

# Review

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## La chía, alimento alternativo para consumo humano

*Chia, alternative food for human consumption*

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### Resumen

El presente trabajo pretende hacer un recuento del estudio sobre la chía de Cándido González Pérez, economista, sociólogo y doctor en ciencias de la educación, nacido en México. Actualmente labora en la Universidad de Guadalajara como Investigador SNI nivel I, en la línea de investigación migración hacia Estados Unidos dentro del área de ciencias sociales en el Centro Universitario de los Altos.

Asimismo ha escrito otras obras, como *Ex braceros: un problema migratorio con pasado y presente* (2015); *Historia y cultura regionales: patronos y mártires alteños* (2013); *Migrantes exitosos del área de salud: ¿fuga o ganancia de cerebros?* (2013); y *Se voltearon los papeles. La migración de las mujeres a Estados Unidos* (2011).

**Palabras Clave:** chía, alimento, consumo.

## Abstract

The present work aims to take stock of the study on the chia's Cándido González Pérez, Economist, sociologist and doctor in Education Sciences, born in Mexico. He currently works at the University of Guadalajara as researcher SNI Level I, over the migration research to the United States in the area of social sciences in the University Centre of Los Altos.

Has also written other works, such as *Former braceros: a migratory problem with past and present* (2015); *Regional history and culture: Patron Saints and martyrs of El Alto* (2013); *Successful immigrants in the health care profession, brain drain or brain gain?* (2013); and *Tables are turned. The migration of women to United States* (2011).

**Keywords:** chia, food, consumption.

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## Introduction

### **Chía, an extraordinary food**

The work of Dr. Cándido consists of two parts. The first makes a historical tour of the chia, their characteristics and their advantages. The second presents the perspective of the producers of this food in the Region of los Altos de Jalisco, who have guarded the tradition of cultivation, their different ways of planting and its route to industrialization.

### **Part I**

To understand and put into context the topic is necessary to begin by talking about the origin, definition, and uses the Chia. According to the dictionary of the Royal Spanish Academy, the word chia or chian means seed of a species of salvia, which in turn comes

from the nahuatl word *oily*. The chia or *salvia hispanica*, commonly known as is apparently native to Mexico and Guatemala. It was cultivated by the Aztecs, the Mayans and other indigenous Mesoamerican, becoming one of their main food, which attributed medicinal, religious, culinary, artistic and cosmetic properties. In the city of Tenochtitlan were used to harvest about 3 350 tonnes of corn, amaranth and chia, and the Aztecs received as tribute to 15 000 tons from 20 different communities, information that may substantiate through records from the Mendoza Codex. The Aztecs roasted the chia or ground it into flour to preserve it better, even for years; for its part, the messengers and warriors ate it whole on long journeys that lack, taking advantage of its nutrients and properties. After the arrival of the conquistadores to the Nueva España, Fray Bernardino de Sahagún, considered by many as the first anthropologist interviewed indigenous elders about their daily lives and wrote their answers long after in the Florentine Codex. There he describes their customs and traditions, including the cultivation and uses of this precious seed. Due to the cultural and religious importance of the chia in the Aztec culture, the conquistadores banned its cultivation and ordered that it be replaced by grains such as wheat and barley.

The chia is a herbaceous plant of annual growth with desert features since it requires little watering, it perfectly grows in sandy and clayey soils, resists insects, pests and diseases, but it is sensitive to frost. On the other hand, is considered to be an excellent candidate for organic crop production. The plant can reach up to 1.5 meters tall, has dark green leaves, oval and serrated, with small peaks with flowers of colors that can be purple, white or blue with valuable index of pollination. Seed measured approximately one millimeter in width and two long, is oval, have a shell or bright colors white and dark cover, which when it is immersed in water produces a semitransparent viscous substance called mucilage. As an interesting fact is known that it contains a wide range of Polyphenolic antioxidants, which act to protect the seed from its chemical and microbial decomposition, making it possible to store it for years without losing you taste, smell and nutritional value.

Spacious health benefits, as well as its nutritional value. The chia is a concentrated source of fatty acids from plants rich in Omega 6, but above all of Omega 3; It is also rich in dietary fiber, protein, calcium, iron, magnesium, vitamins, zinc and antioxidants. Although

other similar seeds should be ground to improve their nutritional benefits, chia seed is easy to consume and Digest; In addition it can be consumed in ways varied gastronomy, for example, combined with cereals or yogurt, used in the development of cereal bars, biscuits masses and breads, as well as elaborate drinks natural water-based or with fruit, milk, juices and puddings; they can also sprout is and consumed fresh, being ideal for salads and sandwiches all. Due to its high content of fiber and its ability to expand in the form of gel, can be used as suppressive of appetite since it contains properties that regulate the intestinal tract, it also reduces the risk of diseases of the heart, stroke and cancer. It also controls diabetes, Dyslipidemia, and hypertension, and acts as an anti-inflammatory, antioxidant, anticoagulant, laxative, antidepressant, anxiolytic and analgesic.

## **Part II**

The author also mentions the 250,000 species of plants that exist in the world, of which only 150 are cultivated for consumption, one of them chia. Its cultivation was reduced dramatically over the past centuries degree almost disappeared due to the size of the seed and harvesting as well as the prohibition of which was the subject by the Spaniards. Later, in the late twentieth century, again it took boom and was cultivated catching on in the United States as pet food in the decades of the seventies and eighties. Now cultivated commercially valuable in countries like Guatemala, Peru, Bolivia, Argentina, Australia and the United States as well as in parts of Mexico, as the region of the Altos de Jalisco.

In 1932 only 38 hectares throughout the republic, of which 26 belonged to the state of Jalisco were grown; then increased production in 1935 to 93 hectares, of which 75 belonged to Jalisco, about half of the production of the municipality of Acatic. The production yield varies due to various factors, for example, production habits of each region, quality of the soil, the amount of irrigation, fertilizers used, among others. Ayerza and Coates believe that farmers Acatic are the custodians of the tradition of cultivation of chia as they follow the customs of the ancient Nahuatl, knowledge that has been passed down for generations, an important factor for continuing to give the seed factor.

Other data for other interesting of which the author speaks through anecdotes and memories of childhood, is the traditional way as it was grown, harvested and sold this grain, and the modifications that have been made to the process of planting along the years. In the village of Acatic, where the earth is red and migajón, ideal for planting chia, villagers have to be planted in one hectare making a furrow in the ground, where they dropped the seeds through the hole that was made to a bottle. They do not put "task" (herbicide), as is now customary. When harvest time came, the cut with a sickle, clipping the put on a cart and carried in an era (space land to work), made batteries and the same wagon the trod around and around, then gave with hoeing, separating the trash or tasole and leaving almost clean. Then to eliminate small trash as possible used a pitchfork or stick with a pitchfork where reloaded the small sieve, placed the seed with the trash was left shaking and the wind to carry the light trash as possible.

They harvested about 25 kilos per hectare which chia tablita being called as a small-rectangle and then moved to the city of Guadalajara to the food market to sell for kilo. Several Acatic farmers planted one hectare at a time because it was much work to azadonarla. So many people grew rather for self consumption.

Over time they began to make some changes in the separation of chia, consisting of putting a wall and part of the floor with cement to separate more easily and not queasy with the earth, being more comfortable underfoot and azadonarla to separate the trash. He recently started using modern machinery for planting and harvesting. Moreover, the soil is prepared from the dry season; once it has begun rainstorm allowed to leave the grass and using seeders seed is sown. According to growers, the formula is to put 5 liters of herbicide, 6 kilos of seed and 10 kilos of powdered insecticide per hectare. One of the keys to reap greater volume was used tractors and herbicides, and separate it with threshers. A most important recommendation is that you never sown from seed harvested on the same site.

Another interesting fact is the time that is chosen for planting, which is every year. This happens in the rainstorm of July. Unlike corn begins to sow earlier this month, with chia have to wait 22 days to a month as the rains begin, because it needs to grow weeds and later

remove it and continue planting. Always sow between 5 and July 20, although this depends on the time; and also it is considered a good time to harvest 18 or Nov. 20, but when normal season and the floor is completely dry, ready to thresh and extract the seed. One of the growers states: "There is a critical time for chia, it is when we say it is fruteando, when in the last ripening process; for example, at the beginning of November there may be icy cold fronts or so considering that the plant is sensitive to drastic temperature change, specifically the cold, the risk of losing the crop runs. Another climate factor that can affect the crop is rain when this has to be done; not spoiled but it turns green. "

Meanwhile, the author of the book mentions that "white chia is earlier than the black" because time to harvest the white seed is 120 days compared to the black that lasts 135; although it is late and separation difficult due to size, regularly scrambled grains are sown. According to studies carried out, one of the reasons for the difference in color is white chia not need dye and therefore is harvested earlier, while black chia is a form of defense grain, hence the delay in collected. Although it is said that white is better quality seed for human consumption, some people doubt and ask black or revolt. The truth is that both have the same properties.

As regards the process of industrialization and commercialization, one of the producers of Acatic comments: "We could not industrialize chia, and all we do is encostalarla and sell it." Before you just checked that was dry and the only way to do that was to score; however, due to the volume of production and to negotiate the price now has moisture meters, in addition to laboratory studies to check that does not contain fungi, yeast or some other type of harmful agent that decreases their properties and value. Part of the marketing strategy and according to supply and demand in the market chia, like many products (speaking in this case agricultural), is determined by the volume of production, crop quality and the demand for it. Intermediaries are the most benefited, as usual, being useful 40% regularly and sometimes leaving a minimum gain to producers who make the actual investment and are at greater risk of loss. Because it seeks to add a value added that they also get a higher profit margin. Another injured party represents the retail consumer, who

must pay higher price. the internet is now used as a means to market chia, through countless pages and articles that talk about the benefits and advantages of this seed.

## **Conclusion**

To conclude his study, the author mentions the historical richness of chia in cultural, religious, industrial and food issues. Speaks Rescue cultivation, the search for new alternatives for industrialization, to give added value that benefits producers and their nutritional qualities as it is rich in fatty acids Omega 3. Whether to bring to light its attributes forgotten to raise awareness of its natural properties as an alternative in the prevention of disease, or to market it worldwide and make it available to the consumer, this seed can be a source of many benefits. Likewise, it can serve as a basis to create new eating habits or to make a variety of food; for example, if processed into flour does not lose its properties and has no expiration date. In short, chia is an alternative food capable of improving the quality of life for many.