

Protected food, drink or agricultural product name

Product specification for ACEITUNA DE TACNA

A protected designation of origin (PDO)

Responsible country: Peru

GB number: F0094

This document sets out the elements of the product specification for information purposes.

Competent Authority

The National Institute for the Defense of Competition and Protection of Intellectual Property (INDECOPI) is the Peruvian authority in charge of running the scheme of the appellations of origin and geographical indications.

Name: National Institute for the Defense of Competition and Protection of Intellectual Property (INDECOPI)

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Applicant group

Name: The Aceituna de Tacna's application was submitted by Central de Asociaciones de Productores de Olivo – CEAPO, from Peru. However, it must be noted that according to the Peruvian legislation, the Peruvian State is the exclusive owner of the Peruvian appellations of origin or geographical indications.

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Type of product (as in Annex XI implementing Regulation 668/2014)

Fruit, vegetables and cereals fresh or processed (class 1.6)

1. Product name

Aceituna de Tacna

2. Description

- Green olives: They are the fruits of the olive tree obtained during the ripening cycle, before veraison.

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External appearance:

- Colour in the range of green to straw yellow.
- Shiny surface.
- According to the calibre, shape and uniform size.

Internal Appearance:

- Firm under pressure, it does not deform, explained by its high protein content and a good amount of dissolved minerals.
- It does not present fibrous structures, since it is balanced in its fibre and lipid content.
- The skin has an appropriate firmness and hardness that is not easily damaged and does not make it difficult to chew.
- The pulp is fleshy, with a homogeneous colour up to the area surrounding the pit or seed.
- It detaches moderately from the pit, that is to say, when removing the seed, it does not drag portions of pulp, nor can it be removed with light pressure.
- The pit is of low medium size, so the amount of pulp represents more than 80%.

Smell and Taste Appearance:

The smell is typical of olives and intense. The flavour is neutral, salty with minimal bitterness and a balanced sensation between juicy and firm.

- Black olives: These are those that were collected at full maturity or shortly before it, from olive trees, depending on the production area and the time of collection, the colours vary from black, reddish, purplish black, dark purple, greenish black or chestnut dark, not only in the skin but also in the pulp. Regarding the sensory analysis, the following parameters have been established: light purple, purple, and dark purple. They are very aromatic typical of olives, a pleasant degree of bitterness and contrasting with the aroma, which should persist in the mouth for approximately 20 to 30 minutes,

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- **Mulatto or colour-changing olives:** They are those fruits that were collected in the veraison and before their maturation, reason why they can present / display in the skin a reddish black colour, purplish black, dark violet, greenish black or chestnut dark; before the pulp begins its pigmentation. The sensory analysis includes the colour parameters: white mulatto, slightly pink mulatto, and pink mulatto.

The shapes that can be seen in the fruits designated Aceituna de Tacna are elongated and ovoidal, symmetry ranges from slightly asymmetric to asymmetric. The transverse diameter corresponds to the centred type. The base is of the truncated type; and the apex varies from pointed to rounded. The nipple is absent or is of the sketched type. The presence of lenticels ranged from abundant to rare.

Bromatological composition of ACEITUNA DE TACNA

The ranges of the values of each of the bromatological variables for the fruits: green olives, at a statistical confidence of 95% are expressed at an average moisture of 69.03% and a constant moisture of 65%, as shown in tables 1 and 2:

Table 1. Moisture 69.03%

95% CONFIDENCE	MINOR VALUE (%)	GREATEST VALUE (%)
LIPIDS	23,135	25,532
PROTEINS	1,497	1,647
FIBRE	0.654	0.733
ASH	3,073	3,836
CARBOHYDRATES	1,327	1,902

Table 2. Moisture 65%

95% CONFIDENCE	MINOR VALUE (%)	GREATEST VALUE (%)
LIPIDS	21,581	24,504
PROTEINS	1,404	1,565
FIBRE	0.614	0.695
ASH	2,884	3,647
CARBOHYDRATES	1,262	1,771

Bromatological variables of mulatto and black olives

The ranges of the values of each of the bromatological variables for the fruits: black olives and mulatto olives, at a statistical confidence of 95%, are expressed at an average moisture of 67.96% and a constant moisture of 65%, as shown in tables 3 and 4:

Table 3. Moisture 67.96%

95% CONFIDENCE	MINOR VALUE (%)	GREATEST VALUE (%)
LIPIDS	22.37	25,295

PROTEINS	1,39	1,50
FIBRE	1,197	1,5
ASH	3,033	3,662
CARBOHYDRATES	3,034	3,794

Table 4. Moisture 65%

95% CONFIDENCE	MINOR VALUE (%)	GREATEST VALUE (%)
LIPIDS	21,225	24,995
PROTEINS	1,326	1,457
FIBRE	1,146	1,444
ASH	2,91	3,459
CARBOHYDRATES	2,899	3,71

Unsaturated fatty acid content in black olives

The following ranges have been established in the content of unsaturated fatty acids of the products designated Aceituna de Tacna, table 5.

Table 5. Confidence limits at 95% on the content of essential fatty acids in black olives

Type of fatty acid in 100g sample at 95 % CONFIDENCE	MINOR VALUE (%)	GREATEST VALUE (%)
Palmitic Acid Methyl Ester (C16: 0) (palmitic acid)	20,413	22,920
Palmitoleic Acid Methyl Ester (C16: 1) (palmitoleic acid)	3,708	4,692
Stearic Acid Methyl Ester (C18: 0) (stearic acid)	5,013	5,420
Oleic Acid Methyl Ester (C18: 1n9c) (oleic acid)	35,225	40,208
Linoleic Acid Methyl Ester (C18: 2n6c) (linolenic acid)	22,538	25,328
Arachidic Acid Methyl Ester (C20: 0) (arachidonic acid)	3,162	3,471
cis-11-Eicosenoic Acid Methyl Ester (C20: 1) (eicosenoic acid)	1,506	1,694
Linolenic Acid Methyl Ester (C18: 3n3) (linolenic acid)	2,240	2,494

Eicosenoic acid is the one that constitutes the main differentiating aspect in the products designated by the Aceituna de Tacna appellation of origin.

Anthocyanin content in black and mulatto olives

The anthocyanin content values contained in black and mulatto olives, at a 95% confidence level of the fresh sample: Minimum value 104.939 mg/100g and the upper value of 153.917 mg/100g.

Protein content in green olives

The protein content is an important characteristic in the differentiation of Aceituna de Tacna, in the case of green olives, which stand out by reaching highly significant differences due to their origin. They present an average of 1.485% and a standard deviation of 0.191; at constant moisture conditions of 65% and with a confidence level of 95%, the range can vary from 1.404% to 1.565%.

3. Geographical area

The production area includes altitudes between 25 meters above sea level and 800 meters above sea level and covers the following sectors:

Sector 1. Irrigation La Yarada:

The “La Yarada” area is located towards the southern end of the Province of Tacna.

Sector 2. Sama Irrigation:

Located towards the northwest of the Province of Tacna. It extends to the south in the area called “Sama Baja”.

Sector 3. ITE Irrigation:

Located in the southwest of the Jorge Basadre Province. Further south in the area called Pampa Baja.



Map. Area of the production zone of the Aceituna de Tacna appellation of origin.

4. Proof of origin

In order to maintain the traceability of ACEITUNA DE TACNA, producers carry out the following activities during the production process: The first step carried out by the producers consists in the elaboration of visual plans of the plots with their names and codes, channels, warehouses, lobbies, the area of the wells and housing. With such procedure they can keep track of future tree replacement. Also, producers usually follow criteria for the installation of nurseries, such as distances greater than 30 meters between water sources in order to avoid contamination.

The points of control for both green and black olives are:

On receipt:

- Date of receipt of the olive
- Origin of the olive
- Kilograms per suppliers or origin (field sector)
- Harvest containers by supplier
- Variety
- Olive type (green / black)
- Carrier
- General aspect

When entering the warehouse:

- Entry date
- Provider or entry note number
- Destination tank

Washing:

- Date of receipt of the olive
- Wash start time
- Wash end time
- Type of wash
- Origin of the olive

Immersion in brine:

- Date of placement of the brine
- Tank number
- Start time of the operation
- Percentage or Baumé degrees of the brine solution.

5. Method of production

In green olives:

In order to maintain its particular flavour without the characteristic strong bitterness, its collection must be done before veraisoning and by hand in plastic baskets, placing blankets at the base of the trees to avoid damage. The harvest period must be between the months of March to May. Immediately after being collected, they must be taken for a pre-wash and

continue with the treatment that involves applying soda or sodium hypochlorite at the approximate concentration of 1.65% equivalent to 2.6°baumé, accepting the range between 2.5 to 3.0°baumé. One of the main contributions of the human factor to the process is that in Tacna it is customary to carry out 2 to 3 washes with a maximum of 36 hours after the alkaline treatment. Fermentation must take place between 60 to 90 days, for this the following criteria must be followed: the fermentation vessels must be cleaned twice a week in hotter years and once in colder years. Fermentation vessels should have a capacity of 1000 to 3000 litres.

In black and mulatto olives:

To achieve firm olives, with a juicy pulp, they must be manually collected in plastic baskets, placing blankets at the bases of the trees to avoid damage to the fruits that are detached. The harvest must be carried out when the plant is in full fruiting and the fruits exhibit a maturity index that varies between 4.5 and 5.0, which occurs between the months of May to August. In addition, all the stages of the process must have been fulfilled, that is, they must have been placed in brine at a concentration between 8 to 10°baumé at a pH of 4.5 and, after fermentation, for a period of 2 to 3 months.

Fermentation vessels should be cleaned twice a week in warmer years and once in colder years. The fermentation vessels used should have a capacity of 1 000 to 3 000 litres, this aspect influences the characteristics of the olive.

External appearance:

- Colour in the range of mulatto to intense purple almost black.
- Shiny surface.
- According to the calibre, shape and uniform size.

Internal Appearance:

- Firm under pressure, it does not deform or fall apart when touched, explained by its balanced content of protein, fibre, ash and carbohydrates.
- It does not present fibrous structures, since it is balanced in its fibre and lipid content.
- The skin has an appropriate firmness and hardness that is not easily damaged and does not make it difficult to chew.
- The pulp is fleshy, with a colour that ranges from slightly lilac to a very intense lilac.
- It is easily detached from the pit and does not tend to drag portions of pulp adhering to the surface of the pit.
- The pit is of low medium size, so the amount of pulp represents more than 80%.

Appearance of smell and taste:

The smell is typical of black olives, very aromatic, with fresh tones. The flavour is salty with an exact point of acidity and pleasant, juicy and firm bitterness.

6. Link with the geographical area

The particular characteristics are the consequence of the interaction of natural factors, such as the climate that prevails in its production area. The Aceituna de Tacna cultivation areas comprise a space considered to be part of the coastal desert biome, with certain patterns of maximum and minimum annual temperatures, relative moisture and minimum values of annual precipitation. This geographical area is influenced by the Humboldt Current, which contributes to this being a desert space with little rainfall, with conditions for olive plants to be exposed during the phenological phase of fruiting to the thermal requirements that determine the uniqueness of the Aceituna de Tacna.

In addition to the climate, soil and water are also key - as natural factors - that affect the special characteristics of olives. Regarding the soil, it present CE values considered moderately saline, varying between 4.1 and 5.91dS/m, so they are considered very slightly saline to slightly saline soils. According to the indicated values, the olive tree is a crop with good tolerance to salinity. In addition, the pH of the soils corresponds to slightly alkaline soils and, in relation to the soil texture, the average values of the proportions of sand, silt and clay, corresponded to 78.34%, 13.62% and 8.31%, which are equivalent to sandy loam soils. It should also be considered that the production zones where the olive plots are located in Tacna include altitudes from 10 meters above sea level to 300 meters above sea level. With respect to the water in the designated geographical area, the pH values in Tacna are between 6.08 and 8.4, with an average of 7.10 corresponding to neutral waters. Tacna presents an average EC of 1.96, as well as an average value of 1.80 in the bicarbonate content. Regarding the classification of water types, the C3S1 type predominates, which corresponds to waters with a degree of salinization that can affect sensitive species; however, suitable for irrigation without destroying the soil structure. The olive tree behaves like a salinity-tolerant crop, so the composition of the waters in Tacna favors that the olive tree produces olives with differentiated characteristics; due to the fact that lower amounts of carbonates affect less the compaction of the soils during irrigation

The influence of the human factor is present through the management of the Aceituna de Tacna cultivation area, in which the olive growers carry out a rest period of fifteen additional days with respect to the other regions of the country. The producers only harvest the olives manually as this does not harm the olive or the tree, this ensures the table olives are of excellent quality. Fertilization is carried out at the projection of the olive tree crown. The Aceituna de Tacna production area complies with the control and eradication measures implemented by the olive growers, as well as the application of good agricultural practices.

The producers apply a Manual of Good Agricultural Practices (GAP) to the olive cultivation systems to obtain the fruit designated as ACEITUNA DE TACNA. The first step that producers carry out consists of drawing up visual plans of the plots with their names and codes; canals, warehouses, lobbies, the well area and housing. In this way they can keep track of future tree replacement. It must be noted that producers have develop necessary skills to carry out the practices applied in the productive process of ACEITUNA DE TACNA, regarding the management of nurseries and new plantations, soil management, irrigation techniques, fertilization, olive grove protection, pruning, harvesting and transportation, crop phenology.

The requested sign is made up of the name of a geographical place - "Tacna" - and designates a product - "olive" - originating in said geographical area that has particular characteristics due to the geographical environment to which the name refers.

7. Inspection body

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8. Labelling

Peruvian Metrological Standard NMP 001: 2019 "Requirements for the labelling of pre-packages" - 5th edition, as applicable.