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Jicama a Healthy Appetizer

La Jicama un Aperitivo Saludable

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Abstract

Healthy eating provides the human body with the nutrients and vitamins necessary to prevent ailments that are caused by not having a good food consumption, the most common diseases in Ecuador are diabetes, overweight, colon cancer and high cholesterol levels. The production and commercialization of Jicama yogurt is proposed as a healthy snack, being the Jicama a tuber that provides nutrients that prevents and works as a treatment against diabetes. A market study was conducted to establish the supply and demand of the product, through a 12-question survey conducted as a pilot plan to the economically active population of the Belisario Quevedo sector, in the city of Quito-Ecuador, applied to 378 people from the identified market segment. The results showed that 97.35% of the product was accepted and the tendency to buy the 1-liter container for a price between \$4-\$6 is contemplated. It is concluded that the proposal of this aperitif is viable, due to its level of acceptance and its curative and nutritional benefits.

Keywords: Appetizer, Diabetes, Jicama, Nutrition, Nutrition

Abstract

Healthy eating offers the human body the necessary nutrients and vitamins to prevent discomforts that are caused by not having a good consumption of food, the most frequent diseases in Ecuador are diabetes, being overweight, colon cancer and high cholesterol levels. The production and commercialization of Jicama yogurt is proposed as a healthy organic snack, with Jicama being a tuber that provides nutrients that prevents and works as a treatment against diabetes. A market study was carried out, which allowed to establish the supply and demand of the product, through a survey of 12 questions carried out as a pilot plan to the economically active population of the Belisario Quevedo sector, city of Quito-Ecuador, applied to 378 people from the identified market segment. From the results it was possible to show the acceptance of the product of 97.35% and the trend of purchase of the 1 Liter container is contemplated, for a price between \$ 4- \$ 6. It is concluded that the proposal of this aperitif is viable, due to its level of acceptance and its curative and nutritional benefits, as well as promoting the production of beverages based on organic products and their contribution to the agrobiodiversity of Ecuador.

Key words: Diabetes, Jicama, Nutrition, Organic Appetizer,

Introduction

In recent years, diseases derived from poor nutrition have increased considerably, as consumers adopt eating habits based on pre-packaged food and food prepared outside the home Sánchez-Castañeda, (2014). Food plays an extremely important role in the life of every human being Parra & Cámara, (2017). A healthy diet is determinant for the good health status of people at any stage of their life cycle, this diet should contain essential nutrients (Álvarez-BorrotoBorrotoet al., 2017, p. 54). Poor nutrition not only affects weight but also brings serious health consequences, eating habits is part of the food culture that a person acquires throughout his or her life (Alejandro, 2014). The alarming figures of global prevalence of obesity and overweight are a cause for alarm and great concern. This is reflected in WHO data, According to Durán-García in Ecuador, the National Health Survey revealed that, between the ages of 19 and 60 years (2014, p. 87), the prevalence of overweight and obesity was 62.8%; more in women 65.5% than in men 60%, Durán-García, (2014).

The Ecuadorian Society of Food Science and Nutrition, conducted a study focused on the possibility of acquiring chronic non-communicable diseases such as Diabetes Mellitus Type II, caused mainly by poor diet that leads in many cases to obesity, which currently has become a chronic disease that causes serious health risks. For the Ecuadorian society this reality is not alien. According to the Ministry of Public Health, through the National Institute of Statistics and Census (INEC), diabetes is the second leading cause of death in the country: in 2010 there were at least 4,017 people with diabetes who died. For this reason, efforts are being made so that this type of health condition can be controlled and reduced in order to improve people's quality of life. One of the strategies that can be used to prevent it is through the promotion and dissemination of healthy food products CorchueloOjeda & Soto Llanos, (2017).

One of the tubers known for its potential nutrients and medicinal benefits against metabolic diseases is the Jicama (*Smallanthus sonchifolius*) for Monroy-Parada et al, (2021) the usable

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parts of Jicama are the leaves and roots, the roots are edible fresh, baked or industrially processed, must be peeled prior to consumption, for its mineral content (3.73%) and total sugars (22%) is considered as a natural rehydrating and could be an alternative in the design of diets for diabetics Benaziziet al., (2021), Bretón et al., (2021) and (Pérez-Jiménez et al., 2018) agree that numerous studies have revealed that Jicama juice could effectively lower blood glucose levels and reduce the risk of cardiovascular diseases Arriscado et al., (2015). In diabetic patients the most important thing is to keep their blood glucose levels under control, for which in addition to pharmacological treatment should be complemented with a balanced diet of foods, containing the necessary nutrients and providing a low amount of calories (Ferrer et al., 2009, p. 32). In the local market there is no supply of products that meet the caloric requirements of a diabetic patient, for which the production and marketing of Jicama yogurt is proposed as a healthy organic snack. The document is organized as follows: in the materials and methods section, the benefits and characteristics of the product are established, the segmentation with the respective geographical dimensions will be carried out, the sampling plan will be detailed through the calculation of the sample and the application of the survey to the residents of the northern sector of the city of Quito. In the Results section, the acceptance of the product for production and commercialization is indicated. Finally, conclusions and future work are presented.

Materials and methods

This study is conducted under a quantitative approach, cross-sectional in that it analyzes the current perception of individuals against a new product, this work focuses on the segmentation study of the company producing and marketing natural jicama yogurt, the economically active population of the parish Belisario Quevedo of the city of Quito, Ecuador, was considered through a survey as primary information, then the respective tabulation and interpretation, for the feasibility of product design and analysis of results. We propose the production of natural yogurt based on Jicama root, with a moderate price and that provides an alternative natural drink low in sugar, for (problem).

The main characteristics and benefits of the product are shown in Table 1.

Table No. 1 *Characteristics Vs. Benefits*

Product	Features	Benefits
Natural yogurt jicama	<ul style="list-style-type: none"> • 250 ml, Liter, Gallon containers 	<ul style="list-style-type: none"> • Low caloric intake • Helps fight diabetes • Lowers blood pressure • Combats constipation • Improves the nervous system • Reduces the risk of cancer

The market to be covered for the development of the research will be in Ecuador with 17'466,640 inhabitants, Sierra region with 6'081,342, province of Pichincha, city of Quito with 2'239,191 inhabitants, was taken as reference the economically active population of the parish Belisario Quevedo, which according to the indicators National Institute of Statistics and Census year 2010 is 23. The following statistical formula was applied to obtain the sample that will be used for data collection through the survey tool, therefore, since it is a finite population, the following formula will be used.

$$n = \frac{Z^2 * P * Q * N}{e^2(N - 1) + Z^2 * P * Q}$$

Equivalencies:

n = Sample size.

Z = Confidence level Z = For 95% confidence, Z = 1.96

P = Probability of occurrence.

Q = Probability of non-occurrence.

N = Size Population or universe N = 23,495 taken from INEC 2010

e = Sample error (5% - 7%). e = Permissible 5% = 0.05

$$n = \frac{Z^2 . P . Q . N}{e^2 (N - 1) + Z^2 . P . Q}$$

$$n = \frac{(1,96)^2(23.495)(0,5)(0,5)}{(0,05)^2(23.495 - 1) + (1,96)(0,5)(0,5)}$$

$$n = 378$$

It is visualized in the equation the application of 95% confidence and 0.05 of error, generates a result of 378 people. A survey of 12 questions directly related to price, place, product, promotion and acceptance of Jicama Yogurt was applied as an instrument.

Result

Once the survey was applied, 378 people between 175 men and 203 women consumed yogurt, 98.94% of the respondents indicated that they do buy yogurt and 1.06% stated that they do not buy yogurt. Figure 2 shows that 51.06% of the respondents stated that the reasons for their consumption are for its nutritional value, 35.19% for a healthier lifestyle, 7.41% prescribed by their doctor and 6.35% for other reasons, as shown in Table 2.

Table 2. *Sample results of yogurt consumption ratios*

OPTIONS	FREQUENCY	PERCENTAGE
For their nutritional value	193	51,06%
Prescribed by your physician	28	7,41%
Healthier lifestyle		35,19%
Other specify		6,35%
TOTAL	378	100%

It is also shown that 97.35% of the people surveyed are interested in having a natural jicama yogurt and 2.65% said the opposite. 48.41% of the people surveyed would be willing to pay between \$ 4.00 and \$ 5.99 for a gallon of yogurt, 32.80% would be willing to pay between \$ 0.80 and \$ 1.99 for a 250ml yogurt and 18.78% would be willing to pay between \$ 2.00 and \$ 3.99 for a liter of yogurt. When asked, by what media would be ideal for you to receive information about our new products; 89.42% of the people surveyed would like to receive information through social networks, 5.29% through flyers, 2.91% through the radio and 2.38%.

At present, Ecuadorians are concerned about the consumption of healthy food, since it is observed that most of the respondents are women and a minority are men; this is because at the national level women are the ones who buy the products consumed by the family; In addition, they do buy yogurt, which affirms that yogurt is a fundamental part of the diet of Ecuadorians and that the trend in the demand for this product is increasing significantly, so its frequency of consumption is weekly, which means that the product is in high rotation in the local market for its nutritional contributions and for a healthier lifestyle. Additionally, most of the respondents would be interested in the existence of a Jicama Yogurt in the market, it is observed that they have preference in the presentation of a liter of yogurt with a price willing to pay for a gallon of yogurt from \$4.00 to \$5.99; and they can buy it in stores and supermarkets, receiving information about promotions through social networks.

Conclusions

In the introduction we talked about diabetes and the incidence it has in Ecuador, the Jicama in a native tuber of Ecuador, consumed in ancient times by our ancestors, rich in potassium, magnesium, calcium low in caloric content, is used both its roots and leaves, so through the market study was established supply and demand for the product based on Jicama, it is observed that through the survey, It is feasible to produce and market Jicama Yogurt as a healthy snack, since it is a tuber that provides health benefits, especially for diabetics due to its low caloric content. Thus, out of 378 people, 368 would be willing to buy a Jicama Yogurt for consumption, resulting in 97.35% acceptance of the product in the market. The use of the main

ingredient, jicama, offers a variety of preparation options, which in the future can be investigated for other food products to be offered in the market.

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