

oleracea L. var. *acephala*) is the most consumed in Brazil, as an ingredient of salads and also usual in preparation of a typical Brazilian dish called *feijoada*. Food irradiation is a world wide spread technology used to improve the quality of vegetables extending the shelf-life and reducing microorganisms present in leafs. Color is the first sensorial aspect realized by consumers, being an important factor of refuse. The objective of this paper was to analyze the color of irradiated cabbage treated by electron beam from a linear accelerator at different radiation doses. The cabbage samples were irradiated at IPEN-CNEN/SP in an electron accelerator (Radiation Dynamics Inc. USA, 1.5 MeV, 25 mA) at doses of 1.0 – 1.5 kGy and also a control sample. Statistical analysis was done to compare the efficacy of different radiation doses. Slight differences in color measurement were observed in the irradiated samples, although the quality of cabbage was maintained until the 7th day of storage.

SM/EB-06

Advances of E-beam Processing for Food Preservation in Brazil

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Food irradiation is a well known process in which food products are exposed to a controlled amount of ionizing radiation to kill harmful microorganisms, to delay ripening and also to inhibit sprouting. During last years the demand for this technology had increased in order to reduce losses all along food chain supply. E-beam processing trends to be the future's choice, once besides the possibility of being disconnected when not in use, is easily available, does not need reloading and streamlines the process, reducing logistics costs. In Brazil, the use of this technology is gaining importance day by day, mainly due to the necessity of food industry on guarantee food assurance and enhances its shelf-life. Although only few industries has already installed e-beam accelerators to its processing systems and also not many provides irradiation services to local companies, this scenery trends to change due to knowledge diffusion, high cost effectiveness relationship and government support.

SM/EB-07

Electron Beam Irradiation Effects on Some Packaged Dried Food Items

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For radical sports practitioners, small nutritious snack foods are needed. At the same time, food preparation must guarantee long shelf life and be compact or lightweight for easiness of carrying. Commercial individually packaged foods can be used either for sports practitioners like adventure racing or eventually as military rations. Irradiation processing of foods is an important preservation technology. High-voltage electron beams generated from linear accelerators are an alternative to radioisotope generators as they require much shorter exposure times (seconds vs. hours for γ irradiation) to be effective and are currently used to pasteurize meat products among others food items. This work describes the application of electron beam irradiation on some food items used in sport training diets: fiber rich cookies, fruit cereal bars, instant dehydrated asparagus soup and instant Brazilian corn pudding. Each kind of sample contained 3 groups of 15 units each. Irradiation was performed with an electron beam accelerator Dynamitron (Radiation Dynamics Inc.) model JOB 188, with doses of 5 and 10 kGy. For the evaluation of irradiated samples a methodology based on the Analytical Norms of the Instituto Adolfo Lutz, one of the South America Reference Laboratories was employed. The microbiological and sensory analyses of the diverse irradiated samples are presented. Electron beam irradiation resulted in significant reduction of the fungus and yeast load but caused dose dependent differences of some sensory characteristics.

A careful dose choice and special irradiation conditions must be used in order to achieve sensory requirements needed for the commercialization of these irradiated food items.

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New Applications for Accelerators in Pharmaceutical Processes

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In-line sterilization tunnels using electron beam have become a reality since the development of low energy and medium energy accelerators small enough to fit into self-shielded units which can be integrated into production lines. These systems have many advantages for the health care industry since they provide fast continuous room temperature sterilization which is simple to validate and traceable. Economies are apparent in terms of time, logistics, fixed assets costs, labour costs etc. Environmental impact is considered low. Medium energy systems for core sterilization of medical devices, syringes or vials have already been installed. The low energy surface sterilization systems which have been installed on 19+ pre-filled syringe lines have recently benefited from technology improvements which increase efficiency. The presentation will introduce electron beam sterilization technology and its practical aspects for pharmaceutical manufacturers, i.e., dosimetry, validation, interfaces, monitoring and recording.

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Developments in Electron Beam Processing in Polymer and Petroleum Industries

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Recent estimates show that out of about 1400 electron accelerator units currently in use for industrial applications throughout the world, 1200 are being used for plastics and rubber processing. Commercial availability of new low, medium and high energy electron accelerators with varying powers and innovative formulations for better radiation processing of polymers have brought a synergy into electron beam processing in polymer industry. The objective of this paper is to highlight recent developments and emerging applications of radiation processing in polymer and petroleum processing technologies. The emphasis will be made on the preparation of fuel cell membranes for low temperature fuel cells, specialty adsorbents for recovery of useful metals/removal of toxic chemical species from aqueous systems, nanostructuring of surfaces for tissue engineering, modification of fluorinated polymers as solid lubricants, advanced materials for biomedical applications, composites for automotive and aviation industries and upgrading of heavy oil.

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E-beam Irradiation of “In Natura” Palm: Texture and Color Evaluation

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In the last decades, palm tree (*Bactris gasipaes* Kunth) cultivation is gaining impetus to produce palm heart not only because its potential economic value but also due to its high mineral content. Food irradiation is a worldwide technology that aims to improve the product quality, in order to eliminate diverse microorganisms that can spoil the food. Irradiation processing, in the recommended doses, causes very few chemical alterations in foods, nutritional losses are considered insignificant and some of the alterations known found in irradiated foods is not harmful or