Physicochemical, microbiological and sensory acceptance alterations of strawberries caused by gamma radiation and storage time

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Abstract

Consumer demand for food similar to one unprocessed has justified new studies seeking reduced changes in its physicochemical characteristics, the sensory acceptance and the microbiological safety. Irradiation increases the shelf life of foods, according to data in the literature. This study evaluated possible changes during the storage of non-irradiated and irradiated strawberries, the last treated at doses of 1, 2, 3 and 4 kGy, all of them stored at 8 ± 1 °C. The pH, total titratable acidity, ascorbic acid content, weight loss, firmness, the microbiota of natural contaminants and sensory acceptance of strawberries were analyzed. Influence of radiation dose and storage period on the physicochemical characteristics, microbiological quality and sensory acceptance of strawberries were observed. Although control strawberry presented better results for the ascorbic acid content, for firmness and for weight loss, it should be emphasized the effect of irradiation on inactivating mesophilic aerobics and markedly reducing of molds and yeasts. In addition, irradiated strawberries at 2 kGy presented the same hedonic mean on acceptance tests during 12 days of storage. It is suggested to use the 2 kGy dose as an alternative for strawberry conservation, since only minor changes were observed in the product during the 12 days of storage and it was the treatment that obtained better microbiological quality and maintenance of sensory acceptance during the storage period studied. Therefore, irradiation is a method that may be a substitute and could be used along with conventional methods, providing strawberries quality with a longer shelf life.