FOOD IRRADIATION

Raising public awareness of its implications

Our story starts with one of our colleagues buying some pre-packaged tomatoes just a few months ago. Having eaten a few he was casually reading the label when he noticed the term 'extra long life'. This was intriguing as he got to wondering how this was done, what process was used to confer this blessing on the said tomatoes. Soon afterwards we came across a magazine article on food irradiation which was the magical process that guaranteed extra long life.

Then we began to hear of similar close encounters from friends and associates with irradiated foods. Another family who were on holiday in France purchased a lettuce just before their return journey. A curious thing about this lettuce was that even though they were using it a bit at a time over several days the lettuce didn't seem to go off at all. So began our investigation into the story of food irradiation.

What is Food Irradiation?

First of all let's see what is involved. To irradiate food it has to be exposed to a flow of ionising radiation normally from a radioactive source like caesium-137 or cobalt-60. It is important to realise that this process does not make the food itself radioactive so it won't glow in the dark! However, it does produce very definite chemical changes in food. The process kills or damages both food enzymes and bacteria that cause the natural decay or spoilage of food. A good thing you might say - well here the controversy begins. For as our investigation got underway we became aware of the pro and anti - food irradiation lobbies. Both sides have their experts, scientists, medical boards etc. taking sometimes diametrically opposed views as to the need for this process, its safety for consumption and general health and its effects on the nutritional value of food.

The Irish Situation

It is difficult to establish the amount of irradiated food being sold in Ireland. The only legislation in place is a food labelling requirement that irradiated pre-packaged food should be indicated as "irradiated" or treated with ionising "radiation". We don't know where this leaves the extra long life tomatoes. However this legislation doesn't cover bulk food items like fruit and vegetables and irradiated ingredients in processed food so how is the consumer to know what he is getting?

In January 1992 the U.K. Government gave the green light to the sale of a range of irradiated foods. Since October 1992 the U.S. have allowed poultry producers to irradiate chickens. So maybe some of that deep fried and battered chicken has also been zapped with a dose of radiation. In many instances it looks like we just don't know or are not being told. Our concern at the very least on this score is that the consumer has a right to know. Furthermore, what's on sale now though limited might only be the first step in the introduction of this process to a wide variety of foods.

The European Scene

In Europe the principal users are Netherlands, France and Belgium. The Dutch are by far the biggest processors of irradiated foods. They allow 38 different food categories to be irradiated.
The list includes mushrooms, strawberries, deep frozen meals, potatoes, fish and shell fish, chicken, rice, egg powder and rye bread.
Apparently various institutions within the E.C., the Commission and the European Parliament have been discussing this topic for a long while. There is a proposal to allow free trade in all member states of a limited range of irradiated foods.
In view of what we were saying earlier about the pro and anti irradiation lobbies it is worth pointing out that several countries have banned this process. Countries such as Sweden, West Germany, Australia and New Zealand.

The Supporters of Food Irradiation

During the course of our investigation we came across a lot of literature promoting the benefits of this process published by the United Nations through its agencies, The World Health Organisation and the International Atomic Energy Agency (IAEA). Reading their literature you would think that food irradiation was the greatest thing since sliced bread. It is portrayed as almost squeaky clean, of enormous potential to mankind without any harmful side-effects apart from a small loss in vitamins.

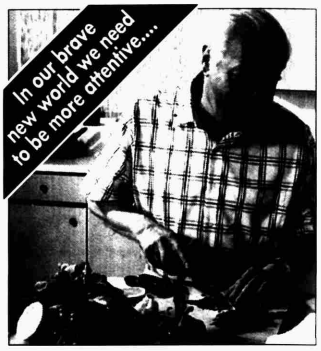
The pro-irradiation lobby's arguments go something like this....
The process is a safer alternative to other methods of preservation such as the use of chemical additives. It is safe and the consumer will benefit from reduced wastage, greater shelf life, safer cleaner food. This comes about because food irradiation:

- Inhibits the sprouting of some root vegetables like potatoes.
- Delays the ripening of some fruits and vegetables.
- Kills or renders sterile some insects and parasites that infest grains, fruits, vegetables and meats.
- Reduces the levels of spoilage bacteria on some foods such as fruit, sea food, poultry and meat enabling them to have a longer shelf life.
- Reduces the levels of food poisoning bacteria on seafoods, poultry, meat and spices.

At present irradiation is most widely used to decontaminate herbs and spices. Many feel it is safer than the chemical alternative of using ethylene oxide (however a leading spice manufacturer in America - McCormacks - have developed a steam pasteurisation process for doing the same thing which would seem the safest alternative of the lot).

The Critics of Food Irradiation

The critics of food irradiation say the process is not needed, its safety has not been adequately tested and that there are health risks involved. Their argument goes something like this:



- Irradiation reduces the nutrient values of foods – particularly vitamins C, A, E and B complex which are all damaged to a greater or lesser extent.
- Some food poisoning bacteria make toxins which remain in the food after irradiation. These toxins themselves can be harmful but the consumers could be fooled into thinking it safe.
- It is a technology that is wide open to fraud and abuse. There is no adequate test to establish whether food has been irradiated. That means that legislation governing its use cannot be policed with spot checks.
- It will allow old food to be sold as fresh and contaminated food to be sold as clean.

When it comes to research on the eating of irradiated foods there are conflicting results and conflicting opinions. Studies have varied from giving it the all-clear to indicating lower growth rates, mutations, chromosome defects in flies, mammals and even human volunteers fed irradiated foods.

Our Own Conclusions

During the course of our research we were struck by several issues which we feel have not been adequately investigated.

Firstly little is known of the consequences of irradiating foods that already contain chemical additives and colourings. Secondly insufficient research has been done on the effect of irradiated foods entering the food chain i.e. where chickens that will be irradiated are themselves fed irradiated cereal and fish meal - what is the cumulative effect? Thirdly almost none of the technical material we reviewed mentioned the role of enzymes. While the body can produce its own enzymes many health experts believe there is a vital connection between food enzymes and health (ref: Enzyme Nutrition - Dr. Edward Howell). Dr. Howell who has made a life-long study of the value and need of obtaining adequate enzymes from food has shown a direct link between degenerative diseases and abnormal glandular changes in mice and rats fed enzyme-deficient diets. He believes the same is true of humans.

What struck us most forcibly about the research on food irradiation was the almost total lack of interest and recognition of the value of enzymes. **Food irradiation inhibits or seriously damages food enzymes.**

Where To Now?

We all need to eat. As consumers we demand food that is safe, wholesome and nutritious. As we get to know more about nutrition and health many are choosing organic food, fresher food and food that is free of chemicals and additives. In this context food irradiation looks like a step in the wrong direction.

Our investigation to date gives us many grounds for concern on such issues as consumer awareness, effective regulation, safety and health factors, and insufficient research. Even the degree of controversy and varied opinion is in itself a signal for extreme caution in dealing with this technology. Our purpose in writing this article has been to increase consumer awareness about the issues involved. Though still in its infancy this type of food treatment could rapidly gain ground. To be forewarned is to be forearmed. So the next time you see extra long life tomatoes, lettuce, shell fish, poultry, think again. Maybe it's not in the best interest of your long life!

Brendan Clifford.

REFERENCES
Enzyme Nutrition
•Dr. Edward Howell
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Food Irradiation
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