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### EFFECT OF IONIZING RADIATION ON THE ANTIOXIDANT ACTIVITY OF FRESH HERBS

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Fresh coriander and parsley are used in traditional kitchen. These leaves are highly perishable and have short shelf life even at refrigeration temperature. Due to cultivate techniques and handling after harvest, these produces can be contaminated with pathogens like Escherichia coli O157:H7, Listeria monocytogenes, Salmonella and Cryptosporidium oocystsof. Food irradiation is the treatment with radiant energy to obtain some beneficial effects, which include disinfestations, improvement of the shelf life by the inactivation of spoilage organisms, and improvement of the safety of foods by inactivating food-borne pathogens. Gamma-ray irradiation is now internationally recognized as an effective method for maintaining the quality of herbs for a longer time. There are not many reports of the influence of irradiation procedures on antioxidant activity of fresh herbs. The aim of this study was to investigate the impact of gamma-irradiation (1.0 and 2.0 kGy) on the antioxidant activity of fresh coriander and parsley. The content of malondialdehyde (MDA), the activity of the enzymes superoxide dismutase (SOD) and guaicol peroxidases (POX) and the antioxidant activity of ethanolic extracts were evaluated on the first, fifth and tenth day of storing at 4 °C.

The content of MDA in both species did not change with the level of gamma irradiation applied. In addition, the activity of SOD and POX and the antioxidant activity of ethanolic extracts were not affected by the irradiation treatment. These results suggest that the applied doses of gamma irradiation represent a viable treatment to increase the shelf life and reduce the microbial contamination of vegetables used as foods.



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### LC/MS/MS IDENTIFICATION OF FOLIC ACID DEGRADATION PRODUCTS AFTER E-BEAM IRRADIATION

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Folates are a group of vitamins based on the parental compound folic acid. They belong to the B vitamin group and are involved in important biochemical processes like DNA synthesis and DNA repair. Folic acid is composed of a pteridine ring, p-aminobenzoic acid (PABA) and glutamate moieties. The human metabolism is not able to synthesize folates and therefore has to obtain them from diet. Folic acid, a synthetic vitamer, is used as a food fortificant in cereals and dairy products because of its low price, relative stability and increased bioavailability compared to natural folate forms. Folic acid is known to be a sensitive compound easily degradable in aqueous solution both by sunlight, ultraviolet and visible light towards various by-products. Irradiation is a process for preservation of foods that uses accelerated electrons or high energy gamma rays, thereby ionizing molecules. Radiation doses of 1 to 10 kGy are proposed for the treatment of various food products, such as grains, dried fish, dried fruits, spices and vegetables, eliminating or reducing pathogens and insects, increasing the storage time and replacing chemical fumigants. This study concerns to identify the degradation products of folic acid after E-beam irradiation. Folic acid aqueous solutions were irradiated with a Van de Graaff electrons beam accelerator, 2 MeV (Vivirad High Voltage, Handschuheim, France) with 100 µA current, 20 cm scan width and dose rate about 2 kGy/s. Applied doses were 0 (control), 0.25, 0.5, 0.75, 1.0, 3.0, 5.0, 7.0 and 10.0kGy. Absorbed doses were monitored with FWT 60.00 radiochromic dosimeters.