

# FOOD PROCESSING AND FUTURE FOODS

*The role food processing can play  
in supporting human and planetary  
health*



## KEY POINTS

- Food processing covers any process that modifies food and beverages from their original fresh or whole state and includes freezing, canning, drying, preserving, and fermentation.
- There are a number of reasons foods may undergo processing, including:
  - Food safety e.g., pasteurisation or addition of preservatives to prevent pathogens from spoiling food,
  - To extend its shelf life, helping to reduce food waste,
  - To increase the nutrient content e.g., folic acid fortification of bread-making flour, iodisation of table salt,
  - To improve taste and/or texture, providing consumers with variety and enjoyment,
  - To reflect innovation and advances in producing “future foods” e.g., functional foods, cultured meat alternatives, diverting food waste into edible products,
  - To develop nutritious options for those with special dietary needs,
  - Save consumers’ time and encourage quick and easy at-home food preparation,
  - To ensure affordable, nutritious options are available year-round.
- The degree of processing is not a direct link with nutrition. While some processed foods are higher in sugar, salt, saturated fat and/or lower in fibre, vitamins and minerals than their unprocessed equivalent, there are also many foods that have undergone some degree of food processing which are highly nutritious and can be included as part of a healthy diet. For example, whole grain bread, breakfast cereals, low-fat yoghurt, nutritious ready-to-eat meals, frozen vegetables, and canned vegetables.
- People do not need to avoid all processed products, as many of these are integral to achieving a healthy, affordable diet. There is also evidence that excluding nutritious processed foods may have a negative impact on diet quality and health (1, 2).
- Consumers should be encouraged to choose a range of foods and beverages that can be part of a balanced diet, considering the nutritional quality of the food, portion size, and frequency of consumption.
- Current evidence shows that nutritional composition, not the degree of processing, is what matters most when it comes to health. However future research could explore whether certain characteristics or manufacturing processes are linked with poor health to help inform healthier food innovation.

# BACKGROUND

Humans have been processing food for thousands of years. In fact, food processing is needed to eat many of the foods we deem core to our diet today.

Take a tomato. As soon as you have chopped it, the tomato has been processed. Add a few more steps and you have tomato soup. Or give it to a food manufacturer, add a few other ingredients, and they can create a bottle of tomato pasta sauce that can sit safely in your pantry for months.

In recent years, there has been increasing commentary that food processing has negative health implications, and that “ultra-processed” foods and beverages should be limited or avoided in the diet. However, the current scientific evidence shows that nutritional composition, not the degree of processing, is what matters most when it comes to health.

***This paper outlines the role food processing can play in supporting a healthy, balanced diet; the limitations of the current definition of “ultra-processed”; and provides an alternative perspective to address these issues.***



# THE ROLE OF FOOD PROCESSING

- Provides safe foods and beverages e.g., pasteurisation or addition of preservatives to prevent pathogens spoiling food.
- Addresses population nutrient deficiencies e.g., folic acid fortification of bread-making flour, iodisation of salt.
- Provides nutritious options for those with special dietary needs e.g., infant formulas, specialised nutritional products for medical purposes, fortified plant-based milks, gluten-free options.
- Supports the transition to a more environmentally sustainable food system e.g., allows for longer shelf life to reduce food waste, divert food waste into usable food products, development of nutritious plant-based meat analogues and plant-based milks.
- Saves consumers' time and encourages quick and easy at home food preparation.
- Provides affordable, nutritious options e.g., frozen and tinned fruit and vegetables.
- Helps address food insecurity, especially for those without access to kitchen equipment that allow them to cook from fresh.
- Increases access to convenient formats of foods important for good health (fruit, vegetables, wholegrains, legumes).
- Some processing can provide improved nutrient availability (e.g., processing legumes can assist with zinc and iron absorption) or nutritional profiles (e.g., addition of fibre-rich chicory inulin to bread).
- Improves access to nutritious foods and beverages in remote communities and during times of crisis e.g., Hawke's Bay floods.
- Supports local communities through employment opportunities.
- Provides culturally familiar foods, e.g., for migrant/refugee families.
- Helps address concerns around global food shortage.
- Provides consumers variety and enjoyment.



# CONCERNS WITH ULTRA-PROCESSED DEFINITION

There is no one, universally agreed definition of “ultra-processed” however, the most commonly used classification is the **NOVA** system. This definition encompasses a broad range of foods prepared with industrial processing techniques, including food additives and multiple ingredients.

The NOVA Classification System recommends that all “ultra-processed” foods be limited or avoided in the diet. This is based on epidemiological studies that assess the relationship between consumption of “ultra-processed” foods, obesity and other non-communicable diseases. Epidemiological studies are designed to observe what happens in populations. They often have a high degree of uncontrolled confounding factors (i.e., levels of smoking, alcohol intake physical (in)activity and overall diet quality) and **do not allow for any conclusion of causality** (cause and effect). To reach such a conclusion, intervention studies would be needed. Importantly, the type of processing used to make a food does not determine or predict nutrient density or overall contribution to the diet. The nutritional quality of a food should be the primary consideration, rather than its level of processing.

Proponents of the NOVA system argue that the impacts of “ultra-processed” products on health extend beyond their nutritional profile, however, understanding of other mechanisms to explain the adverse effects of “ultra-processing” on health is limited and largely theoretical. It is also important to note that all food additives used in New Zealand have undergone extensive toxicological assessments by FSANZ which ensures their safety before they are approved for use.

Another important consideration is that “ultra-processed” foods and drinks are **not a homogenous group**. Some foods and beverages that would be classified as “ultra-processed” foods have poorer nutrient profiles, and are already recommended to be limited in the diet by the *Eating and Activity Guidelines for New Zealand Adults* (e.g., confectionary, cakes, fried/salty snacks, soft drinks). These tend to be energy-dense, high in saturated fat, added sugars and/or salt and low in fibre, vitamins and minerals.

However, the current definition also includes nutritious foods like whole-grain bread, whole-grain breakfast cereals and low-fat yoghurt. Evidence suggests that consumption of these foods is not associated with ill health (1) and avoiding them may even have a negative impact on diet quality and health (2). There is also evidence that excluding nutritious “ultra-processed” foods may result in lowered intakes of key nutrients, specifically thiamin, folate and iodine (3).

A further consideration is that the “ultra-processed” definition has the potential to cause **confusion for researchers and consumers**. Research shows that the NOVA classification system is hard to interpret, even for food and nutrition professionals, with different people classifying the same foods quite differently (4). The NOVA classification system is also at odds with other public health nutrition initiatives, like the Health Star Rating and food fortification, creating even greater confusion for consumers.

Of note, the NOVA Classification system provides no guidance around intakes of foods not classified as “ultra-processed”. Notably, salt, salted/cured meats, high saturated fat oils and spreads (e.g., butter) all fall outside of the “ultra-processed” definition, yet excess consumption has been linked with an increased risk of disease (5).

**As result of these, and other concerns, many highly regarded groups have recommended that established food classification systems (that are evidence-based and centred on nutritional qualities) are used to underpin Dietary Guidelines and advice, rather than the NOVA Classification System e.g., UK Scientific Advisory Committee on Nutrition (SACN), British Nutrition Foundation, Nordic Nutrition Recommendations 2023 Committee.**

# AN ALTERNATIVE APPROACH

Around a third of adults and 1 in 8 children are currently living with obesity in New Zealand (6). Meanwhile, food insecurity remains a major challenge for many people in our community.

The food and beverage industry remains committed to working with Government, non-Government organisations and the community to address factors that contribute to poor health. Given the concerns with the current definition of “ultra-processed” foods, the following are offered as alternative solutions to help improve human and planetary health beyond focusing solely on food processing:

- **Focusing on overall dietary patterns, not individual foods:** We do not eat individual foods in isolation – it is the complex interplay between a variety of factors (like the nutrients they provide, and how they are consumed) that has the greatest overall impact on both human and planetary health. Rather than focusing on individual foods or aspects of food, like the degree of processing, public health messaging should be focused on overall diet quality – promoting a diet that is rich in fruits, vegetables, grains (mostly whole grain and those high in fibre), low or reduced fat milk/ milk products & alternatives, and lean proteins (legumes, nuts, seeds, fish, other seafood, poultry and/or red meat with the fat removed).
- **Innovation and reformulation:** Reformulation can help improve nutritional intakes without changing consumer behaviour, leading to improved diet quality. For example, as part of the Heart Foundation Reformulation Programme, it is estimated that 760 tonnes of sugar and 335 tonnes of salt are being removed from targeted products per annum in Aotearoa New Zealand (7).
- **Food environment:** The food environment is a key driver of the food choices that we make. The Health Star Rating System informs consumers at a glance which are the most nutritious options within a category. This can help guide people to make healthier choices within the wider food environment. Increasing the accessibility, affordability and desirability of more nutritious food options can help the public consume healthier diets - food processing can play an important role here.
- **Continued research:** To date, most research into “ultra-processed” foods has focused on the NOVA definition, which is not sensitive enough to differentiate between energy dense, nutrient poor processed foods and those that are nutritious, nutrient rich options. Current evidence shows that nutritional composition, not the degree of processing, is what matters most when it comes to health. In addition, food processing encompasses a broad spectrum of techniques, so future research could focus on understanding whether certain characteristics or manufacturing processes are linked with poor health to help inform healthier food innovation.



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