

Health & Nutrition Sciences

How the Food in Your Cupboard is Made

Open your kitchen cupboards, peek inside your fridge, sift through your freezer. Notice that most of the ingredients used in modern home cooking leverage innovative food processing techniques. These techniques offer benefits to the food you eat, including unique taste, food safety, extended shelf life, and nutrition.



WHAT IS A PROCESSED FOOD?

Although the term “processed food” does not have a legal definition, it generally refers to a food or beverage that has been altered from its natural state.

Examples of food processing techniques:

FERMENTATION

Fermentation is a natural process through which microorganisms, like yeast and bacteria, convert carbohydrates such as starch and sugar, into alcohol or acids.

Value of fermentation:

Fermentation creates compounds, such as organic acids, that contribute to flavour, aroma, texture, or shelf life¹. The organic acids produced during fermentation act as natural preservatives and give fermented foods a distinct taste.



Products in your home kitchen:

Yoghurt, sourdough, cider vinegar, sauerkraut



Products in your home kitchen:

Milk, yoghurt, fruit juices, eggs

PASTEURISATION

Pasteurisation is the process by which heat is applied to food and beverages to reduce pathogens and extend shelf life without major changes to the chemistry of the food². This process can be applied to both packaged and unpackaged foods.

Value of pasteurisation:

Pasteurisation reduces pathogens and inactivates spoilage enzymes, increasing food safety and the shelf life of foods².

Health & Nutrition Sciences

MILLING

Milling is the process of cleaning, and grinding grains to be made into flour, pasta, cereal, oats and snack foods. Types of grains that are often milled include wheat, corn, and oats³.

Value of milling:

During milling, the inedible, fibrous protective cover surrounding the kernel is removed. This allows for the grain to be ready to eat and shortens cooking time.



Products in your home kitchen:
Wheat flour, pasta and snack foods



Products in your home kitchen:
Breakfast cereals, milk alternatives, bread and flour

FORTIFICATION

Fortification is the deliberate increase in content of nutrients in a food to improve its nutritional quality⁴. Fortification of specific nutrients is mandatory in some countries, such as Sweden where some dairy products and their alternatives are fortified with vitamin D⁵ and in the UK where flour is fortified with calcium, iron, thiamin and niacin⁶.

Value of fortification:

Fortified foods have helped to reduce rates of nutrient deficiency-related illnesses. For example, in 1998, Canada mandated that all white flour, enriched pasta and cornmeal be fortified with 150 micrograms of folic acid per 100g. This significantly reduced the prevalence of neural tube defects by 46%⁷. The UK intend to mandate folic acid fortification in non-wholemeal wheat flour to prevent NTDs⁸.



Products in your home kitchen:
Dried fruits, instant coffee powder, instant potato flakes

DEHYDRATION

Dehydration is the process of using energy to reduce moisture in the food. Most commonly, heat is added to the food by hot air or other gas, which carries moisture away from the food⁹.

Value of dehydration:

Dehydration works to preserve food by lowering the water activity and preventing the growth of microorganisms. Most of the nutritional value of the food, including protein, fibre and minerals, is retained.

References:

1. Marco, ML, Heeney, D, Binda, S et al. (2017) Health benefits of fermented foods: microbiota and beyond. *Current Opinion in Biotechnology* 44, 94-102.
2. Fellows, PJ. (2022) *Food Processing Technology (Fifth Edition)*. Chapter 10 – Pasteurisation, 343-356.
3. North American Millers' Association. What Is Milling (accessed My 2023).
4. World Health Organization. Food Fortification (accessed May 2023).
5. Livsmedelsverket. (2019) The Swedish Food Agency's regulations on fortification of certain foods. (accessed June 2023).
6. UK Flour Millers. Bread and Flour Regulations. (accessed June 2023).
7. De Wals, P, Tairou, F, Van Allen, MD, et al. (2007) Reduction in Neural-Tube Defects after Folic Acid Fortification in Canada. *N Engl J Med* 357, 135-142.
8. Morris, JK, Wald, NJ. (2023). Importance of getting the right UK folic acid fortification policy. *Arch Dis Child* 108, 74-75.
9. Mohammadi, X, Deng, W, Matinfar, G et al. (2020) Impact of Three Different Dehydration Methods on Nutritional Values and Sensory Quality of Dried Broccoli, Oranges, and Carrots. *Foods* 9, 1464.