

CANNED AVOCADO A NEW CONCEPT FOR A NEW MARKET

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The idea started as a practical and innovative solution in order to fulfill the need of consuming healthy, natural and practical food. This innovative product not only is a product in a new format but also has differential features, which are detailed below:

- The product has a shelf life 3 or 4 times longer than the natural fruit, reducing stock costs
- Without the stone, very easy to peel and its properties remain constant.
- Innovative packaging for the category of canned fruits (Doypack™) reflecting its practical and modern characteristics.

The key stage to obtain this product is the conservation process. As first measure, avocados are treated with heat and an acid medium in order to inactivate the Polyphenol oxidase enzyme (PPO). The traditional scalding methods do not reach a balance between inactivating PPO and keeping the sensory properties that allow acceptance of the product.

This led to the need of developing a stage prior to commercial sterilization called “coating”, which allows protecting the product from the acid medium necessary for the conservation and improving its final texture.

Key words: Conservation, innovation, *Poliphenoloxidase*, coating, differentiation

PALTAS EN MITADES EN CONSERVA UN NUEVO PRODUCTO PARA UN NUEVO MERCADO

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La idea surgió como una solución práctica e innovadora para satisfacer las necesidades actuales de consumir alimentos sanos, naturales y prácticos. Este

innovador producto no solo es un producto con un formato innovador, sino que también cuenta con las características diferenciales detalladas a continuación:

- El producto posee una vida útil aproximadamente entre 3 y 4 veces mayor a la del fruto natural, lo cual reduce costos de stock.
- No posee carozo, es de muy fácil pelado y posee propiedades características constantes.
- Posee un envase totalmente innovador para la categoría de las conservas de frutas (Doy packs®), el cual comunica a la perfección la practicidad y modernidad del producto.

La etapa clave para la obtención de este producto es el proceso de conservación. Como primera medida, las paltas son tratadas con calor y un medio ácido, con este proceso se logra inactivar la enzima Polifenoloxidasasa (PPO). En los métodos tradicionales de escaldado no se logra alcanzar un balance entre inactivar la PPO y mantener las propiedades sensoriales que permitan la aceptabilidad del producto. Esto originó la necesidad de desarrollar una etapa previa a la esterilización comercial, llamada "coating" que permite proteger al producto del medio ácido necesario para la conservación y mejorar la textura final del mismo.

Palabras claves: Conservación, innovación, *Polifenoloxidasasa*, coating, diferenciación.

1 Objectives and justification:

1.1 Strategy

The product strategy is on a differentiation based on the convenience and in its excellent sensorial properties. The product improves the shelf life (4-5 times) regarding the natural fruit, which would reduce stock costs. On the other hand it does not have cob, it is of very easy bare and it has constant characteristic properties. It has an innovating package for the category of conserves of fruits (doypacks®), which perfectly communicates the convenience and modernity of the product.

1.2 Reasons to believe

The present necessities to consume healthy, natural and practical foods force to us like producers to be very demanding with respect to the quality, technology of production and satisfaction to the client - consuming. These values have to be

emphasized in the strategy of communication of our product by means of packaging totally innovating, a concept differential and fundamentally with the proposal of a product of greater life utility (around greater 300% to the natural fruit), sensorial properties improved (consistency) to prepare plates - foods and with the possibility of consuming it all the year.

2 Market research

2.1 Trade international circuits.

Two circuits of importance in the international trade of the avocado exist:

The one that comes together in the European market.

- And the one that supplies to the United States of America. A

third destiny of the imports is Japan.

The market of the U.S.A. has forts sanitary restrictions reason why, few countries can accede to the same one. The United States is a net importer of Avocados, due to a high consumption by the height of the ethnic meals and the campaigns of healthy life.

Regarding to the European avocado market, France is the main consuming country of Avocados of the European Union reason why it absorbs a high percentage of the imports of the block. The origin of the Avocados concerned to the European Union in the last years is South Africa, Israel and Mexico and Kenya.

In period 1995-2000 the UE imports EU were distributed by equal parts between Israel, Spain and South Africa, which supply 75 % of the market of imports of the EU. Mexico and Kenya appear in a second level, also as important suppliers.

It is possible to indicate that the fact that a country appears as exporter not necessarily implies that he is a producer. This situation takes place with several countries of the European Union that are front door of a great amount of food products, those that partly are re-exported to other countries. In the avocado case, it is the situation of countries like France, Holland, Belgium, Luxembourg, Germany and United Kingdom that is not producing, thus all export must come from an import. By such reason, the exporter enumeration is not necessarily the one of competing countries

2.3 Dates of entrance to the European Union for main suppliers

It is observed that the countries of the North Hemisphere, Spain, Israel and Mexico (that commercialize Hass mainly), are superposed during the months of the autumn, European winter and spring, with the following stage:

- Mexico the one that begins its season in precocious form in August and finalizes in May.
- Spain enters in October and finalizes its shipments at the end of June. - Israel exports between November and May.
- Kenya, equatorial country, arrives between March and June and their shipments are of the Strong variety of green external coloration.
- South Africa, the main supplier of the austral hemisphere, makes its shipments of Hass between May and October, although already he is present from March with Fort.

For the time of Passovers (March/April) one occurs a little while difficult in the market then, coexist the five main suppliers. During the European spring and the summer also a loss in the prices can occur depending on the intensity of the South African shipments.

2.3 Stimulating and limits factors to the expansion of the production and the exports

In the scope of the worldwide markets, the factor that has remarkably influenced in the expansion of the production and export of avocado has been the continuous growth in the demand. This growth is based, mainly, in the new favorable tendencies of the consumption to the fruits and vegetables, that offer a balance in their nutritional components and that visualize positive for the health. In this sense, avocado is one of the most complete fruits as far as its mineralogical composition. It has non-saturated fatty acids, which is very beneficial for the health, since esteem which they contribute to diminish the cholesterol levels in blood. The increase of the demand is demonstrated in the growth of the global imports, that happened of 130,000 ton to 320,000 ton in the last decade and although the prices lowered in equal period of US\$ 1.79 to US\$ 1.36 by kilogram, these values have allowed the continuous expansion of the supply.

2.5 Possible futures scenes

Avocado is a fresh product of high value, whose international trade has grown in the last decade, in consonance with the new tendencies of food consumption. Therefore, the supply of avocado on world-wide scale has an increasing tendency that will stay

in the future, because there is in the producing countries a great amount of new plantations that at the present time have not arrived at production or total production.

The differentiation of the product through mark and certifications of quality is one of the suitable strategies to obtain a greater insertion in the international market. Also, actions of promotion of external markets are considered essential to dispute the participation in a market in which several strong competitors are developing similar strategies. The avocado consumption shows a tendency the increase and, like markets plaintiffs, they emphasize the U.S.A. and almost all the countries of the U.E., in individual France and United Kingdom. Between the increasing importers and of high interest is Japan. Israel exports mainly to the European countries, where it competes with Spain, South Africa, Kenya and, more recently, Mexico. On the other hand, the U.S.A. adds to their high production in California the supply of Chile, Dominican Republic and, from 1998, Mexico, to supply the states of the northeast.

2.6 Business Opportunity

Whereas the tendencies show a constant growth of the consumption market of avocado, some countries mainly are in a position of competitive disadvantage in terms of volumes available for the commercialization in the U.S.A. and the UE.; disadvantage that can be turned an opportunity if it is managed to introduce in these markets a product differential, where the added value is granted by a product that widely is accepted, but under a new type of presentation for this consumption. One of the factors of greater weight with regard to the final quality of the fruit is the upheavals that suffer during their storage in cold. The maximum period of storage in cold to temperatures of between 5 and 7°C and losses pressures of Oxygen and Carbon Dioxide it is of around 8-9 weeks, this is an important limited issue with regard to the chain of supplying of the avocado. Having the long periods that a ship takes the centers of consumption of the U.S.A. or Europe, this one is a factor that plays in against at the time of determining the avocado shelf life concerned from distant countries. That is to say, which it stops to have "an attractive" product for this market, the product price from these origins "put in shelf" must considerably be but under which an originating product of near zones. But even so it is the subject of the low volumes produced by these countries, gives like result the necessity us to invest to manage to obtain a differentiating product to manage to be competitive.

3 PROPOSAL: Canned Avocado (in halves)

3.1 Global market tendencies

The new global tendencies of the consumption are in favor of practical and healthy foods. One tries products that offer a balance in their nutritional components, which visualize as positive for the health and simplify the life of the consumer. At the moment the conserve segment of fruits does not have any type of launching, nor innovation, as well as either great functional benefits beyond the own ones of the fresh avocado.

3.2 Market Strategy

Our product strategy is on a differentiation based on the practiced, convenience and the excellent sensorial properties.

- The product improves the shelf life (3-4 times) without the frozen storage condition, which reduces stock costs.
- On the other hand it does not have cob, it is of very easy bare and it has constant characteristic properties.
- Another one of the advantages is that it counts on a totally innovating package for the category of conserves of fruits (Doypack®), which communicates practiced, convenience and modernity of the product.

4.1 • Technology aspects

4.1 • Maturation, harvests, post harvests and composition of

4.1.1 the fruit

Avocado is a climacterically fruit, therefore in its evolution the berry presents/displays a pre-climacterically phase, a climacterically one, a climacterically crisis and a post-climacterically period. One of the characteristics most excellent of avocado is that it does not soften in the tree. A very different behavior happens once harvested the fruit, the one that undergoes a fast softening motivated by its high respiratory rate, which makes very perceivable, this increase of the breathing is known as it raises climacterically and avocado is not eatable before they experience the climacteric. During this stage ethylene settles down physiologically in active concentrations in the intercellular spaces of the fruit.

4.1.2 Harvest, post harvest

The most important aspects with respect to the harvest of avocados are related in determining when to harvest and how to do it. They must be harvested when they have reached his point of maturity, in a physiological state so, that it guarantees the continuation of his process of maturation. The handling post-harvests can be divided in three stages:

- Handling in the orchard of the fruit -
Handling and packaging.
- Stock and commercialization

The answer of the avocado to the temperatures of the storage varies according to the temperature ranks, following the following scheme:

- 10 to 25°C: the fruit more quickly softens with the increases of temperature of storage
- 5 in 8°C: softening is controlled and only it will happen if the fruit transfers to the highest temperatures
- 0 to 4°C, softening to these temperatures is limited by the time, due to the risk injuries by cooled.

The recommended conditions of the storage, nevertheless, can vary according to the variety of the fruit. The damage by cold is the key factor for the storage prolonged of avocados

5 Manufacturing

5.1 Process

For this analysis the acquisition of originating fruits of the local markets of any producing country is taken into account. Once acquired, the avocado arrives at the reception beach of the factory where it hopes to be processed. The use of refrigerator chambers to regulate the stock of avocado during the nonproductive periods, would not be an alternative due to its high cost. When the fruit arrives at the reception beach, it is placed in the entrance of the line of processing. This line is in favor compound initially of dump a manual that overturns the avocado on a tray and soon an elevator transports the avocados towards the following step. Previous to the washing machine, the avocados in the different calibers is due to classify to be used, for this exist "seizers" that separate the fruits in the different required calibers. Next a washing machine of brushes in form of rollers is located that turn in different directions and works by water aspersion to pressure. Once selected washings and, are come to make the stoned one of the fruits. This process is one of the tactically important points. The process

consists of a clean and smooth cut of the avocado in longitudinal form without getting to cut the cob; soon the cob is displaced.

The conservation process consists of following the stages:

- Thermal Whitening.
- Sealed
- Coating
- Packaging.
- Sterilization.
- Cooled.



PROCESO ESTANDARD
DE CONSERVACION

NUEVO PROCESO DE
CONSERVACION

With these processes it is managed to mainly inactivate the *Poliphenoloxidase* enzyme (PPO) that is the main person in charge of the formation or development of a darkening of weaves, which confers an undesirable aspect to them stops the consumer.

5.2 Conservation Study.

5.2.1 Microbiological aspects.

With which it concerns to the conservation of this product, several controls were made to guarantee no single the food innocuousness but also to try to maintain to maximum the their original characteristics. As first measurement analyzed the innocuousness referring to contaminations by microorganisms

5.2.2 Physical, Chemical and sensorial aspects.

In order to determine the life utility of the product, it was come to try the same one under a period of stability to different conditions (atmosphere, 0°C and 45°C). With regard to the sensorial properties, a slight increase in the coloration is observed of sc. that accompanies to the avocado in the sample 45°C, without being observed this increase in the surface of the avocado. In flavor terms, a small change in the sample of 45°C with respect to same of 0°C and the atmosphere is observed. This test was made using a panel of 12 people where it occurred to prove the pulp of avocado of the different conditions. The changes of flavor, texture, scent and the appearance of flavors and disagreeable scents were analyzed



5.3 Packaging

Basically, the primary package is Doypack® of nominal capacity of 500 milliliter. With respect to the secondary package (box), the same esteem that would be of cardboard corrugated with capacity for 12 or 24 Doypack®. The election of this type of format is based on the following benefits:

- a) It is highly innovating for the conserve segment, maintaining the credentials of a product "accessible premium" and in costs simultaneously.
- b) Unlike tins, this does not dent and has better conditions of manipulation (in plant and for the consumer) compared with tins.

- c) It is an economic option.
- d) Is needed much less space material storage before the process (smaller to 20 times in volume).

e) It has greater surface of visual exhibition in gondola that its equivalent one in tin.



6 Conclusions & recommendations.

Consumers and producers are many and that they love to pay less and less by basic products. Even so, to continue conquering the external markets and to maintain the consumption local them value is due to add at least or something that allows maintaining them us, and where the main attribute is the trustworthiness, the mark and the creativity. The challenges to future, for the sector of avocado and also this opportunity of business are not the exception, the opportunities are infinite, the advantages are to increase the consumption and power to enter noticeable in which today the conventional products are not competitive. Due to the previous reasons we think that the opportunity is in eliminating the weaknesses of the fresh fruit and not competing directly with the great producers already established, but to be its clients producing a product being based on avocado with high value added for the today consumers.

In order to obtain we developed it the product: CANNED AVOCADOS (IN HALVES), which was devised to arrive at the market of massive and institutional consumption contributing the following advantages:

- Practicality
- Convenience
- Excellent sensorial properties at the time of preparing its plates

Briefly eaten CANNED AVOCADOS (IN HALVES) is no single a CONSERVE, it is a product with an innovating format, but that also counts on the characteristic detailed differentials next:

- The product approximately has a life utility between 3 and 4 times greater to the one of the natural fruit, which reduces to stock costs.
- Does not have cob, it is of very easy bare and it has constant properties characteristic.
- It has a totally innovating package for the category of conserves of fruits (doypacks®), which perfectly communicates the practicality and modernity of the product.