SURFACE TREATMENT OF SPECIAL HIGH-PROTEIN PRODUCTS USING LOW ENERGY BEAMS FROM MACHINE SOURCES

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Recent developments in low energy electron beam (LEEB) technology have revolutionized aseptic packaging. Advancements in electron beam technology are shrinking the footprint of the devices used to generate ionizing radiation. With the relatively recent development of reliable, compact, cost-effective, LEEBs, a new class of in-line applications is now possible. The benefits of high-speed, high efficacy treatments, with no chemicals and at room temperature, are now realized across a variety of packaging applications. Such developments are also attractive to the food industry.

According to the Diabetes Registry, over 700,000 people in Serbia suffer from this disease. They need a special diet, with as few carbs as possible and more protein. It is well known that proper and healthy food is a prerequisite for good health. Protein nutrition seems to have become very popular in recent years, both among athletes and the general population. In creating such products, it is of great importance to extend the shelf life of the product. This can be achieved by treating the product with the use of ionizing radiation, during which all microorganisms in the product would be destroyed. However, it was found that this treatment is somewhat changing the nutritional value of the product. Irradiation of the product surface with a Low Energy E-beam (LEEB) appeared as a possible ideal solution. Such a treatment would neutralize the microorganisms that are on the surface of the product and are formed mainly during the handling of the product. On the other hand, the change of the nutritional values of the product under the influence of high-energy ionizing radiation would be avoided.

The aim of this research is to collect high-protein food products whose properties will be analyzed in detail. After that these products will be irradiated with LEEB in an external institution. Based on the analysis of microbiological parameters and nutritional values after irradiation, the potential application of this technology in the production of high-protein nutrients suitable for diabetics will be established.