

Food irradiation

Food irradiation is a processing technique with similar results to freezing or pasteurisation. During this procedure the food is exposed to doses of ionising energy, or radiation. At low doses, irradiation extends a product's shelf life. At higher doses, this process kills insects, moulds, bacteria and other potentially harmful micro-organisms.

Considerable scientific research over the past five decades indicates that food irradiation is a safe and effective form of processing. Food irradiation has been approved in 40 countries including the United States, Japan, China, France and Holland. In general, food irradiation is not permitted in Australia, unless specific permission is given by Food Standards Australia New Zealand (FSANZ) in accordance with the FSANZ Food Standards Code. Irradiated foods will be clearly labelled so that consumers can make an informed choice.

Irradiated foods are not radioactive

There is a common misconception that irradiated food is radioactive. The radiation used to process foods is very different from the radioactive fallout that occurs after, for example, a nuclear accident.

In food processing, the radioactive source never contacts the food and the sources used emit only gamma rays and no neutrons. That means the food cannot become radioactive. The World Health Organization (WHO), the American Dietetic Association and the Scientific Committee of the European Union are three internationally recognised bodies which support food irradiation.

The procedure

The food is exposed to ionising radiation, either from gamma rays or a high energy electron beam or powerful X-rays. Gamma rays and X-rays are a form of radiation that shares some characteristics with microwaves, but is of much higher energy and penetration.

The rays pass through the food just like microwaves in a microwave oven, but the food doesn't heat up to any significant extent. Exposure to gamma rays does not make food radioactive. Electron beams and X-rays are produced using electricity, which can be switched on or off, and do not need the use of radioactive material.

In both cases, organisms that are responsible for spoiling foods - such as insects, moulds and bacteria including some important food poisoning bacteria - can be killed. Food irradiation cannot kill viruses.

The benefits of food irradiation

Some of the benefits of this food processing technique include:

- Extended shelf life of some products.
- Less food spoilage.
- Reduced risk of food-borne diseases caused by micro-organisms, such as *Campylobacter*, *Salmonella*, *E coli* and *Listeria* (especially in meat, poultry and fish).
- Less need for pesticides.
- Less need for some additives, such as preservatives and antioxidants.
- Lower risk of importing or exporting insect pests hidden inside food products.
- Reduced need for toxic chemical treatments, such as those used to kill bacteria found in some spices.
- As an alternative to current treatment for disinfecting imported fruits, grains and vegetables, which uses an ozone-depleting gas.
- Reduced sprouting in potatoes and onions.

Differing effects on food

Some foods, such as dairy foods and eggs, can't be irradiated because it causes changes in flavour or texture. Fruits, vegetables, grain foods, spices and meats (such as chicken) can be irradiated.

The process alters the nutrient content of some foods because it reduces the level of some of the B -group vitamins, but this loss is similar to other accepted food processing techniques, such as canning or blanching.

Community concerns

People have expressed a number of concerns in relation to food irradiation. They include:

- **Radioactivity** - a belief that irradiated food is radioactive and therefore harmful to eat. Irradiated foods do not become radioactive. Extensive testing has demonstrated that irradiating food is as safe as canning, pasteurising and freezing.
- **Lack of choice** - Australian consumers have indicated they want to be able to choose between irradiated and non-irradiated foods. There are currently limited ways to determine whether or not irradiation has been used, because there is no radiation left behind in the food after the irradiation process. Labelling is compulsory on irradiated foods in the USA. Irradiated foods are marked by a symbol called a radura, which is the international symbol for irradiation. Similar laws are being considered for Australia.
- **Effects on food hygiene** - there are concerns that the extensive use of this method of food preservation may result in less stringent food hygiene and handling practices. Irradiation is not a substitute for good hygienic practices. **Natural warning signs eliminated** - concern that irradiation will make it difficult to tell if foods are old or have gone 'off', because normal indicators like smell or mould are destroyed by irradiation.
- **Not for consumer's benefit** - concern that food irradiation is driven purely by market needs, rather than consumer demand.

Proper food handling is still needed

Food irradiation does not replace the need for correct food handling practices in industry and in the home. For instance, a few bacteria may survive the irradiation of meat. If the meat is left unrefrigerated, these bacteria could still multiply and cause food poisoning.

Where to get help

- An accredited practising dietitian, contact the Dietitians Association of Australia
- Food Standards Australia New Zealand.

Things to remember

- Food irradiation is a form of food processing that can extend the shelf life and reduces spoilage of food.
- Foods are exposed to radiation to kill insects, moulds and micro-organisms, but no detectable levels of radiation are left behind in the food.
- Community concerns include the need for labelling laws.

This page has been produced in consultation with, and approved by:

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