

RESEARCH REGARDING THE SENSORY CHARACTERISTICS OF SOME VEGETABLES

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Abstract

Fruit and vegetables quality is an extremely complex problem, difficult to describe objective. Although the consumer is unable to assess the nutritional quality of a fruit or vegetable, however he is able to make a statement on the sensory aspects such as shape, color, texture, juiciness, firmness, taste and aroma. Consumers often complain about the quality of fruit and vegetables, which are offered through commercial distribution systems. The main complaint relates to taste bad and sometimes its absence. However, when it comes to defining exactly what "taste", the answers obtained are not clear and, in general, are quite divergent. Researches try to define some connections between quantitative and analytical determinations type hedonic sensory analysis. They were directed to analyze the quality of vegetables in two distinct directions, namely the analysis of physicochemical and biochemical characteristics that contribute to the scientific definition of taste: pH, acidity, total carbohydrate content, firmness and sensory analysis on issues such as shape, color, texture, juiciness, firmness, flavor and aroma.

Key words: sensorial determination, cucumber, tomato, pepper

INTRODUCTION

Sensory analysis measures how foods interact with the human senses (taste, smell, sight, touch) and how they are perceived properties of foods.

Basics of sensory analysis were established in the United States during and after the Second World War, when the government wanted to improve the quality of food provided for the army. It is recognized that, even if food is highly nutritious, they can not be consumed due to poor perception of sensory properties [14]. Sensory methods have been developed, mainly for economic reasons, because they allow to establish acceptance values for any food.

Sensory analysis is a multidisciplinary subject. In recent years, contributions from different scientific fields such as psychology, physics, chemistry, neuroscience and statistics allowed to increase considerably the potential of this analytical tool.

Four basic methods of sensory evaluation are generally used:

- Methods of analysis are discriminatory and determining differences between samples.

- Descriptive tests can determine the nature and intensity attributes in a given sample.

- Hedonic tests that allow obtaining information on the preference and acceptance of products.

- Tests for determining threshold sensitivity of a given stimulus or compound [11, 13].

Sensory differences are made in pairs for comparison, where tasters are asked to taste two or more samples and then to mark on a paper test some attributes such as color, taste (aroma, acidity, sweetness, bitter), odor and an overall assessment of the food. In all tests, tasters are allowed to comment, so that they could explain, sometimes, their choice [8, 12]. Hedonic tests play an important role in assessing consumer acceptance of food. Overall, more than 20 people involved in hedonic tests. They communicate their feelings such as like or dislike the statements, evaluation sheets [3]. Obtaining data are usually qualitative.

Hedonic testing is popular because it can be done by inexperienced people and experts [4]. Samples are generally one by one to each

topic and are asked to decide how much he / she likes or dislikes. Decision is given by a mark on a scale [6] and so the subject is able to express their own perception of quality [16].

Hedonic scale with nine stages is different, ranging from "bad" to "excellent". These words are placed on a graphic scale. Many different types of scale can be used [9]. Hedonic assessment scores are converted to and treated by rank analysis or analysis of variance.

Hedonic scale tests are used for consumption [5, 10]. Very important are the characteristics of subjects, respectively tasters can be no margin of acceptance or waiting their influence results [1].

Quality fruit and vegetables is an extremely complex, difficult to describe objectively. The consumer is unable to assess the nutritional quality of a certain fruit and vegetables, yet he is able to make a statement on the sensory aspects such as shape, color, texture, juiciness, firmness, flavor and aroma.

Sensory properties of fruits and vegetables include flavor (taste and aroma), texture and appearance. Taste and flavor are considered more important than texture, because they reflect some internal qualities, that sensory quality [7].

However, it has been shown that what people really have reflected about their taste and smell with their nose papilla reflects only 20-40% of taste perception [15]. It is believed that scent plays a more important than taste in determining that the overall assessment of fruit quality. This is easy to prove that it is difficult to identify flavor if airflow through the nose is restricted [2].

In recent decades, horticultural research priorities were established on cultivars of vegetables or fruit to be cultivated to achieve higher performance, high resistance to disease and to transport and deliver a higher shelf such that a low perishability.

Some sensory aspects were also considered that the product appearance (shape, color). These parameters are undoubtedly useful, because they are easy to be assessed on the sorting lines.

Consumers complain more quality fruit and vegetables, which are offered by commercial systems of food distribution. The main concern of the complaint is bad taste and even its absence.

In recent years, fruit and vegetable industry was present, using automatic quality assessment, by measuring firmness, juicy, total acidity and sugar and also pH. Unfortunately, the main quality factors such as smell and flavor are not measurable with currently available analytical devices.

MATERIAL AND METHODS

For conducted research there were compared two cultivars of cucumber type Farbio (Luxury F1 and Pasalimo F1 cultivars) and three cultivation type cornichon (Rytm F1, Zeina F1 and Renato F1) grown in three known vegetable areas: Matca, Pucheni and Periș. Type of culture is in greenhouses, growing period was March to May 2012, harvesting was done on 8 May 2012.

After collection, samples were brought for testing to laboratories Veterinary Medicine Bucharest. Samples were washed and prepared for testing.

Each taster had distributed - one cucumber sample which was cut into several portions on the long and so we have medium samples; they were placed on a plastic plate that had sample number.

For each taster and for each sample were specific questionnaires that included some preliminary instructions as well: You will receive samples of vegetables or fruit, you are asked to appreciate the smell, taste and texture, please appreciate the intensity of each sample without compare them and fill in the table that containing more points on the color, smell, taste, firmness and an overall assessment of the vegetables.

The assessment was performed with a scale of 1-9, respectively from "very weak" to "very hard" for each sense separately. These notes have been taken into account and using a star-chart was made interpretation of results.

RESULTS AND DISCUSSIONS

The results of Farbio cucumbers type sensory analysis shows that location Pucheni determined to obtain better quality fruit, in the judgment of tasters majoring in color, odor, flavor and sweetness, characteristics that have established an overall assessment point 6.58.

Table 1. Results of Farbio cucumbers sensory analysis

Specif.	Color	Odor	Flavor	Sweetness	Acidic taste	Bitter taste	Overall
Farbio Matca, Pasalimo F1	5,12	4,59	4,72	4,94	2,29	1,82	5,41
Farbio Pucheni, Luxury F1	6,12	5,32	5,25	5,48	2,00	0,82	6,58

Cucumbers from Matca, Pasalimo, had a more acidic taste including bitter parts so overall was around 5.41 value (Table 1).

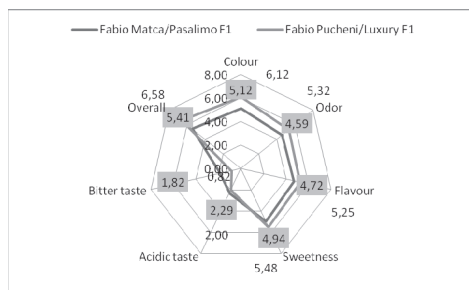


Fig. 1. Diagram of the statistical interpretation of Farbio type cucumbers

From the statistical interpretation of the diagram (Fig. 1) can be seen that there is overlap of characteristics taken in assessing cucumbers but higher notes were obtained from the cultivar Luxury F1 from Pucheni area.

Table 2. Results of cornichon cucumbers sensory analysis

Specification	Color	Odor	Flavor	Sweetness	Acidic taste	Bitter taste	Overall
Cornichon Matca/Rytm F1	6	4,75	5,05	4,75	2	2,4	5,75
Cornichon Pucheni/ Zeina F1	6,55	5,15	6,55	6,3	2,05	1,9	7,25
Cornichon Periş/Renato F1	7,4	6,2	6,9	6,9	2,5	2,3	7,4

Sensory analysis was conducted also to the cultivars cornichon cucumbers which were harvested at physiological maturity of three locations: Pucheni, Matca and Periş.

Overall of cucumbers shows that the highest value of 7.4 was obtained at the Periş, at Renato F1 cultivar, followed by Pucheni, Zeina F1 cultivar with 7.25 value and the last was cornichon from Matca, cultivar Rytm F1.

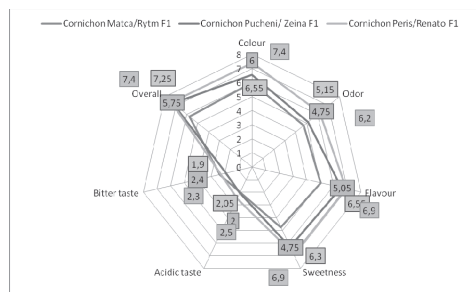


Fig. 2. Diagram of the statistical interpretation of cornichon type cucumbers

In terms of color, the best cultivar was Renato F1 with 7.4 note followed by Zeina F1 with 6.55 note (Table 2). The same trend is observed in terms of smell and taste and the best cultivar was also Renato F1 followed by Zeina F1.

Statistical analysis based on the diagram shows that are balanced in terms of sensory characteristics were Renato F1 and Rytm F1 cultivars from Periş and Matca, and Zeina F1 cultivar is unbalanced in terms of taste.

CONCLUSIONS

Sensory analyzes performed on cucumbers grown in greenhouses and solariums in our south have revealed the following:

Analysis of the results of Farbio type cucumbers sensory analysis shows that location Pucheni determined to obtain better quality fruit, in the judgment of tasters majoring in color, odor, sweetness and flavor, characteristics that have established an overall assessment point: 6.58. Cucumbers from Matca, Pasalimo, had a more acidic taste taste including bitter parts so general appreciation was around 5.41 value.

Statistical interpretation of the diagram can be seen that there is overlap of characteristics

taken in assessing cucumbers but higher grades were obtained from the cultivar Luxury F1 from Pucheni.

Overall of the cornichon cucumbers type shows that the highest value of 7.4 was obtained at the Periş, Renato F1 cultivar, followed by Pucheni, Zeina F1 cultivar with 7.25 and the last Rytm F1 cornichon cultivar from Matca area.

Statistical analysis based on the diagram shows that are balanced in terms of sensory characteristics were Renato and Rytm F1 cultivars, from Periş and Matca areas, and Zeina F1 cultivar is unbalanced from the point of view of taste.

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