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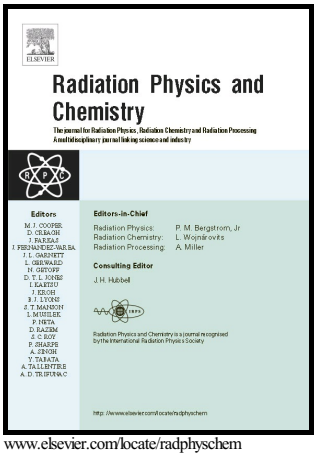

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Particular applications of food irradiation: meat, fish and others

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Abstract
It is surprising what all can be achieved by radiation processing of food; this chapter narrates a number of less obvious applications mostly hidden to the consumer. Also the labelling regulations differing world-wide are responsible for leaving the consumer uninformed. Several of the early proposals could not reach technological maturity or are commercially not competitive. Still considerable energy is spent in research for such applications. Other applications are serving a certain niche, companies mostly are reluctant to release reliable information about their activities. Labelling regulation vary world-wide significantly. Hence, the market place does not really give the full picture of irradiated food available to the consumer. Despite those restrictions, this report intends to give a full picture of the actual situation for meat, fish and others and of unique uses.
Keywords: Food irradiation, Radiation processing, Ionizing radiation, Shelf-life extension, Hygiene, Product improvement, Meat, Fish, Spirits, Juice yield

Introduction

Processing of food by ionizing radiation offers a range of beneficial effects, which cannot be achieved by other and –and in particular- traditional techniques; some are in competition with conventional treatments, also in respect to effectiveness; others are perfectly supplementing practices handed down to us during historical times.

FOREWORD:
Insect disinfestations, as it concerns quarantine applications, is covered in a specific chapter; non-phytosanitary applications for fruit and vegetables are also covered in the preceding dedicated chapter which includes insect elimination from grain. Consequently this chapter is complementary to the chapter on applications for produce, concentrating on a variety of other exploitations of processing food by ionizing radiation.

Radiation processing by irradiation in general
It must be kept in mind what the purposes of processing food by ionizing radiation are and to evaluate possible alternative and traditional treatments to achieve these objectives:

Low dose (up to 1 kGy)	
Inhibition of sprouting [a, c]	potato, onion, garlic, ginger root, chestnut
Insect disinfestations [a, c]	cereals, pulses, fresh and dried fruits,
Parasite disinfection [a, b]	fresh pork and fish
Delay of ripening [c]	tropical fruits, climacteric fruits
Medium dose (1 to 10 kGy)	
Extension of shelf-life [c, b, d]	fish and seafood, strawberries, asparagus
Inactivation of spoilage and pathogenic bacteria [a, b, e]	raw and frozen seafood, meat and poultry, chicken feet, raw milk cheese, life oysters, pet feed and treats
Improving technological properties	increased juice yield (grapes etc.), reduced cooking time (dehydrated vegetables), removal of off-flavour, accelerating ripening of wine and spirits
High dose (above 10 kGy)	