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Article

Consumer preferences and economic valuation of a traditional Mexican cheese using discrete choice experiments

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Abstract:

The production of traditional foods is strongly linked to the regions of origin where they are produced. These products are part of the culture and are key elements in the gastronomy of the regions, as they have unique sensory and nutritional characteristics derived from the production processes. The objective of this study was to identify the value attributes of a sample of consumers of Seco Encerado cheese, using the technique of discrete choice experiments (DCE), and to determine the additional willingness to pay (WTP) for each kilogram of cheese. The most important results were the identification of the significant attributes: price, origin and process, as well as the interactions: price - origin and process - label. The attributes that consumers consider important when choosing a product and for which they are willing to pay a premium price have been identified; two groups of consumers have been created (artisanal cheese enthusiasts and cheese consumers), who are interested in different evaluation attributes, different socio-demographic characteristics and the intrinsic links of the product with the territory. This research explored the valuation and WTP for Seco Encerado cheese, identifying a positive tendency on the part of consumers towards this product.

Keywords: Ripening cheese, Mexico, Valuation attributes, Seco Encerado cheese, WTP.

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Introduction

Traditional foods are produced from local natural resources using specific processing techniques. This specificity gives unique chemical and sensory characteristics to this type of product, in addition, they have a relationship closely linked to their culture of origin. They are key elements in the elaboration of different local gastronomic dishes that show representations of socio-cultural meanings and provide specific nutrients to the people who include them in their diet[1]. The production and consumption of traditional foods have been empirically passed down through generations. They have an impact on the economic development of the region of origin where they are produced, creating jobs and supporting local producers[2]. The promotion of these foods can therefore contribute to rural development and improve the economies of small-scale producers.

Cheeses stand out internationally as a traditional food group of great importance, they are recognized by consumers for their attributes such as protection of origin, type of process, quality indicators, safety labelling and price[3]; over time, attempts have been made to identify the main valuation attributes of cheeses, for this purpose different valuation techniques have been used and applied, such as discrete choice experiments, from which it is possible to estimate the willingness to pay (WTP) for different traditional cheeses and their attributes. Previous research has identified consumer behavior towards traditional cheeses, such as Colonna *et al*[4], who identified preference and purchase of specialty cheeses from the US; Menozzi *et al*[5], who identified preference for labelled Parmigiano Reggiano and Comté cheeses; Mazzocchi *et al*[6] assessed consumer attitudes towards sustainably produced mountain cheeses; and Menozzi *et al*[7] investigated the factors that influence the choice of PDO-labelled cheeses from France and Italy.

Braghieri *et al*[3], indicated that there is a relationship between consumer attitudes, valuation and willingness to pay for traditional cheeses; this is influenced by different factors such as: origin, beliefs and attitudes of consumers, as well as level of education and income. On the other hand, Rodrigues *et al*[8] defined that food choices are related to different points of perception and the main factor in a purchase choice is influenced by physiological or nutritional needs, however, Köster[9] indicated that in addition to biological determinants (hunger, appetite and sensory aspects), there are environmental determinants (cultural, social

and economic environment) and individual determinants (age, gender, personality and food experience); Therefore, it is important in this research to know what are the factors that influence the food choice of a product such as Seco Encerado Cheese.

It is important to note that in Mexico there is an important culture of cheese consumption and production, Villegas de Gante *et al*[10] describe the production of around 40 Mexican artisanal cheeses that are considered traditional due to the set of characteristics acquired from their respective production environments; one of these products is Seco Encerado cheese, produced in the region of Istmo de Tehuantepec, Oaxaca, Mexico[11].
This cheese is characterized by the fact that it is artisanal produced with raw milk from zebu cows *(Bos taurus indicus)*, as the first phase of the production process reception operations are performed (filtering and manual skimming in some dairies), then proceed to the curdling, which is done with rennet obtained from cattle and carried out at room temperature (30 - 40 ° C) for 30 min, once the gel is formed, the curd is cut and drained through blanket cloth bags. Once the curds are salted, they are placed in cubic molds (35 x 35 cm) made of Huanacaxtle wood *(Enterolobium cyclocarpum)*, where the cheeses are pressed with river stones (weighing approximately 10-20 kg). The cheeses are subjected to two ripening processes under the typical environmental conditions of the Isthmus (high relative humidity and temperature): the first process lasts 7 d and is carried out in Huanacaxtle moulds in order to ensure complete draining and avoid internal fractures in the cheese; The second process lasts about one month, during which the cheeses are removed from the molds and placed on wooden shelves, where every third day the cheese is turned over and the fat released is spread on the different sides of the cheese, this process is repeated until the 30-d period is over. Once the cheese has matured successfully, it is covered with a layer of wax or paraffin to maintain its shelf life and prevent possible physical or biological contamination. The final piece of Seco Encerado cheese weighs approximately 10 kg and is sold by the cheese producer to the local retail distributor, who oversees cutting the cheese into small triangular prisms with a weight of 50 g and a price of around 20 MXN, a common presentation of the product and offered to the final consumer. Seco Encerado cheese due to its sensory characteristics of aroma and intense fermented flavor, salty flavor and crumbliness, stands out as an ingredient in various typical dishes of the region such as: breads (*(bollito de queso o quesadilla de arroz), garnachas istmeñas, tostadas, empanadas rellenas de queso, pure de papa horneado estilo istmeño, garnachas, enchiladas*, among others, however, Seco Encerado cheese is also a perfect complement for some local foods such as: *totopos istmeños, pites or corn tamales*, beans or among other dishes[12].

Despite the importance of traditional Mexican cheeses, there are currently few studies that evaluate consumers' valuation preferences and willingness to pay for them, however, the following consumer-related research on Mexican cheeses was identified: Sensory analysis of "Bola de Ocosingo" Cheese[13]; Perceptions of cheese authenticity[14,15]; Segmentation of

cheese consumers according to their lifestyle[16]. The objective of this research was to determine consumers' willingness to pay and valuation of Seco Encerado cheese through discrete choice experiments using the following valuation attributes: origin, type of process, aging time, label, and price, with the purpose of exploring consumers' perceptions of Seco Encerado cheese.

Material and methods

Sample of consumers

A sample (n ≥ 355) of Mexican consumers of Seco Encerado cheese was selected according to Equation (1) described by[17]; for an infinite population (N= 99,999), a coefficient of reliability of 95% (z= 1.96), a coefficient of variation of 50% (V_y= 0.5) and a margin of error of 5 % ($\varepsilon_{R(\bar{y})}$= 0.05). The criteria for participation in the research were: availability, being a consumer of Seco Encerado cheese and being of legal age (≥ 18 yr). The questionnaire was applied virtually using Google® Forms. The type of sampling was non-probabilistic, using the snowball technique for the distribution of the questionnaire, in which participants who met the selection criteria were identified, these in turn shared the link to participate to other individuals who met the selection criteria, this process was repeated until the planned sample size was reached.

Equation……. (1)

$$n \geq \frac{z^2 N V_y^2}{z^2 V_y^2 + (N-1)\varepsilon_{R(\bar{y})}^2}$$

Discrete choice experiment design (DCE)

The discrete choice experiment involves the construction of an experimental design that aims to evaluate experimental variables that contain two or more levels (attributes) and the effect of the levels of these attributes on the stated preference[18].

Attribute and level selection

The attributes were selected according to the criteria that characterize traditional foods according to Guerrero *et al*[19]: geographical origin, type of process, product information and price (Table 1).

Table 1: Selection of attributes for the survey using discrete choice experimental methodology

Research criterion	Attributes	Levels	Description
Geographic origin	Place of origin	Tapanatepec, Oaxaca Zanatepec, Oaxaca	Places associated with the production of Seco Encerado cheese.
Process type	Process	Natural (the rumen of the cow is used as a coagulating agent)	Rennet extracted from cow rumen, processed by salting and solar drying.
		Not natural (industrial microbial rennet is used as a coagulant)	A blend of coagulation enzymes marketed under the CUAMEX® brand.
Process type	Ripening time	Fresh	Fresh cheese fit for human consumption from 0 to 48 h.
		Semi-dry	Semi-ripened cheese (7 to 15 d).
		Dry	Cheese ripened for at least 30 days (T ≥ 35 °C and RH ≥ 60 %).
Product information	Label	With information	The label of the cheese must include nutritional and origin information.
		No information	The cheese label must not contain any nutritional or origin information.
Price	Price per kg of cheese ($ MXN)	400 300 200	Amount to be paid in Mexican pesos per kilogram of Seco Encerado cheese.

$ MXN= mexican peso; T= temperature; RH= relative humidity.

Selection of combinations

A full factorial design was applied based on the five attributes to be evaluated for Seco Encerado cheese and their respective levels (Table 1), from this experimental design 72 different combinations were obtained; implementing a design of this type with too many combinations would imply fatigue and a cognitive challenge for the respondents[20], therefore it was proceeded to apply a fractional factorial design with an $IV^{1/5}$ arrangement to obtain 16 combinations of representative attributes, these possible combinations were randomized to form eight selection sets.

Survey design

The survey consisted of three sections: 1) Introduction: respondents were presented with a general description of Seco Encerado cheese and its importance, as well as the purpose and implications of the survey; 2) Sociodemographic variables: consumers were asked to provide their sociodemographic data, gender, age, education level, occupation, monthly income and place of residence; 3) Choice experiment: consumers were presented with the 8 choice sets, which consisted of two purchase alternatives and one no-purchase alternative (Table 2).

Table 2: Example of purchasing alternatives presented in the survey

Alternative of choice A	Alternative of choice B	Alternative of choice C
Seco Encerado Cheese  Origin: Tapanatepec, Oaxaca Process: Not natural (industrial microbial rennet is used as a coagulant) Ripening time: Fresh Label: No information (nutritional and origin) Price per kg of cheese ($ MXN): 200.00	**Seco Encerado Cheese**  Origin: Zanatepec, Oaxaca Process: Natural (the rumen of the cow is used as a coagulating agent) Ripening time: Dry Label: With information (nutritional and origin) Price per kg of cheese ($ MXN): 250.00	
Option A	Option B	Option C (I would not buy an option)

Data analysis

Discrete choice experiment and willingness to pay

The data obtained were analyzed using econometric estimation with the mixed logit model (with and without interaction effects), as it has been considered the most appropriate model when dealing with aspects related to attributes[21]. This model considers the diversity of preferences by allowing the parameters to be randomly distributed in the sample population, so that everyone has their own preferences[22]. In this study, and to analyze consumer preferences in the consumption of Seco Encerado cheese, a mixed logit model was applied, in which the data from the discrete choice experiment were analyzed within a randomized utility framework, in which an individual (i) chooses the alternative that provides the highest utility among (j) alternatives in each choice occasion (t). The utility function takes the following form (Eq. 2):

Equation 2…….. $$U_{ijt} = V_{ijt} + \varepsilon_{ijt}$$

Where: U_{ijt} is the utility obtained by an individual in choosing the alternative; V_{ijt} is the deterministic component and ε_{ijt} is the random component.

For the logit model without interaction, the following variables were used: a) dependent variable: consumers' choice among the three alternatives (option A, option B and the no purchase alternative), which took values of 1 if an alternative was selected and 0 if the two alternatives were not selected; b) independent variables: attributes coded with their respective levels according to the experimental design. On the other hand, for the mixed logit model with interaction, the following variables are used: a) dependent variable: consumer's choice of the three alternatives; b) independent variables: attributes coded with their respective levels according to the experimental design.

Once the model parameters have been estimated, it is possible to calculate the marginal WTP for each attribute considered (the marginal substitution ratio between the attribute and the price). WTP is calculated using the equation already described[22-24] by taking the quotient of the coefficient of the attribute (β_a) and the coefficient of the average price (β_p):

$$DAP = \frac{\beta_a}{\beta_p} - 1.$$

Latent class logit model

A latent class logit model (LCLM) model was used to classify consumers into groups according to attribute preferences. This model is mainly applied to discrete variables, from the LCLM it is assumed that a constant vector β within each, identical homogeneous coefficients and heterogeneity between different groups of individuals, β that varies between groups[25].

The LCLM model is mainly applied to studies with discrete variables[25], from the generation of coefficient estimates it is possible to determine the membership of an individual i, belonging to class s, has a probability of choosing alternative j in the set of options t equal to[22,26].

$$P_{i/s} = \frac{\exp(\beta'_s x_{ijt})}{\sum_{k=1}^{J} \beta_s x_{ikt}}$$

Where: s is the number of classes and β is the vector of fixed parameters associated with class s.

The LCLM was applied to the consumer variables of the three alternatives (option A, option B and no purchase alternative), obtaining two main classes characterized by the sociodemographic variables of the individuals belonging to each class. To compare the differences between the individuals of the classes, a K-proportions test was applied with X^2 as the test statistic, following the procedure of Marascuilo. Analyses were performed using the XLSTAT statistical analysis software, version 2023.1.1 (Addinsoft®, USA).

Results and discussion

Sociodemographic characteristics of the sample

In Table 3, the descriptive statistics of the participants' sociodemographic information (n = 355) are presented. In the gender category, 36.62 % of the respondents are male, 61.41 % are female and 1.97 % preferred not to say; in the age category, the largest number of participants fell within the 18 to 35 yr range (40 %); the average income of the participants (68.45 %) is less than $10,000.00 MNX; in the occupation category, the majority of the participants are self-employed (30.14 %); while 72.96 % of the participants are from the South of Mexico. The analyzed sample exhibited a similar demographic distribution to Mexico's general population. In Mexico, 52 % of the population is female and 48 % male, the average age is 29 yr, most individuals have a basic level of education, and the average income is $5,750.00 MXN[27]. The participation of consumers from southern Mexico is related to the production area of Seco Encerado cheese, located in the Istmo of Tehuantepec, Oaxaca, Mexico, a region that mainly includes Oaxaca, Chiapas, Tabasco and Veracruz[28].

Table 3: Descriptive statistics of the main sociodemographic variables reported by in the study (n= 355)

Sociodemographic variables	Categories	Sample (n)	Sample (%)
Gender	Male	130	36.62
	Female	218	61.41
	I prefer not to say	7	1.97
Age	18 - 35	142	40.00
	36 - 45	130	36.62
	> 46	83	23.38
School education	Low level of education	223	62.82
	University studies	132	37.18
Occupation	Self-employed	107	30.14
	Unemployed	13	3.66
	Government employee	81	22.82
	Pensioner	6	1.69
	Private employee	73	20.56
	Student	75	21.13
Income	≤ 10,000.00	243	68.45
($ MXN)	10,001.00 A 20,000.00	92	25.92
	> 20,000.00	20	5.63
Residence	North	8	2.25
	West	15	4.23
	Centre	73	20.56
	South	259	72.96

Mixed logit model on the valuation attributes

Table 4 shows the analysis of variance of the mixed logit model applied to the attributes and their different levels, this model was selected according to the criteria described[29,30], who indicate that: i) the coefficients of the variables should have the expected signs, ii) the coefficients of the independent variables should be significant with a certain acceptable level of reliability, iii) the Log likelihood of the model should be large, and iv) the model should have a better fit in terms of the MacFaden R^2. In this model, the main goodness-of-fit statistics were: the Log (likelihood) with a value of 8835.14 and the pseudo-R^2 (McFadden) with a value of 0.210; according to Menozzi *et al*[31], a Pseudo R^2 (McFadden) value of 0.2 to 0.4 indicates an excellent model fit, while Valdivia *et al*[30] indicated that these values (0.2 to 0.4) are equivalent to an R^2 of 0.70 to 0.90 in an ordinary least squares model, indicating a good model fit.

Significant attributes *(P*≤0.05*)* identified were*:* price, origin, process and the of price with origin, process and label, these attributes are considered important in the valuation of the product by the consumer. Menozzi *et al*[5], indicated that food quality systems, production methods, organic and origin labels are attributes that provide strategic elements to differentiate traditional cheeses from their competitors. Therefore, the valuation that consumers give to the significant attributes of Seco Encerado cheese constitutes an essential differentiating element for this product.

Table 4: Analysis of variance of the logistic regression model used

Source	**DF**	**Chi- square (Wald)**	***P* > Wald**	***P* > LR**
Price	1	3.687	0.055	< 0.0001
Origin	2	136.137	< 0.0001	< 0.0001
Process	1	5.913	0.015	< 0.0001
Price * Origin	1	4.083	0.043	< 0.0001
Price * Process	1	1.734	0.188	< 0.0001
Price * Label	1	39.426	< 0.0001	< 0.0001
Log (Likelihood)	8850.14			
R^2 (McFadden)	0.210			

Table 5 shows consumers' preferences for specific attributes and their willingness to pay for each attribute, as well as their significance. In the case of the origin of the cheese, it was significant for both municipalities ($\beta_{Tapanatepec}$= 1.43; $\beta_{Zanatepec}$= 1.98). Consumers are willing to pay a price premium of $11.00 MXN per kg of cheese if it is produced in Tapanatepec, Oaxaca; however, if the cheese is produced in the Zanatepec, Oaxaca, there is a greater willingness to pay an additional $ 15.60 MXN per kg of cheese. The process attribute (β = 0.70) is important in the consumer's purchase choice and there is a willingness to pay an extra $ 4.80 MXN per kilo of cheese if the cheese is produced using an artisanal production process. The interaction price*label with information (β= 0.191) was found to be positive, consumers are interested and consider it positive that the product has a packaging label that provides information on the main characteristics associated with the product and nutritional information; the consumer is willing to pay an extra $ 1.60 MXN for a label that provides this information.

Table 5: Consumer preferences and WTP for Seco Encerado cheese

Attribute	Coefficient β	Standard error	P > Chi²	WTP ($ MXN)
Price	0.12	0.06	0.055	
Origin (Tapanatepec)	1.43	0.15	< 0.0001	11.0
Origin (Zanatepec)	1.98	0.28	< 0.0001	15.6
Process (Artisanal)	0.70	0.29	0.015	4.8
Price* Tapanatepec	0.38	0.19	0.043	-3.2
Price* Artisanal	0.24	0.18	0.088	2.1
Price* Label with information	0.19	0.03	< 0.0001	1.6

WTP= willingness to pay.

In this study, positive WTP in terms of origin, process and labeling, these aspects are closely related to consumers' eating habits, while for the interaction price*Tapanatepec there is a negative WTP, so consumers are not willing to pay a premium for these attributes because they are indifferent to them[32]. In addition to various psychological and sociodemographic factors, these habits are also influenced[33]. Nowadays, the food market has diversified to satisfy consumer needs[34]. For this reason, it is necessary to implement strategies that allow traditional foods to satisfy consumers, thus improving territorial development and generating economic benefits for producers[35]. In the case of Seco Encerado cheese, it is essential to promote its origin and introduce informative labels.

Valuation attributes and willingness to pay

Table 6 shows the results of the consumer profiles obtained through the logit analysis of the latent classes; two classes of consumers were identified. Cluster 1 ' Artisanal cheese enthusiasts', who value the attributes: Process (artisanal), ripened time (dry), label (with information) and Price* ripened time (dry), and have a positive WTP of $ 2.79 MXN, $ 7.32 MXN, $ 5.26 MXN and $ 22.02 MNX, respectively, for each kilogram of cheese. For this group of consumers, the value of the artisanal process and the 'dry' ripening process stand out; they prefer the cheese for its indigenous quality characteristics and are willing to pay a premium for these characteristics.

The higher valuation and WTP for attributes related to the process (artisanal) and ripening time are related to consumers' knowledge of traditional products, resulting in a higher valuation of local products and conceptualizations that associate artisanal food with higher quality[36]. Regarding consumers' preference for information labels, Stiletto *et al*[37] defined

that consumers consider the label as an important part of their buying decision, as it depends on the label whether the food is considered: "healthy", "nutritionally valid" or "frequently consumed". The use of different food labels can help consumers of Seco Encerado cheese to influence their purchase choices, satisfy their motivational needs (ethical, environmental and directly link the product to its origin.

In class 2 'Cheese consumers', who value positively the attributes: ripening time (semi-dry), ripening time (dry) and price*process (artisanal), there is a positive WTP of $4.71 MNX, $1.17 MNX and $1.1.17 and $1.74, respectively, for each kilo of cheese, this group of consumers is willing to pay a price premium for the cheese but is not willing to consume the cheese with the artisanal ripening process that it undergoes.

Table 6: Consumer ranking profiles and WTP ($ MXN) for different attributes of Seco Encerado cheese

Source	Cluster 1 'Artisanal cheese enthusiasts'			Cluster 2 'Cheese consumers'		
	Coefficient β	*P*> Chi²	WTP	Coefficient β	*P* > Chi²	WTP
Price				-1.45	< 0.0001	
Origin (Tapanatepec)				8.42	< 0.0001	-6.8
Origin (Zanatepec)				2.72	< 0.0001	-2.87
Process (Artisanal)	4.37	0.0153	2.79	6.71	< 0.0001	-5.62
Ripening time (semi-dry)				-8.30	< 0.0001	4.71
Ripening time (dry)	4.83	0.0003	7.32	-3.16	< 0.0001	1.17
Label (with information)	-1.25	0.0018	5.26			
Price*Origin (Zanatepec)				2.70	< 0.0001	-2.9
Price*Process (Artisanal)				-3.98	< 0.0001	1.74
Price* Ripening time (semi-dry)				4.16	< 0.0001	-3.86
Price* Ripening time (dry)	-4.21	< 0.0001	22.02			

WTP= willingness to pay.

In the results of the sociodemographic characterization of the classes (Table 7), the main differences found were that the class of 'Artisanal cheese enthusiasts' is composed of a greater number of men. Most of the members of this class have a low level of school education, their source of employment is self-employed (they are usually housewives, farmers, transport workers, etc.) and they are consumers originally from the south of Mexico and can therefore be called native consumers of this cheese.

'Artisanal cheese enthusiasts' are mainly men who express a preference for mature cheeses, and this preference can be derived from the typical sensory characteristics of these cheeses, which are related to intense flavors and aromas[38]. In addition, men pay more attention to the sensory characteristics of the product, as their preferences are mainly related to hedonic attributes[39], while women, who prioritize utilitarian attributes, related to price and nutrition[40].

The relationship between the origin of the consumer and the origin of the product is strongly linked, a phenomenon known as consumer ethnocentrism, which is mainly observed in regions with a strong local identity and a high demand for local products[41]. This group of local consumers exhibits similar behavior to that described[42], where dairy consumers show a higher preference for products of a specific origin, perceiving them as authentic and higher quality. The psychological relationships that consumers associate with cheese and the knowledge of cheese are the main factors that allow this group to show a higher willingness to pay for Seco Encerado cheese.

Table 7: Sociodemographic characterization of consumer groups

Categories		**'Artisanal cheese enthusiasts' (n= 185)**	**'Cheese consumers' (n= 170)**
Gender	Male	73 [b]	57 [a]
	Female	108	110
	I prefer not to say	4	3
Age	18 - 35	70	72
	36 - 45	72	58
	> 46	43	40
School education	Low level of education	122 [b]	101 [a]
	University studies	63	69
Occupation	Self-employed	61 [b]	46 [a]
	Unemployed	5	8
	Government employee	41	40
	Pensioner	4	2
	Private employee	39	34
	Student	35	40
Income ($ MXN)	≤ 10,00.00	133 [b]	110 [a]
	10,001.00 a 20, 000.00	40	52
	> 20,000.00	12	8
Residence	North	5	3
	West	7	8
	Centre	34	39
	South	139 [b]	120

[ab] Different letters indicate difference *(P*≤0.05*)* between the categories.

In this research, different consumer associations with the territory of origin of the product have been identified, Zhe *et al*[43] define these associations as attachment to place, in this concept influence different characteristics of consumer satisfaction (symbolic differentiation, sense of belonging, continuity, security and sense of belonging that traditional foods have), so it is important to study the associations that consumers have with the territory, paying special attention to its promotion and economic legal protection[44].

Conclusions and implications

The attributes that directly influenced the valuation of the cheeses were: price, origin (Tapanatepec and Zanatepec), process (artisanal) and the interaction between price and

process (price*artisanal) and process and label (price*label with information), for which consumers are willing to pay a price premium. Based on the above, it can conclude that consumers are looking for a traditional product produced in an artisanal way, they also showed interest in knowing the nutritional information of the product because they prefer a cheese with a label that includes the characteristics of the product to make a correct purchase decision according to their lifestyle. The latent class analysis identified two classes: "'Artisanal cheese enthusiasts'", who value the attributes Process (Artisanal), Ripening (Dry), Label (With Information) and Price*Ripening (Dry) and prefer to consume Dry Waxed Cheese with a traditional process, including the ripening to which it is subjected; while the second class "Cheese Consumers" consider the attributes Ripening (Oreado) and Price*Process (Artisanal), this group of consumers is willing to consume any type of cheese, except ripened cheeses. This study presents two main limitations: the first is related to the non-probabilistic sampling method, as it is not usually representative of the entire sample of cheese consumers. The second stems from the DCE, since the stated preference methods used in the experimental design may lead to overestimations or underestimations of the declared WTP values. Despite these limitations, this research contributes to a better understanding of consumer behavior and their WTP for Seco Encerado cheese.

Acknowledgements and conflict of interest

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