

## SENSORIAL ANALYSIS OF PEANUTS PROCESSED BY E-BEAM

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### ABSTRACT

The development of the sensorial analysis was influenced by frequent changes in the technology of production and distribution of foods. Currently the sensorial analysis has represented a decisive part in some sectors of the nourishing industry with the purpose to improve the quality of its products. The food irradiation has as purpose to improve the product quality, in order to eliminate the diverse microorganisms that can spoil the food. The process of irradiation in the recommended doses causes very few chemical alterations in some foods, the nutritional losses are considered insignificant and some of the alterations known found in irradiated foods is not harmful or dangerous. The present study evaluated the sensorial characteristics of peanuts processed by electron beam machine and was made a test of acceptance using a hedonic scale. Samples of peanut had been processed in the doses of 0, 5 and 7kGy. Thirty volunteer panelists had participated of that acceptance study. The evaluating parameters were: appearance, odor and flavor. The result showed that the consumers had approved the peanut in the dose of 5 and 7 kGy, not having significant difference between the samples controlled and irradiated.

### 1. INTRODUCTION

The peanut (*Arachis hypogaea*), is a native leguminous cultivated in South America and in the most varied tropical regions of the world, for its large adaptability to a great environment diversity. The economic importance of the peanut is related to the fact of the seeds possess pleasant flavor and to be rich in oil and protein. Moreover, it contains carbohydrate, minerals and vitamins, consisting in a highly energy food. The pleasant flavor becomes the peanut a product also destined to the consumption "in nature", as appetizer salty, toast and chemical preparation of diverse forms and in the industry of candies, as supreme whole number with diverse coverings or worn out grains in the form of "paçocas". Beyond the consumption "in nature", the grains also can be used for extraction of the oil, used directly in the feeding human being, the industry of conserves and medicinal products [1,2,3].

The food irradiation comes being studied has some years as an alternative for the conservation and disinfection of foods. Although still seen for many with some restrictions, extremely efficient insurance and in specific applications for the main regulators agencies are considered: World-wide organization of the Health, International Agency of Atomic Energy and National Agency of Sanitary Monitoring. The irradiation constitutes in a method capable to diminish the economic losses proceeding from deterioration and the elimination of pathogenic being increased the level of security of foods and favoring the acceptance of the

products. The irradiation also destroys the microorganisms causing of illnesses, also the worms, parasites and the insects that spoil stored foods [4,5,6].

The sensorial analysis supplies to important information on the perception human being on a product that can have suffered to important alterations due the ingredients, processing, packing, life of shelf among others factors that can modify a product. Many times what he is significant instrumentally and analytically, are not perceivable sensorial for the consumer. Therefore the importance of if carrying through sensorial tests to conclude a research where the opinion of the consumer is of extreme relevance [7,8].

The present work aims to evaluate the sensorial characteristics of peanut "in nature" processed by ionizing radiation.

## **2. MATERIAL AND METHODS**

### **2.1. Material**

Peanut samples had been acquired in the São Paulo market. The peanut grains had been conditioned in plastic packing contend 200g approximately each.

### **2.2. Methods**

#### **2.2.1. Irradiation**

The samples of peanut grains had been irradiated in its bags with doses of 0, 5 and 7 kGy at the Institute of Energy Research and Nuclear (IPEN-CNEN/SP), using an electron beam machine of the Radiation Dynamics Incorporation - USA.

#### **2.2.2. Sensorial test of Acceptance**

Acceptance test, was carried using 30 panelists in the food laboratory analysis' at CTR- IPEN (Radiation Technology Center) located in São Paulo. The samples of peanut grains "in nature" had been served in codified plastic cups with three different digits. Each sample was followed of an acceptability code (fig. 1), using hedonic scale of 9 points for its evaluation.

You are receiving three samples from peanut grains. Two of them had been processed for radiation (or irradiation) and to another one not. It tries, first, the sample of the left, takes a little of water and later it tries the samples following. Using the scale below, of one it notices that it identifies its degree is satisfaction to the product, whit relation to flavor, odor and appearance.

- 9- Very like
- 8- Moderately like
- 7- Slightly like
- 6- Little like
- 5- I did not like, nor did I displease
- 4- I did not like moderately
- 3- I did not like slightly
- 2- I did not like little
- 1- I did not like

Sample _____	Sample _____	Sample _____
Appearance: _____	Appearance: _____	Appearance: _____
Odor: _____	Odor: _____	Odor: _____
Flavor: _____	Flavor: _____	Flavor: _____

Commentaries: \_\_\_\_\_

**Figure 1.** Informative model of the register of sensorial analysis of peanut grains.

### 2.2.3. Statistical Analysis

The data were evaluated through variance analysis (Anova)  $p < 0.05$ .

## 3. RESULTS AND DISCUSSION

The acceptance of evaluated test for sensorial attributes in peanut grains observing the parameters of appearance, odor and flavor in the irradiated samples (5 and 7 kGy) and in the control shows that no difference were found. This test was carried out to verify some sensorial change observed by the consumers, in relation to the different radiation dose response. The result variance analysis for the parameters appearance, odor and flavor (table 1, 2 and 3) demonstrates that the calculated F is smaller than the F standard, therefore the irradiated samples with 5 and 7 kGy had not presented significant difference in relation to the control in a significance level of 95% ( $p < 0,05$ ).

**Table 1.** Analysis of Variance in the parameter appearance.

C.V.	G.L.	S.Q.	Q.M.	F calculate
<b>Samples</b>	2	1.093	0.55	0.34
<b>Panelists</b>	29	43.96	1.52	-----
<b>Residue</b>	58	94.90	1.63	-----
<b>Total</b>	89	139.96	-----	-----

**Table 2.** Analysis of Variance in the parameter odor.

C.V. <sup>a</sup>	G.L. <sup>b</sup>	S.Q. <sup>c</sup>	Q.M. <sup>d</sup>	F <sub>calculate</sub> <sup>e</sup>
Samples	2	1.26	0.63	0.046
Panelists	29	92.76	3.20	-----
Residue	58	800.08	13.79	-----
Total	89	894.10	-----	-----

**Table 3.** Analysis of Variance analysis in the parameter flavor.

C.V. <sup>a</sup>	G.L. <sup>b</sup>	S.Q. <sup>c</sup>	Q.M. <sup>d</sup>	F <sub>calculate</sub> <sup>e</sup>
Samples	2	7.76	3.88	2.41
Panelists	29	45.79	1.57	-----
Residue	58	93.58	1.61	-----
Total	89	147.13	-----	-----

<sup>a</sup> C.V: Coefficient of Variation

<sup>b</sup> G.L: Degree of liberty

<sup>c</sup> S.Q: Sum square

<sup>d</sup> Q.M: Square middle

<sup>e</sup> No significative difference. ANOVA p<0.05.

#### 4. CONCLUSION

It was possible to conclude through the sensorial analysis of peanut that did not have significant difference between the samples as well as in the control and in the irradiated.

#### 5. ACKNOWLEDGMENTS

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