



ANIMAL PROTECTED DESIGNATION OF ORIGIN AT ECUADOR ACCORDING TO UE NORMATIVE

OBTENCIÓN DE UNA DENOMINACIÓN DE ORIGEN PROTEGIDO ANIMAL EN ECUADOR EN BASE A LA NORMATIVA EUROPEA

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Abstract

Amid globalization causes traditional products with low adaptability to lose market share. Considering that one of the main limitation of traditional products is their marketability under minimum quality standards, the following question arises: Is it possible to obtain traditional products with a level of quality recognizable by consumers? In the EU the answer for this question is found mainly in context of the protected designations of origin (PDO). A PDO status adds quality to the product by the value of its own identity, reflecting the quality standards expected by the consumer. The main objective of this work is to develop a proposal to obtain a PDO in Ecuador, studying the general principles of a designation of origin in Ecuador and comparing them with the European vision of a PDO of animal origin. Therefore, this paper defines the commercial, social, and agricultural aspects of the implementation of a PDO. Using an inter-regional approach, several products eligible for carrying the PDO seal are compared, and the legal framework for implementation in Ecuador is considered. Finally, a list of conditions based on the "Queso de Hoja de Cayambe" (Cayambe "string" cheese) has been developed, which could be used as a benchmark for implementation of a PDO on other products. The conclusion is that to implement a PDO in Ecuador, administrative flexibility, political will, and scientific engagement are needed. This study may be used as a preliminary tool for the development of community projects focused on livestock agriculture and food products.

Keywords: Quality, PDO, identity, Ecuador, EU.

Resumen

La poca adaptabilidad de los productos tradicionales frente a la globalización hace que pierdan mercado. Dado que una de las principales limitaciones para estos productos es su comercialización bajo estándares mínimos de calidad, surge la pregunta ¿Es posible obtener productos tradicionales con una calidad reconocible? En la UE la respuesta a esta pregunta se encuentra básicamente en el marco de las Denominaciones de Origen Protegidas (DOP). Una DOP otorga un valor agregado al producto bajo un concepto general de calidad, definida por su propia identidad, permitiéndole aproximarse a los estándares esperados por el consumidor. El principal objetivo de este trabajo es desarrollar un ejercicio para una propuesta local para la obtención de una DOP en Ecuador, estudiando previamente los principios generales para una denominación de origen ecuatoriana, comparándolos con la visión europea de una DOP. Para ellos se ha definido el alcance general de su aplicación y se ha estudiado el marco legal para su implementación. Por último, se ha desarrollado un pliego de condiciones con base en el “Queso de Hoja de Cayambe”, que podría servir como referencia para la implementación de una DOP en cualquier otro producto. Concluyendo que para el funcionamiento de una DOP en el Ecuador, es necesario encontrar flexibilidad administrativa, voluntad política y participación científica; pudiéndose usar este trabajo como herramienta de partida para el desarrollo de proyectos comunitarios agropecuarios y alimentarios.

Palabras clave: Calidad, DOP, identidad, Ecuador, UE.

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Part of the present investigation was presented in the General Coordination of the Information System of the Ministry of Agriculture, Livestock, Aquaculture and Fisheries of Ecuador, there is a Proposal for the “Comparative study to obtain a D.O.P. in Ecuador based on the European case” (Maldonado, 2017).

1 Introduction

The comparative studies between different regions in relation to the promotion of productive processes are a key tool to understand any proposal that is made for its implementation and operation. Given that Latin American peasant communities represent a highly sensitive population center in the face of globalization, and that trade policies do not allow them in many cases to achieve inclusive socio-economic development for all participants (Vandecandelaere et al., 2010), implementing a Protected Designation of Origin (PDO) can be a great opportunity to take advantage of the productive capacities of Latin American rural sectors in pursuit of fair trade (Tolentino Martínez, 2015), promoting social organization and the promotion of community projects (Unión Europea, 2015).

In Ecuador, in literal 2 of Article 385, Eighth Section of Science, Technology and Ancestral Knowledge, Chapter One on the Inclusion and Equity of Title VII of the Good Living Regime indicates that “the national system of science, technology, innovation and Ancestral knowledge, within the framework of respect for the environment, nature, life, cultures and sovereignty will aim to recover, strengthen and enhance ancestral knowledge, developing technologies and innovations that boost national production, increase efficiency and productivity” (Asamblea Constituyente, 2008), later focused on the principles of the Organic Code of the Social Economy of Knowledge and Innovation (Asamblea Nacional, 2016), as a state initiative for the protection of traditions in Ecuador.

The present work aims to develop a proposal for obtaining a PDO in Ecuador taking into account the Ecuadorian and European regulations, from: 1) Review the definition and bases for the development of a PDO in Europe, linking these principles with the quality of food of animal origin. 2) Identify a local product and develop a list of conditions for the establishment of a PDO of animal origin.

2 Definition

A product with a geographical indication seal is one whose traditional origin and characteristics are related to a specific geographical area. These qualitative

characteristics must be verifiable and linked to this locality. In Europe, a distinction has been made between these foods, and depending on their characteristics, they have been divided into three categories: Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Protected Gastronomic Specialty (EGT). In Ecuador, and because the Law does not distinguish between appellations of origin and geographical indications, in the present work these products will be named as a PDO.

Thus, a PDO would be defined, in a general way, as the seal that is given to a traditional product, consumed frequently, whose elaboration has been transmitted historically through generations, and its sensory characteristics are linked to its geographical origin (Guerrero et al., 2010).

3 Reach

The PDOs are always associated with commercial protection for small and medium producers, and have been focused on improving their economic remuneration (Consejo de la Unión Europea, 2012). The consumer associates the seal as a symbol of quality, and since the quality is profitable, the product will be related to the interests of the consumer (Sellers and Nicolau, 2001). The European consumer is increasingly critical of food of animal origin, so it usually seeks their origin and sustainability in processing, while traditional foods in Ecuador have other characteristics, as shown in Table 1. Therefore, the scope of a PDO is diverse, and can range from the commercial side to a possible agro-sustainable approach.

In Ecuador, few communities feel the need to associate as an alternative to strengthening their production (Hentschel and Waters, 2002) so a PDO can be an alternative to promote productive association. In order to develop a PDO, it is important to establish the value chain of the products that identify a product with the society in which it is produced, so that society later qualifies it according to its civil norms and environment (Vandecandelaere et al., 2010). A PDO seeks the development of a society, and is a very useful tool for its development. In particular, it promotes the protection of vulnerable groups (Oyarzun, 2011).

Table 1. Comparison between Europe and Ecuador about the characteristics of foods suitable for a PDO (Unión Europea, 2014; Guardia, 2016; IEPI, 2016)

Europe	Ecuador
1.Safe food	1.Diverse Hygienic Quality
2.Respect consumer demand	2.High acceptance
3.Offer limited by seasonality or limitation of production area	3.Offer limited by the size of production area
4.Recognized for their social responsibility	4.Recognized for their community nature
5.Of different forms of production	5.Associated with Agroecological production processes

4 Characteristics of the Products Suitable for a PDO

A product will be able to be considered a PDO according to its characteristics of origin and its link with the geographical area, and in the case of traditional foods if its permanence in the local market has allowed the transmission of its characteristics throughout different generations of producers and consumers (Consejo de la Unión Europea, 2012).



The European Union considers all the products specified in Annex I of Regulation (EC) 510/2006 (Consejo de la Unión Europea, 2006) as suitable for a

PDO of animal origin, among which are: fresh meat, edible meat offal (intestines, viscera, stomachs), fish, prepared meat, fish, crustaceans or mollusks, animal shortenings, cheeses, dairy products, eggs and honey.

In Ecuador, the subject is more generic, and any product of agroindustrial origin that meets the basic characteristics of a designation of origin is suitable for being considered as PDO (IEPI, 2016).

The identification of these products varies between these two regions. While in Europe a stamp easily recognized by the consumer is used, in Ecuador traditional products need status recognition as shown in Table 2.

Table 2. Comparison of Traditional Products Recognition Seals between Europe and Ecuador (Unión Europea, 2014; IEPI, 2016).

Europe	Ecuador
Seal recognized by the consumer	Need State recognition
	 Instituto Ecuatoriano de la Propiedad Intelectual

In Ecuador, several agricultural production systems can be identified that adapt specifically to their particular geographical environment. At the same time, several potential products have been identified for a PDO of animal origin. Above all, in order to obtain them, a total training of the system in agro-food production processes is necessary (IEPI, 2016).

At present there are two recognized designations such as: the "Cacao de Arriba" of vegetable origin and the "Sombrero Montecristi" with traditional characteristics. In addition, the Galápagos Coffee, other food products and various handicrafts are in the pipeline to obtain a PDO.

5 Principles of a product suitable for a PDO

To identify a product suitable for a PDO, it is necessary to contrast and define the differences of the product with similar ones, according to a differentiation of the characteristics on the product in different regions (Oberthür et al., 2011).

At present, products with PDO are recognized worldwide by the WTO, as long as this name has been accepted in their country of origin and complies with the rules of the country of destination (WTO, 2012). This facilitates the international trade of traditional products and their global recognition.

Since 2006, the acceptance of PDO applications from third countries was declared in the European Union (WTO, 2009), and the “Café Colombia” was the first Latin American product recognized in Europe (Café de Colombia, 2009).

Legislative harmonization between countries facilitates economic exchange, and in order for it to be carried out safely, it is necessary to guarantee the quality levels of the products. For this reason, in or-

der to obtain a PDO, it is necessary to develop a legal procedure that recognizes the product as such.

6 European legal framework

In Europe, a term under the DOP registration serves to identify a product that has fulfilled a list of conditions that guarantee its quality in all phases of production. This seal is recognized throughout the European Union as a guarantee of originality and tradition in accordance with the Lisbon Agreement (Unión de Lisboa, 1979).

In Europe, various agricultural protection programs have been developed, such as policies on the agrarian structure that promote improvement, adaptation and development in rural areas. Regulation 1151/2012 (Consejo de la Unión Europea, 2012) of the European Parliament and Council is focused on a wide range of products of this type, and aims to regulate and promote fair competition and intellectual property rights. Table 3 details the general procedure for obtaining a PDO in Europe based on this regulation.

Table 3. Steps for obtaining a PDO in Europe: application, conditions, inspection and certification (Consejo de la Unión Europea, 2012)

1. Application
Administrative request of the country or region (on behalf of natural, moral, public or private persons) according to The Treaty of Lisbon and the Regulation (Unión de Lisboa, 1979)
2. Conditions
Specification of conditions justifying the geographical area of influence and the characteristics of the product
3. Inspection
The European Commission (EC) will study the case, notify and act as arbitrator if the case merits it.
4. Certification
The registration of a PDO confers marketing rights while the EU states will ensure that these are met.

7 Ecuadorian legal framework

In Latin America, the diversity of traditional products coincides with a great legislative variability among producer countries (Molina, 2015). The various multilateral intellectual property treaties seek

to minimize product fraud, with legal instability limiting their promotion. Thus, the first legislative contributions in this line take place during the Uruguay Round of Intellectual Property (ADPIC, 1994). Currently, countries such as Argentina and Chile have promoted specific legislation for these cases,

such as Law 25,380 / 2004 (Senado Argentino, 2004) and Law 19039, Title IX (Legislación Chilena, 2005). On the other hand, the Andean countries have raised their rules more generally. This is reflected in articles 201 to 223 of decision 486 on Industrial Property of the Andean Community, which mention certain general bases for the management of PDOs in the region (Comisión de la Comunidad Andina, 2000).

In Ecuador, the legal regulation of the PDO is part of the Organic Code of the Social Economy of Knowledge, Creativity and Innovation, Chapter XII (Asamblea Nacional, 2016) where it is established

that a Designation of Origin will be designated to a product of a geographical area in which it is produced, extracted and processed, including its human and natural factors. This code does not distinguish between DOP and PGI, but already includes EGT in another section. Among the most noteworthy of this is the prioritization of community production on another type of production and some specifications on its use and certification against the competent authority as set out in Table 4. This is why when granting a PDO to these products their protection is achieved, since they become “a good of the nation entrusted to its producers” (Llorente, 2001).

Table 4. Steps for Obtaining a D.O.P. in Ecuador: Application, Conditions, Inspection and Certification (IEPI, 2016).

1.Application
Petition of natural or legal person dedicated to the production and/or elaboration of the product, authorized as legal representative of the Geographical Indication according to: The National Directorate of Intellectual Property (IEPI).
2.Conditions
Specify: Geographic area of influence and the characteristics of the product.
3. Inspection
The IEPI will study the case and will inspect in 15 working days: Geographic area, the way to elaborate the product and its ingredients, control of establishments and production.
4. Certification
The certification authorizes the product to use the word DESIGNATION OF ORIGIN for the commercialization of the product, acquiring all the benefits that this entails.
It is published in the Official Gazette of the State, with a range of 30 days for any opposition. The Geographical Indication is registered as a trademark for a period of 10 years from the date of publication. Registration can be renewed.

8 Quality standards

A product with a PDO will necessarily have to link quality standards in its production phases. Any quality control system is a challenge for this type of industry (Dora et al., 2013). A PDO, being jointly focused on community, craft, business and industrial work, must work with regulations that are easy to apply, understand, follow and control by the producer (Trienekens and Zuurbier, 2008). In this way the designation will comply with it, and thus consumer safety is guaranteed and the competitiveness of the products improves (Cruz Gómez et al., 2004).

A PDO will rely mainly on the approval of its production processes, based on local legislation and

the quality principles of each country, considering that the industry has to adapt to consumer needs (Brissaud, Frein and Rocchi, 2013). The quality control organisms that are responsible for controlling the hygiene characteristics, organoleptic properties, reproducibility of the specific characteristics of the product and traceability of the food with a PDO will ensure the quality standards under minimum specifications and characteristics that meet these requirements (Curtis, 2005). Under these principles, a PDO will be supported in a balance between traceability, food safety, reproducibility, sensory characteristics and labeling, as represented in the quality circle proposed in Figure 1.

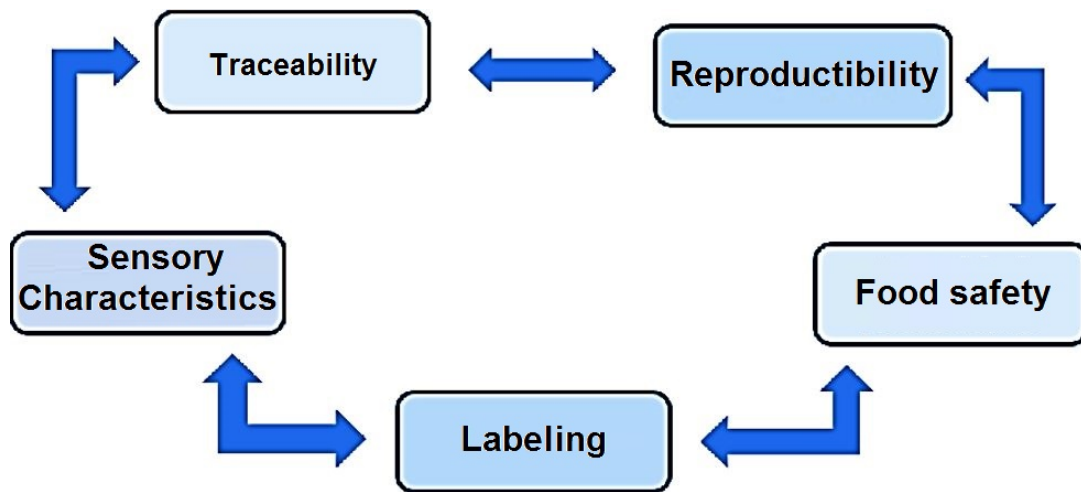


Figure 1. Circle of quality

9 Definition of a specification for an Animal Origin PDO

A list of conditions consists of a technical safety sheet where the ingredients, factors and conditions for the implementation of a PDO are established, in addition to the causes of adulteration thereof. It is recommended that it be defined by the PDO actors, be easy to apply, understand, follow and control (Oyarzun, 2011). The list responds to the legal obligations of each country, and is based on scientific research as a basis for the establishment of safety standards and food quality (Vandecandelaere et al., 2010).

The proper management of the certification and the conditions that a product with PDO must fulfill, allows to promote the product globally, and achieve an important international recognition, as is happening with the Manchego Cheese (Vandecandelaere et al., 2010) (Consejo Regulador Queso Manchego, 1995).

10 Principles that link a PDO of dairy origin with its environment

Cheese is the consequence of the combination and correlation of several factors, both intrinsic and extrinsic, that influence its composition and manufacturing process. The correlations of these factors

affect the yield and cheese composition (Cecchinato and Bittante, 2016), these factors are taken into account in the specifications of a PDO.

Origin

A quality cheese will be defined by the origin of its raw material (species, breed, lactation, feed, CCS), which affects the composition of the milk (pH, fat, protein), and specifically the composition linked to the characteristics of the cheese (casein and fat).

In the industrial processes of manufacturing cheese, the final result will depend on the heat treatment, cooking, use of cartridges, additives, cutting points, syneresis, dewatering, kneading, etc., among many other factors that, when modified, will notably change the quality of the cheese (Fox et al., 2004). The development of specific flavors in cheese, depending on the origin of the milk, is mainly due to the contribution of non-pathogenic bacteria to cheese (Yoon, Lee and Choi, 2016).

Form of production

The process of milk production is a complex process and must be controlled according to the objectives of each farmer. The way to produce the raw material influences the quantity and quality of the milk, as stated by Urgell (Consejo Regulador de la Mantequilla de Altura de Urgell, 2001), region where milk is produced with optimum levels of fat for

the preparation of butter.

In the case of dairy production in Ecuador, it mostly comes from extensive systems that handle low production parameters. Requielme and Bonifaz (2012) indicate that policies aimed at small producers are necessary since they are the majority and manage average production of less than 4 liters per day, in extensions of 1 to 5 hectares. In this case, a PDO will benefit from the specificity of these forms of production and from there obtain their differentiation from other products.

The guide of Good Livestock Production Practices (AGROCALIDAD, 2012) covers a large number of production forms to which different producers can adapt. For the development of a PDO, this guide is a starting point from which the producer can guarantee the quality of its raw material.

Feeding of the animals

The quality of dairy products depends, as mentioned before, on the origin of their raw material, and this depends to a large extent on the management and feeding of herds. This is supported by several studies that determine that, when feeding commercial herds with grasses of different types the composition of the milk varies, affecting at the same time the final characteristics of the cheeses (Valdivielso et al., 2016).

Elaboration

The manufacture of cheese will affect its quality, and its sensory characteristics will depend on several factors (Johnson, 2017). Among the sensory aspects that are influenced by manufacturing are: the nutritive character, texture, taste, aroma, and appearance. Technology will also provide additives and operational processes that can modify the final product. During the manufacture of the cheese there are other factors, such as salting, molding, pressing, ripening, storage and packaging, which will affect the sensory characteristics of cheese.

Storage

Since cheese is affected by different variables from its origin, its subsequent storage will also influence its final organoleptic characteristics (Fox et al., 2004). This is how the conditions of humidity and temperature will directly affect the product as it

happens in Cabrales, where the conditions of the caves in which they mature are special and have a specific micro-biota for the purpose. These conditions provide the unique characteristics of the cheese produced there (Consejo Regulador del Queso Cabrales, 1990). Because the Ecuadorian consumer has fresh cheese, cheese and mozzarella cheese (NTE-INEN-1528, 2012) whose storage time is short, the correct storage and maintenance of the cold chain will allow the product not to lose its characteristics desired in the market.

11 Practical example of a list of conditions applicable to Ecuador

It should be taken into consideration that among dairy products, Ecuador is characterized by the commercialization of uncured fresh cheese, and that the regions have developed several types of cheese whose differentiation lies in their different origin. On the basis of the Spanish specifications (Consejo Regulador del Queso de Tetilla, 1983; Consejo Regulador de la Mantequilla de Altura de Urgell, 2001; Consejo Regulador Queso Cantabria, 2006; Consejo Regulador DOP Arzua y Ulloa, 2009; Consejo Regulador Queso de Murcia, 2011) can be developed an exemplified comparison of the principles for the possible obtaining of a PDO of animal origin in Ecuador, in particular for the Cayambe Leaf Cheese, as explained below:

Name: Protected Designation of Origin “Cayambe Leaf Cheese”

Product Description: Unripened cheese ready for direct consumption, made from curd of fresh milk, with acidified mass and in the presence of native non-pathogenic mesophilic bacteria of Cayambe (NTE-INEN-1528, 2012), subjected to a thermal increase prior to spinning and kneading the cheese, and then wrapped in achira leaves (*Canna edulis*) (Fairlie, Morales Bermúdez and Holle, 1999).

Detailed characterization of the raw material

Origin: Obtained from fresh milk from the farms of the parishes of Cayambe and Pedro Moncayo (Pichincha).

Qualitative characteristics: Made with milk of the following characteristics: density 1 028 to 1 034, non-fat dry extract > 8.2%, protein > 2.9%, fat > 3% and acidity 0.14% - 0.18% (Banville et al., 2013).

Phases: Milk is collected daily in the producing farms and stored at temperatures < 7°C throughout the production chain.

Process: Milk treated thermally (66°C, 30 minutes) and stored at < 7°C (FAO, 2011).

Characteristics and organoleptic properties of the product

Organoleptic: (Includes: pasta, texture, bark, flavor, aroma). Cheese of semi-soft consistency, fibrous and elastic texture, yellowish and uniform white color, lactic and sweet flavor due to the influence of achira leaf, little developed and lactic aroma.

Physical: (Includes: shape, dimension, weight). It consists of a flattened mass of cheese spun and rolled on itself, wrapped in a sheet of achira in the shape of a tamale, each piece has a size of 8 to 15 cm, and a weight of 25 to 100 g.

Chemical composition: (Includes: fat, protein, dry extract, pH). Based on its characteristics, its composition after dewatering will have a humidity of 46-48%, concentration of protein 18%, and fat 20% (FUNIBER, 2016), and a pH at the time of packing of 5.5 to 5.7.

Detailed description of the geographical area

The detailed description of the geographical area should include: regions, political division, geographical boundaries, maps, etc. In this case, Cayambe and Pedro Moncayo are cantons of Pichincha located in the Ecuadorian Sierra.

Cayambe canton (1 382 km²) is located in the geographic center of the equatorial line N 0° 0'. Bordered on the north by the cantons of Cotacachi, Otavalo and Pimampiro (Imbabura), to the south by the canton Quito (Pichincha) and the canton Gonzalo Pizarro (Sucumbíos), to the east by the Cayambe-Coca National Park, and to the west by the canton Pedro Moncayo and Quito (Pichincha) (GADIP Cayambe, 2016).

The Pedro Moncayo canton (332 km²) is located slightly to the north of the equatorial line N 0° 10'. It borders on the North with the Cotacachi Canton, on the South with the Quito Canton, on the East with the Cayambe Canton, and on the West with

the Quito Canton (GAD Pedro Moncayo, 2016).

Elements that prove the origin of the product

Monitoring of livestock farms: The production processes are regulated by different manuals of good farming practices, such as the Guide to Good Breeding Practices for Milk Production, Technical Resolution No. 217 and No. 842, of November 30, 2012 (AGROCALIDAD, 2012).

Follow-up in the production phases: Farmers and producers of raw materials of animal origin who intend to use their products for this purpose will have to base their practices on these guides and be audited jointly with Agrocalidad (AGROCALIDAD, 2012).

Food producers will be based on the Technical Standard of Good Manufacturing Practices for Processed Foods in Ecuador (Ministerio de Salud, 2015), and will be supported by related and specific standards such as the Manual of Manufacture and Good Practices for the Preparation of Dairy Products (FAO, 2011).

Control in the market: The control and management of the brand will be based on the Organic Law of Regulation and Control of Market Power (Asamblea Nacional, 2011).

Control of quality standards and food safety: The control of quality standards will be based on the NTE-INEN ISO 9001 standard (NTE-INEN-ISO-9001, 2008), according to NTE-INEN 2537 (NTE-INEN-2537, 2010).

Traceability: In accordance with the self-control policies, internal inspections will be carried out to ensure traceability based on what is stated in the Guidelines for Good Livestock Practices.

Community Liaison

Traditional and historical: Located in the foothills of the snow-capped mountain, Cayambe is recognized as a land of fertile valleys and foothills, where agriculture has been developed for generations. Considered a traditional dairy area, several dairy processing centers have been installed in this city for decades. From its milk "height" (above 2 000 masl) the "Cayambe Leaf Cheese" is produced, this being one of the engines of the local economy together with its traditional sponge cake (GADIP Cayambe, 2016).

Social: The population of Cayambe and the Ka-

yambi nation have a pre-Columbian historical link with the region. It constitutes a nation recognized by the National Council of Indigenous Nationalities and people, which actively promotes the processes of development and social demand fostered by the Constitution of the Republic (Kayambi, 2016).

Their group has had great influence in various movements of social struggle, is a majority demographic force in the areas of Cayambe and Pedro Moncayo in Pichincha, in addition to its social participation in provinces such as Imbabura and Sucumbíos. Natural: Located in the geographical half of the world. Cayambe has the distinction of being a region with a temperate and cold climate. Its soils are of volcanic origin and are surrounded by an irregular orography, with heights that oscillate between 1 740 and 5 245 meters above sea level. The average regional temperature does not vary greatly throughout the year, fluctuating from 11.8°C to 15.1°C. The average annual rainfall varies from 730 to 940 mm, according to the canton region, with a gradual decrease during the months of May to October (IEE, 2013). The páramo vegetation surrounds the valleys and occupies the lower section of the Andean high floor of the Cordillera Central and the Nudo del Mojanda-Cajas (GAD Pedro Moncayo, 2016). In its valleys are high montane and montane forests (Jossé et al., 2009).

Production system

Agricultural and livestock: Livestock production in the region is made with improved pastures. Mainly several lines of ryegrass (*Lolium hybridum*) and national pastures associated with the dairy industry (*Lolium multiflorum* var. Pichincha) are used.

The livestock line is based on mestizo cattle and improved with Holstein Friesian lines, as well as with crosses with other dairy breeds of European origin. Milk production is mainly carried out in small and medium-sized farms (Mena-Vásquez, Boelens and Vos, 2016), through small or community herds (Bonifaz García and de Jesús Requelme, 2011).

Raw material management: Farmer management is focused on the high quality of pastures (Roca Fernández and González Rodríguez, 2014), and is based on the agroecological capacity of the area for livestock (Franzuebbers, Sawchik and Taboada, 2014).

Production and transport: The milk is milked daily

in the farms or communes of the sector, and then it is taken to the vats of the producing farms or to the authorized collection centers. Subsequently, it is transported directly to the craft processing centers or authorized factories in the city of Cayambe.

Processing or industrialization system: The milk is processed communally or industrially (in authorized factories) and its production is used for the sale of leaf cheese in local shops.

Obtaining the product

- a) a) The “Cayambe Leaf Cheese” is established based on the classification of cheese types of NTE-INEN-2537 (2010), numeral 2.1.17.
- b) The coagulation of milk will be carried out between 32 and 35°C, during 30 minutes.
- c) To allow the draining, the curd will be cut through successive cuts.
- d) Salt and citric acid will be added to the tank leaving it to act on the grains.
- e) The tank will be reheated exceeding 60°C.
- f) Once the dough is softened, it will begin to knead quickly trying to reduce losses of fines.
- g) It will take the mass of spun cheese and it will be flattened with a roll.
- h) It will roll over itself and proceed to cut.
- i) The central rib of an achira leaf will be sectioned to flatten it and clarified in boiling water.
- j) The piece of cheese will be wrapped with each sheet and the product will be packed immediately.

Marketing and labeling

The product must be correctly identified, respect commercial agreements and the local regulations established in NTE 1334-1, 1334-2 and 1334-3 (NTE-INEN-1334, 2011). It will clearly identify the stamps recognized by the IEPI that qualify it as a PDO, as well as a logo that clearly links the product with the geographical area and the collective mark. The cheese should be dispensed in aseptic containers, hermetically sealed, that protect the product, be resistant, do not alter its organoleptic characteristics, and help its conservation and quality. In addition, they must ensure their safety during storage,

transportation and sale in accordance with the NTE 1528 standard (NTE-INEN-1528, 2012).

The commercialization of the product must be done in authorized distribution and marketing centers. It must define a regulation that authorizes the distribution of this cheese, linking it with the quality of its origin.

Control and registration structure

Once the PDO is authorized, this section will include the authorization granted by the IEPI in accordance with the legal framework already established. The addresses, contacts and digital means of the PDO, as well as the rights and obligations of the actors of the PDO, the list of authorized producers, manufacturers and marketers, together with the respective accreditations shall be recorded.

12 Conclusions

A legally constituted DOP is recognized throughout the world, and therefore it is necessary to harmonize the Ecuadorian legislation with respect to other Latin American states and European legislation itself. This type of study helps to consider the bases for the development of a specific law for a PDO.

In order to develop a PDO, it is necessary to create a regulation that adapts to the situation of each country. In Ecuador, it is possible to establish a PDO as long as there is sufficient flexibility that allows the linking of several actors for its development. For PDOs to be commercially attractive, it is necessary to promote research and encourage productive investment. For this, it is necessary to deepen the multidisciplinary studies in the legal aspect, internal quality studies, good manufacturing practices, and economic impact for its development.

Because they are often born from the will of the community itself, the PDOs can be rural socio-economic drivers in the region, on other types of international cooperation programs and industrial production initiatives. On the contrary, public policies, low associative capacity and low quality of products limit the success of a PDO.

Faced with the global interregional free trade situation, Ecuador must be prepared for the use of productive alternatives.

Based on the example of the specifications of the "Cayambe Leaf Cheese", developed in this work,

this proposal can be validated *in situ* according to the characteristics of the product, expanding its scope and impact to other regions of the country.

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