

**TRENDS IN FOOD IRRADIATION IN BRAZIL***Nelida Lucia del Mastro**Department of Nuclear Techniques Applications**Nuclear and Energy Research Institute**IPEN-CNEN/SP BRAZIL**nlmastro@net.ipen.br*

Irradiation can reduce post-harvest losses by killing insect pests in fruit, grains or spices, reducing food spoilage organisms, inhibiting the sprouting of vegetables and delaying the ripening of fruits [1]. Irradiation, similar to good storage techniques, is one facet of good pest management of grains and can be used as treatment for plant pests of quarantine significance [2].

On the other hand, the World Health Organization recommends food irradiation as one of the most important methods to fight the increasing trend in the incidence of foodborne diseases [3] mainly in food products of animal origin. At present there are worldwide scientific evidence demonstrating radiological, microbiological and toxicological safety as well as nutritional adequacy of irradiated foods.

Although there are few no-medical ionizing radiation sources even for laboratory research installed in the country, Brazil had contributed with important researches in the field of food irradiation. Studies on the influence of gamma radiation on pests that infest Brazilian crops, the radiosensitivity of insects feed with irradiated diets, the shelf life extension of poultry meat, fruit and flowers disinfestation [4][5] were already performed. In the last years, works on radiation hormesis applied to onions or potatoes [6] and sensory analysis of irradiated food were also performed.

Using mainly ^{60}Co sources, and in few occasions electron beam irradiation, research on food irradiation started at the IPEN in 1991. The main subject then was the development of methods to identify irradiated foods, a new field of study in the country. According to the changes which occur in the food as a result of irradiation, chemical, physical or biological methods can be employed to identify irradiated foods [7][8][9][10][11].

Other researches on the field of food irradiation are being developed like the study of the radiosensitivity of seafoods and pathogens like *V. cholera* sp.[12][13], industrialized chicken egg (liquid and powder) and different kind of Brazilian fruits.

New lines of research are at present being introduced. One is related to rheological properties of irradiated additives commonly used in food industry. Food hydrocolloids both from vegetal or animal origin are becoming extremely important in food technology. The use of irradiation to contribute to the natural aging process of alcoholic beverages is also being analyzed.

Another new line deals with the development of edible films or coatings. One of the most useful functions of edible films is their ability to act as barriers, either to gas, oil, or, more often, water. Moisture levels in foods are critical for maintaining freshness, controlling microbial growth, and providing mouthfeel and texture. Edible films can control water activity preventing either moisture loss or uptake.

Brazilian legislation on food irradiation is presently being revised. The decree establishing general regulations for food irradiation, No. 72.718 of 29th August 1973 was published in the *Diario Oficial* on 30th August 1973. It was followed by two Directives from the Ministry of Health: No. 9 of 8th March 1985 and No. 30 of 25th

September 1989. Since then, no new regulation was become available. A new approach considering also regulations of the Ministry of Agriculture is being introducing in accordance with international regulations.

Today there are three commercial facilities for industrial irradiation operating in the country, two being exclusively dedicated to their own production of medical sterile disposable. There is only one commercial facility for multipurpose irradiation services. It irradiates some food products mainly dried foods like spices. Another three new facilities, now in processing of licensing, are scheduled to initiate their operation in 1999, when it will be possible to start food irradiation on a commercial scale. A proper and updated legislation together with an adequate marketing will permit the development of unlimited industrial application of the radiation technology on food products with benefits for both the public health and the international trade.

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