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SENSORY ANALYSIS IN GRAPES BENITAKA

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ABSTRACT

Abstract Sensory analysis is considered one of the main techniques when you want to know the organoleptic qualities of foods. Marketing strategies, showing that some foods produced organically is more nutritious, flavorful than conventional ones are affecting some consumers. The advantages of using radiation in sensory analysis are not the formation of waste, the less nutritional loss and little change in taste of food. The possibility that the fruit is harvested at more advanced maturity, when all characteristics of flavor and external appearance are fully developed is another advantage. The possibility of fruits being packed irradiated prevents contamination after processing. This type of study, ionizing radiation associated with sensory evaluation is scarce, making it necessary for future discoveries. The objective this paper was to evaluate the quality of grapes Benitaka after the irradiation process with doses 0,5; 1; 1,5 e 2 kGy.

1. INTRODUCTION

Sensory analysis is considered one of the main techniques when you want to know the organoleptic qualities of foods. The tester using the senses evaluates the characteristics of food and begins to translate the voice of the customer [1]. Marketing strategies, demonstrating that some organically produced food is more nutritious, flavorful than conventional ones are affecting some consumers. The addition of organic waste to be free, have greater longevity and better sensory characteristics, because they contain more sugars and organic acids, high nutritional value and content of dry matter and therefore have less free water in food, preventing the proliferation of microorganisms that can deteriorate the fruit [2; 3].

Should be considered physical and sensory attributes to determine the quality of a food, avoiding taking a basic individual characteristic. Physical characteristics such as mass, size and color of the fruit influence the acceptability by the consumer, whereas the intrinsic characteristics such as sweetness and acidity, among others, make up the organoleptic (sensory), both important in industrialization and consumption of fresh fruits [4].

The advantage of using radiation in sensory analysis is not the generation of waste, the less nutritional loss and little change in the taste of food. The possibility that the fruits are harvested with advanced maturity, when all of its flavor characteristics and external appearance are fully developed is another advantage. The possibility of irradiated fruit to be packaged to prevent contamination after processing. This type of study, ionizing radiation associated with sensory analysis is scarce, making it necessary future discoveries [5].

The regulatory agencies (Food and Drug Administration, Food and Agriculture Organization, World Health Organization, the National Agency for Sanitary Vigilance) as well as several scientific papers [6; 7; 8; 9] agree and confirm the efficiency of this technology, yet the market for irradiated foods has not yet reached the desired level due to lack of information to consumers.

2. MATERIAL AND METHODS

2.1 Samples

The grapes were purchased from a supermarket in São Paulo, Brazil, packed in polyethylene bags, labeled and identified. The samples were stored at refrigerated temperature of 8°C at Instituto de Pesquisas Energeticas e Nucleares (IPEN).

2.2 Irradiation Treatment

Samples were irradiated using a Multipurpose ^{60}Co Irradiator at Instituto de Pesquisas Energéticas e Nucleares – IPEN/CNEN. The applied dose was control; 0,5; 1; 1,5 e 2 kGy with dose rate of 3kGy/h. Harwell Gamma Chrome YR Bath dosimeters were used for the measurement of radiation dose. After irradiation, the samples were immediately stored at 8ºC.

2.3 Sensory analysis

The sensory evaluation of fruit after acceptance of ABNT [10] was performed after 3 days of irradiation and referred to the Dietetic Laboratory Technical School of Public Health / USP, in individual cabins, suitable for the practice of analysis.

We selected 30 panelists (staff and students) are not trained and instructed to perform a comprehensive evaluation (color, flavor, texture, appearance). For samples of each panelist received Benitaka grape berry each treatment (± 15 g). As for the samples of raisins, raisins testers received 3 (± 2 g) of each treatment, which also were placed in cups coded with three digits.

We employ unstructured hedonic scale of 9 inches, anchored at the ends with the words "dislike extremely" and "liked very much" with an appropriate field for any comments of the judges (Fig. 1).

You are receiving coded samples of grapes "in nature." Please rate how much you liked or disliked the same using the scale below:

9. I liked very much
8. I really enjoyed
7. I liked slightly
6. indifferent
5. Not liked / disliked or
4. dislike slightly
3. dislike moderately
2. much disliked
1. disliked very much

Sample No.: _____ Amount: _____

Comments
_____
_____
_____
_____
_____
_____

Figure 1. Data Sheet for the sensory evaluation samples of grape variety Benitaka

3. RESULTS AND DISCUSSION

According to the results of the grape variety Benitaka, the average acceptance (Table 1) indicated that both the irradiated and control samples (0.5 to 2 kGy) were accepted. However, the use of 2 kGy significantly reduced ($p < 0.05$) the acceptance of this fruit when compared with other samples. The testers reported that the samples treated with doses 1 and 2 kGy had its consistency (texture) of "old". Probably these samples to be acquired in the market already showed signs of maturation more advanced, so the radiation treatment did not show the expected result.

Table 1. Average sensory acceptance of the grape variety Benitaka

Dose	Tasters	Average
Control	30	7,27[a]
0,5 kGy	30	7,30[a]

1 kGy	30	6,10[b]
1,5 kGy	30	6,53[ab]
2 kGy	30	5,97[b]

Means followed by same letter in the column is not statistically different at 5% probability by Tukey test.

Already in control samples and 0.5 kGy on the scale refer to "like extremely" and "really liked" the comments were positive, ie, the "fruit was juicy and sweet," and thus their average higher than the other treatments. Thus, one can say that with increasing doses, the sensory characteristics of the texture of the fruit, showed a variation in the acceptance of the tasters.

In cases of papayas irradiated with a dose of 0.75 kGy, the panel distinguished the fruit with characteristic firmer, but the firm was not the only factor for greater acceptance, but other organoleptic differences caused by irradiation that could have affected the test [11].

Studies to fruit açaí, the dose of 1kGy showed no difference in sensory characteristics even though only 16 tasters [12]. Another author [13] by using the same scale for sensory analysis in guavas irradiated with doses from 0.3 to 1.2 kGy associated with cooling, concluded that although there was no significant difference between the different doses, irradiation had a positive effect on these characteristics as in "sweetness" of the fruit.

According to some authors, it was also found that the radiation dose of 1 and 2 kGy did not significantly affect the flavor, color and appearance of *Smooth cayenne* pineapple minimally processed [14].

Irradiation can cause lipid oxidation in fruit pulp rich in lipids. With this, the grapes contain anthocyanins that these lipids may radioproteger avoiding any unpleasant taste that the accepted treatments in this test can be developed [15].

4. CONCLUSIONS

Samples of grape variety Benitaka treated in control and 0.5 kGy doses had an acceptance in sensory quality. The radiation treatment did not cause change in taste of raisins, according to tasters.

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