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## DOES GAMMA-IRRADIATION AFFECT THE QUALITY OF FRESH-CUT WATERCRESS?

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Watercress (*Nasturtium officinale* R. Br.) is a nutrient rich perennial plant of the Brassicaceae family highly appreciated in the Mediterranean cuisine. It is eaten raw in salads, soups and other recipes and used in folk medicine due to its medicinal and therapeutic properties [1,2]. However, it has a reduced shelf-life of approximately 7 days [3]. Since most conventional preservation treatments can't extend the shelf-life without compromising the quality and consumers are more aware about the limitations and side effects of the commonly used sanitizing treatments [4], irradiation emerged as a potential and safe alternative against these conventional postharvest treatments. In this study, the effect of different doses of gamma-irradiation on fresh-cut watercress quality was evaluated. Samples were collected in Bragança region (Northeast of Portugal), rinsed in tap water and packaged in sterilized bags. Packaged samples were exposed to 0 (control), 1, 2 and 5 kGy of  $\gamma$ -rays in a  $^{60}\text{Co}$  chamber and stored at 4 °C for 7 days. Among the evaluated parameters, color was measured with a colorimeter, total soluble solids using a digital refractometer, and pH with a digital pH-meter. Macronutrients were determined using standard procedures, and hydrophilic (sugars, organic acids, phenolics and flavonoids) and lipophilic (fatty acids and tocopherols) compounds by chromatographic or spectrophotometric techniques. Furthermore, the bioactivity was evaluated in hydroalcoholic extracts through DPPH scavenging activity, reducing power,  $\beta$ -carotene bleaching inhibition and TBARS formation inhibition. Data were evaluated through Linear Discriminant Analysis (LDA) to verify if the differences induce by irradiation on the evaluated parameters could act as discriminant variables. Among the 58 studied variables, only 13 (including fructose, glucose, citric acid, some fatty acids such as linoleic and  $\alpha$ -linolenic acids,  $\beta$ - and  $\gamma$ -tocopherols and  $\beta$ -carotene bleaching inhibition) were selected in the application of LDA, which is a strong indication of the similarity between the results obtained for the remaining 45 variables. Furthermore, some of the observed differences proved to be advantageous for the irradiated samples. Thus, this study demonstrated that, up to 5 kGy, gamma-irradiation did not affect the main quality parameters of fresh-cut watercress.

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