refrigerated liquid products, frozen products, dried and speciality products.

Receiving shelled eggs: Receiving of eggs can be either:

In-line process: Where eggs are received directly from farm and farm is near egg processing facility.

Off-line process: Eggs are received from contractors, and receiving time is more compared to in-line receiving process. Eggs reaching the egg processing factory are packed, palletize, and transported.

Washing and sanitizing: Washing process includes jet water spray to remove loose dirt and rotating brush to clean of hard to remove dirt.

Quality check: Candling is one of the most used quality checking mechanisms where the eggs are rotated over several times over bright light to check the internal quality of egg. Depending upon quality check they are categorized into different grade class and processed separately. All the dirty, leaker and damaged eggs or removed from the processing conveyor.

Egg breaking: All the acceptable quality eggs, free from any sort of internal and external defects are moved forward for egg breaking process.
In this process, eggs are sucked up via vacuum and are broken into two halves to get the internal egg liquid.

Separation: Extracted egg liquid go under separation process where it is subjected to liquid white and yolk separation.
The separated liquids are cooled down and transferred to respective storage tanks.

Pasteurization: Eggs high nutritive value attracts microbial contamination and hence, to prevent microbial growth, they are subjected to high temperature treatment and then rapidly cooling it to low temperature.
After pasteurization they are, either directly packed, or processed further as per the requirement like freezing, drying for powder formation.

Storage: Storage condition is preferred to be as low temperature as possible.
Egg products can have shelf-life up to 3-4 months if kept at 1-2 Deg. C. Liquid eggs before pasteurization is also kept at temperature of below 4 Deg. C so, maintain the quality of product.

Poultry Processing

The term "Poultry" refers to domestic fowl reared for their flesh, eggs or feathers and includes chickens, ducks, geese, turkeys and pegeons. Of these, chicken and turkey are most commonly used for their meat. Poultry meat is a good source of protein and has a lipid content and low calorific value.

Catching, cooping & transporting live broilers

During catching,

- It results in carcass down.
- Grading and yield loss
- 90% of bruising occurs within 12-24 hours before pressing.

Receiving, holding and unloading

Receiving: They need adequate ventilation in the holding area to minimize mortality excessive live shrink.

Hanging: In the hanging area low levels of light to minimize the bird's excitement once they are placed in shackles.

Singeing: Removal of filoplumes using flame for surface sterilization, clean, uniform and neat appearance.

Washing: Washing assists in reducing microbial load present on the carcass.

Neck Slitting and removing of feet and oil glands

This is done by using a knife. A vertical incision is usually made in the dorsal side of the neck to assists the removal of crop esophages, and trachea. Next feet of the birds are removed by means of automatic cutter.

Evisceration: Evisceration processes remove the internal organs of poultry. Hearts, liver & necks may also be cleaned and packaged in evisceration.

Cutting and Deboning: Cutting process include preparation of bone-in product and bone-out product. Deboning process includes removal of legs and thighs, most deboning cuts are performed using knife's-wizard knife.

Preservation

- Refrigeration
- Dehydration
- Curing
- Smoking
- Canning
- Irradiation
- Microwave heating
- Use of chemical additives including antibiotics are important.

Refrigeration: Refrigeration includes cold storage and frozen storage.
In cold storage we employee a temperature between 30-45°F.

Smoking: Smoke is generally produced due to slow combustion of saw dust 20-30% hemicellulose 20-30% lignin & 40-60% cellulose which assists in preservation of poultry meat.

Irradiation: Irradiation is helpful in preservation of meat by killing and by reducing micro- organisms and parasites present in them.

Packaging
Whole bird bulk packaging: This involves boxing multiple whole birds.

Whole bird individual packaging: This involves packaging the gizzard, liver and heart with the whole bird and placing it in a bag.

Storage: Dressed chicken can be stored in a refrigerator at 2 ℃ for 7 days and deep freezer at -18 ℃ to -20 ℃ for a period of 4-6 months.

Meat Processing
The meat processing involves the slaughter of animals and fowl, processing of the carcasses into cured, canned, and other meat products, all these processing techniques are aimed at inhibiting the microbial spoilage and increasing the shelf life of the meat. Major principles involved in meat processing are use of heat, low temperature, smoking, modified atmosphere packaging and ionizing radiations.

Stunning and slaughter: Animals are often stunned before they are finally slotted to prevent them from experiencing prolonged pain. During the execution of the process, the live stock is made unconscious before final slaughtering.

Butchering: You must first remove the animals pelt or, in the case of poultry, the feathers, before you can begin butchering.

Grading: The meat is graded based on its size, muscle mass & fat deposition. The bases of meat grading include conformation of the carcass, firmness of the lean meat.

Cutting: Large racks of meat or sliced up into smaller portions to be finally sold to the final consumers. The live stock is minutely cut in to ribs back on, or brisket.

Storage: Cut meat products for food service use may be vacuum packed after cutting or stored in food-grade containers, wrapped appropriately, and stored according to food safety standards.
Products for frozen storage should be vacuum packed or wrapped tightly in freezer paper to prevent freezer burn.

Processing of Milk and milk products
Milk processing allows the preservation of milk for days, weeks or months and helps to reduce food-borne illness. Processing of dairy products gives small-scale dairy producers higher cash incomes than selling raw milk and offers better opportunities to reach regional and urban markets.

A. At the milk processing plant samples are checked for proper temperature, total acidity, flavour, odour, cleanliness, and the absence of antibiotics.
B. Within 72 hours the milk must be processed. The milk is pasteurized at the processing plant.

Standardization: Milk is processed through centrifugal separators to create a skim portion and a cream portion. The cream portion is added back to the skim portion based on the desired fat content for the product.
The extra cream from this step is used to make ice-cream or butter

Clarification: It involves the use of a centrifuged machine called 'clarifier'.
Milk clarification is a cocktail technique in which an acidic ingredient is used to curdle milk, separating it into curds and whey.
Clarifying milk will protect your downstream equipment by removing material such as, sand, soil, dust, & precipitated protein.

Pasteurization: It is the process of heating the milk to destroy all pathogenic bacteria. Milk can be pasteurized by heating it to 161° F for 15sec.

Homogenization: It is the process used to prevent the cream from rising to the top of a finished milk package. Homogenization reduces the milk fat globule size, allowing for even distribution in milk.

Quality control: Quality control is conducted through all the steps in processing. And analysed the presence of microbiological organisms.

Packaging: When the product has completed all of the steps in pasteurization, standardization, clarification, homogenization, quality control, it is packaged into gallon, half gallon, quart, pint & half pint containers.

Dating- guaranteed drinkable: This refers to the last date on which the product can be offered for sale. It can be passed up to 1 week passed the date.

Days beyond date: While there are no set recommendations, most research suggests that as long as it has been stored properly, unopened milk generally stays good for 5-7 days past its listed date, while opened milk and milk products lasts at least 2-3 days past this date.

Storage: All fresh fluid milks & products should be stored at temperatures below 40°F heat and should not be stacked high in the display cases.

Conclusion

Though there is tremendous potential in the food processing industry, it needs strong and dependable chain facilities to support the increasing production of Processing that involved in egg, poultry, meat, milk and milk products will continue to satisfy demands with the correct way of processing and helps to pay more attention on value addition through processing and nutrition sciences. This can be concluded that processing generally includes preservation, packaging etc., over long storage periods and also this will prevent many losses during processing and aid in the production of safe products in the country.

Acknowledge

I acknowledge my gratitude to my supervisor, Dr. Alka Gupta, Also, I would like to thank my friends and family who supported me and guided me throughout this project. I cannot express enough thanks to my committee for their continued support and encouragement.

References

1. Anderson J, Wachenheim C, Lesch W. Perceptions of genetically modified and foods processing and use of technology, 2006, 9.
2. Dimitri C, Greene C. Recent growth patterns in U.S processed food market, 2002.
3. Grumezescu, Alexandru Mihai, Holban, Alina Maria. Food processing and increased quality and consumption. Academic Press, 2018, 430p. ISBN 9780128114995.
4. Held Man DR, Hartel RW. Principles of Food Processing. Chapman & Hall New York, 1997.
5. Hui YH. Handbook of meat and meat processing, second Edition. CRC Press. 2012-01-11, 599. ISBN 9781439836835.
6. Smith JS, Hui YH. Food Processing Principles and Applications. Wiley- Blackwell, Lowa, USA, 2004.
7. Slimani N, Deharveng G, Southgate Da T. Contribution of highly industrially processed foods to the nutrient intakes and patterns of middle study. European Journal of Clinical Nutrition. 2009;63Suppl 4:S206-S225.