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CHARACTERIZATION OF THE CONSUMPTION OF MILK AND DAIRY PRODUCTS IN THE URBAN AND RURAL AREAS OF LAGHOUAT, ALGERIA

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ABSTRACT

This paper examines the disparities in consumption of milk and dairy products by urban and rural families in the region of Laghouat, located in southern Algeria. From December 2019 to March 2020, surveys were conducted among 125 families (94 in urban areas and 31 in rural areas). The results show that the consumption of milk and dairy products occupies an important place in the diet of the inhabitants of Laghouat (97.87% and 100% respectively for urban and rural families). Individual consumption levels expressed in kg milk equivalent/person/year were significantly higher in rural areas (241.89±27.84kg) than in urban areas (147.17±8.20 kg). A wide range of industrial and traditional dairy products was identified (raw milk, pasteurized or sterilized milk, powdered milk, lben or babeurre, rayeb or curdled milk, cheese, yogurt, butter). The consumption of industrial products (pasteurized or sterilized milk, powdered milk, lben, and yoghurt) constitutes 74.88% of the total quantity consumed by urban families. For rural families, 81.56% of the quantity consumed was composed of traditional products (raw milk and lben). The traditional processing of milk and dairy products was significantly more observed in the rural (93.55%) than in the urban community (28.72%). The marketing chain for raw milk seems weak; 54.84% of the farmers surveyed do not sell their milk. The in-depth study of the characterization of consumption would be interesting to revive the milk sector in the region of Laghouat and Algeria.
Keywords: Milk and dairy products; consumption levels; traditional processing; marketing.

Introduction

For centuries, milk has been considered a complete and balanced food in human nutrition (Onurlubaş *et al.,* 2013). Consumption is universal but variable among populations (Lecerf, 2010). In 2019, the amount of raw milk produced globally was about 883 million tons for more than 7 billion consumers (FAOSTAT, 2021). Algeria is characterized by rapid growth and an increasingly urbanized population (ONS, 2019). However, the production of animal proteins is struggling to meet the needs of this population, which has led the state to subsidize milk as an aliment very rich in nutrients and which can substitute for other expensive products such as meat. Unfortunately, this national milk production (78% from cattle) (FAOSTAT, 2021) does not cover the needs of the population, which makes Algeria very dependent on the world milk market through the import of milk powder (Dilmi Bouras, 2008). This policy of importing and state support is not without consequences, on the one hand, on consumption, which has increased from 35 liters/inhabitant/year in 1967 to more than 147 liters in 2012, which ranks Algeria 1st among the Maghreb countries (Makhlouf *et al.,* 2015) and on the other hand, on the national economy (the country loses billions of dollars per year: 1.4 billion $ USD in 2018 occupying the 2nd place behind cereals) (Meklati *et al.,* 2020).

As the Algerian population is predominantly urban, there is certainly a change in consumer eating habits, especially as the evolution of food consumption reflects societies' transformations (Malassis, 1988; Chikhi and Padila, 2014). However, the characterization of milk consumption and the diversification of milk products in Algerian traditions remain unknown and little studied. In rural areas, household diets are characterized by milk and various dairy products related to animal husbandry, the species raised, and little-known traditional practices (Derouiche *et al.,* 2016). In the semi-arid zone of Laghouat, the region where the present work took place, livestock plays an important role in the livelihoods of disadvantaged households, who consider these animal genetic resources a source of cash income, milk, and meat (Laouadi *et al.,* 2018). Consumption characterization studies in this region are virtually absent. The question that arises from this perspective is whether there is a disparity in the consumption of milk and dairy products between urban and rural areas. To answer this question, a survey was conducted among urban and rural families to characterize the current situation of milk and dairy products consumption in the region of Laghouat.

Material and Methods

Study area

The study was conducted in seven communes of the wilaya of Laghouat (Figure 1). The commune of Laghouat was selected to conduct the urban community survey. The remaining six communes were selected to conduct the rural community survey.

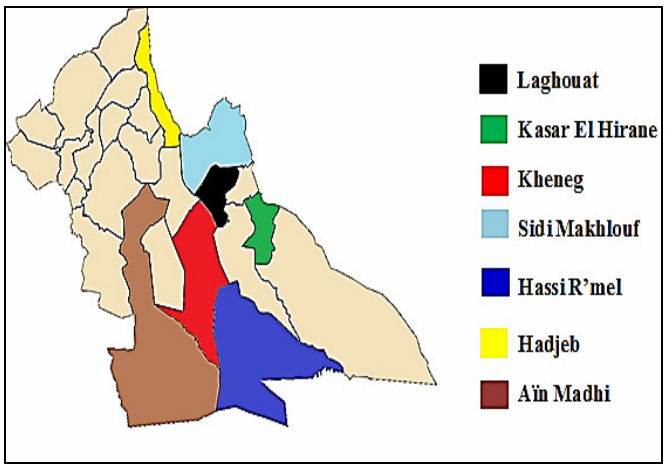

Fig. 1 : Laghouat study area, showing the communes covered by the survey.

Data collection

A household survey was conducted from December 2019 to March 2020 to obtain consumption information. The structured questionnaire, including closed and open-ended questions, was administered to 125 people (94 urban and 31 rural communities). These individuals were randomly selected but needed to know the household level's consumption characteristics.

Description of the questionnaire

The questionnaire covered the following components:

- socio-economic characteristics of the household;
- characteristics corresponding to the consumption of milk and dairy products, reasons for consumption, and the list of dairy products consumed;
- a detailed description of consumption of each identified dairy product;
- consumption levels of milk and dairy products;
- traditional milk processing;
- marketing of milk and dairy products in the rural environment.

Calculation of consumption levels

For statistical purposes, it may sometimes be useful to compare quantities of dairy products with each other by reducing them to equivalent quantities of milk. For this purpose, conversion coefficients have been used. The principle evaluates the quantity of milk necessary to manufacture the products considered. The most commonly used milk equivalents are those based on dry matter (Meyer and Duteurtre, 1998): raw milk: 1, pasteurized milk: 1, powdered milk: 7.6, lben: 1, rayeb: 1, yogurt: 1, cheese: 3.2, butter: 6.6. The quantity of milk and dairy products consumed at the household level per year is equal to the quantity consumed per day, multiplied by the conversion factor for each product type, multiplied by 365 days. The quantity consumed by each individual per year corresponds to the value obtained per household divided by the number of individuals in the surveyed family.

Statistical analysis

All statistical analyses were performed using R software (Version 3.1.1). Simple descriptive statistics (frequencies, mean, and standard error) were used to analyze the variables studied. The difference between frequencies was tested using Chi-Square or Fisher exact, and the difference between consumption levels was tested using the one-factor ANOVA.

Results and Discussion

Our study consisted of a food survey. Its overall objective was to characterize consumer behavior towards milk and dairy products in two distinct communities: urban and rural. According to Pale (2006), the determinants of consumption according to the literature are of several kinds: the place of residence, salary of the head of household, price of products, season, taste, hygiene, availability of products, etc. In this work, we chose the parameter "community of society: urban or rural" as an explanatory variable for disparities in the consumption of milk and dairy products.

Socio-economic characteristics

Each surveyed household had an average of 6.69±0.20 and 6.32±0.47 persons for the urban and rural families, respectively, which is similar to the national average in 2011, which was 6.02 persons (ONS, 2014), and also to the average recorded in the rural setting of Tebessa (6.1±2.2 persons) (Derouiche et *al.,* 2016). Of these people, 4.89±0.20 and 5.06±0.47 were adults for the urban and rural settings, respectively. The respondents to the questionnaire were 88.3% women in urban areas and 83.87% men in rural areas. The same trend was found by Laouadi et *al.* (2018). This could be due to rural society's traditional and cultural structure (customs) in which men prohibit women from participating in the interview. Ideally, the head of the household should be interviewed. However, given his unavailability, the surveys were conducted with family members who should know the consumption patterns in their households (17.02% of respondents are parents in the urban area versus 83.87% in the rural area).

Consumption of milk and dairy products

Milk is highly consumed by the inhabitants of Laghouat ($p<0.05$) in both urban (97.87%) and rural areas (100%) (Table 1). This last result could be explained by the fact that milk is part of the culture of the herding peoples in Algeria. In the Laghouat region, livestock breeding is a tradition rooted in the region's history. 100% of the respondents in the rural areas own livestock (41.93% cattle breeding, 77.42% goat breeding, 3.22% sheep breeding, and 3.22% camel breeding). The absolute non-consumption of milk and dairy products is marked only in 2.13% of urban respondents and is due to the vegetarian nature of the family or the undesirable taste of milk and dairy products. Both communities consider milk to be a necessary food. It should always be present in the daily menu as a source of calcium (61 and 74% for urban and rural families, respectively). Indeed, milk fits well into the habits of urban and rural households (22%) (Table 1). In addition, according to

Amellel (1994), dairy products are a substitute for seasonal fruit for certain categories of households because of the generally very high prices of the latter.

In Africa, milk and dairy products occupy a significant place in the dietary tradition of many African ethnic groups; imports have also made available to the continent's urban populations a wide range of products appreciated for their nutritional and taste qualities (Metzger et *al.,* 1995). The high consumption rate of milk and dairy products is also partly the result of past government policies (Bencharif, 2001), which have promoted their consumption as a cheap and affordable source of animal protein for the majority of the population and possible alternative to more expensive meat. The results of Table 1 show that the range of dairy products consumed is very diversified: raw milk, pasteurized and sterilized milk, powdered milk, lben, rayeb, butter, yogurt, and cheese. Industrial milk (pasteurized or UHT or powdered) is more consumed by urban citizens who have greater purchasing power and are rather forced to choose what is available on the market. The rural community consumes only raw milk (100%). This last result was also recorded in Tébessa by Derouiche *et al.* (2016). Furthermore, it could be explained by the availability of raw milk (100% of the respondents own livestock). On the other hand, the population's preferences have become accustomed to consuming it. Similarly, some rural consumers did not have access to the urban city because of the distance.

Raw milk

The results in Table 2 show that the proportion of households that consume raw milk does not exceed half (42.55%) in urban areas, while it is very high among rural families (100%). The consumption of raw milk was also very popular in rural areas of the region of Tebessa (85.1%) (Derouiche et *al.,* 2016). Regarding the origin of the raw milk consumed, the difference between the two populations was highly significant ($p<0.001$). 77.50% of urban families obtain it from the informal market, while 100% of rural families consume milk produced by themselves (Table 2). Our results also show that cow's milk is more consumed in urban areas (82.5%) given its availability in the informal market. In rural areas, goat's milk dominates (77.42%). In the Laghouat region, goats are generally used to cover the household's daily needs in milk and meat (Laouadi et *al.,* 2018). The consumption of sheep's milk was very low due to, on the one hand, its non-availability in the urban market. On the other hand, in rural areas, this milk is usually kept to feed the lambs or transform it into the traditional product 'Dhane', which is expensive. The consumption of camel milk by the surveyed population is very limited because of its unavailability on the market and its very high price (500-1000 Algerian dinars/liter).

Pasteurized or sterilized UHT milk

This milk category concerns milk in pasteurized bags subsidized by the state and sterilized milk under different brands. The latter product is consumed by a rather well-to-do segment of the population. Its cost does not allow an individual with an average income to consume it regularly. The results in Table 3 show that urban families consume more of this type of milk (89.36%) than rural families (22.58%) ($p<0.001$). Derouiche *et al.* (2016) reported that only 12.5% of rural families consumed industrial milk. Regarding its origin, we noted that this product is almost purchased in supermarkets (100%) (Table 3).

Milk powder

The results (Table 4) show that the consumption of powdered milk has the same trend as that of pasteurized or sterilized milk, i.e., significantly higher consumption in urban areas (84.04%) compared to rural areas (12.90%). The results obtained by Derouiche *et al.* (2016) show a lower consumption in rural areas (1.8%). Milk powder is one of the most widespread products in sales outlets. It comes from different countries, under different brands, and in different packages. As a result, it is 100% formally purchased at the point of sale.

Curdled milk (Rayeb)

The results presented in Table 5 do not show a significant difference in the consumption of "Rayeb" between urban and rural families (62.77 and 67.74%, respectively). Still, this curd's origin differs significantly between the two environments ($p<0.001$). 91.53% of the urban population surveyed buy this product in registered sales outlets packaged in bags or bottles, while 95.24% locally through traditional processing (Table 5).

Babeurre (Lben)

The consumption of "Lben" was more important in rural areas than in urban areas (96.77% vs. 81.91%). This rate is higher than the one recorded by Derouiche et *al.* (2016) in rural areas in Tebessa (48.8%). Industrial "lben" was the most consumed in urban families (89.61%), while traditionally processed lben was the most consumed in rural areas (96.66%) (Table 6).

Yoghurt

Yoghurt consumption was significantly ($p<0.001$) higher in the urban area (Table 7), given its availability in the formal market in brewed and fruity especially. Rural families in the Laghouat region consume more yoghurt (74.19%) than those in Tebessa (22.1% in the study of Derouiche et *al.*, 2016). The formal market thus remains the only place of supply (100%) of this type of product for both populations (Table 7).

Cheese

The results in Table 8 always show a higher consumption ($p<0.001$) of this type of product in urban families (97.87%) compared to rural families (70.97%). Our survey found that the consumption of traditional cheese (Djben) was very low in both communities. The explanation that could be given for this trend is that in the formal market, a significant range of cheeses exists.

Butter or Zebda

The results summarized in Table 9 show that all (100%) of the rural population consumes butter (or Zebda), mostly from traditional processing (87.10%), which is greater than the consumption recorded in the rural area of Tebessa (33%) in the study by Derouiche *et al.* (2016). The urban population also consumes butter considerably (88.30%), but it is mostly of industrial origin in margarine or industrial butter (98.8%).

Level of consumption

Table 10 shows consumption levels in kg of milk equivalent per household and individual for milk and dairy products. The quantities consumed differed significantly in urban and rural areas for raw, pasteurized, or sterilized UHT milk, powdered milk, lben, and rayeb. The differences were not significant for yoghurt, cheese, and butter ($p>0.05$). In terms of kg milk equivalent consumed per individual per year, total consumption for all dairy products differed significantly between the two communities, with higher quantities in rural areas (147.17±8.20 kg for urban families *vs.* 241.89±27.84 kg for rural families). The significant increase in milk and dairy products consumption in rural areas could be explained by the high percentage of self-consumption, the high frequency of consumption (several times a day), and the absence of a milk marketing chain in the Laghouat region. Similarly, it appears that milk is an essential food in the diet of poor rural families and can substitute other expensive products (meat and fruit).

For rural families, the consumption of raw milk (131.63±13.21 kg milk equivalent/individual/year) produced 100% locally and Lben (68.82±14.47 kg milk equivalent/individual/year) produced in 96.66% locally, represent 81.56% of the total quantity consumed. For urban families, industrial dairy products (pasteurized or sterilized milk, powdered milk, Lben, and yoghurt) are the most consumed and represent 74.88% of the total quantity consumed. The values recorded in our study show a higher consumption than the national average in Ramdane *et al.* (2019) study, which is 96.96 kg/person/year and the average recorded in the south (70.55 kg/person/year) by the same author. However, it appears lower than the average milk consumption, estimated by a survey in the urban area of Souk-Ahras (Algeria) at 172.5 kg milk equivalent/capita/year (Mamine et *al.,* 2016).

The consumption of rural families in the Laghouat region (241.89±27.84 kg milk equivalent/person/year) is lower compared to that of Tébessa found by Derouiche et *al.* (2016) (340±183 kg milk equivalent/person/year). On a global scale, the average annual figure recorded for urban and rural families in our study far exceeds the recommendations of international bodies for a balanced diet (WHO and FAO): 90kg milk equivalent per year (Haug et *al.,* 2007). The average in Laghouat is higher than in other African countries (17.5 kg/capita/year in rural Senegal, 21.5 kg milk equivalent/capita/year in Mali, 23 kg/capita/year in Ethiopia, 16 kg/capita/year in Burkina Faso, 12.6 kg/capita/year). Indeed, milk and dairy products do not occupy a predominant place in the food ratio in these countries. African consumers do not have sufficient income to easily access milk and dairy products (Metzger et *al.,* 1995).

Compared to other neighboring countries of the Maghreb, our results are significantly higher than those of Tunisia (62.2 kg/capita/year in urban areas and 81.4kg/capita/year in rural areas) (Khaldi and Naili, 2001) and Morocco (82±38 kg/capita/year in the city of Rabat) (Sraïri and Karbab, 2010). The almost similar level of consumption between Morocco and Tunisia is justified by dietary habits that are quite similar: tea consumption as the main beverage, cereal-based diets with little animal protein, and comparable average income levels (Sraïri and Karbab, 2010), unlike Algeria, whose dairy policy is based on subsidized imported powder, which leads to higher consumption levels.

Traditional dairy products

The results illustrated in Table 11 show that the traditional processing of dairy products is significantly ($p<0.001$) more important in rural families (93.55%) than urban (28.72%). A similar trend was recorded in the rural area of Tébessa in Algeria (Derouiche et *al.,* 2016), where 69.1% make the traditional products. This result could be explained by the fact that urban families have a wide range of dairy products in the formal market that is close to their places of residence, which is not the case for rural families, the formal market is not always close, this forces them to make their dairy products. In rural areas, traditional products are the most appreciated, which explains their higher consumption and processing rates, despite the diversity of industrial products on the market. For those who traditionally made their dairy products, the reasons for processing were more a traditional habit and to ensure a healthy product fit for consumption (Table 11). The survey enabled us to draw up a list of traditional dairy products, namely: cheese (Klila and Djben), drinks (Rayeb and Lben), and fats (Zebda and Dhane). Some of the products mentioned exist in several countries, either with the same name such as Lben, Klila, Djben, Zebda, and Smen in Morocco (Benkerroum et *al.*, 1984; Benkerroum and Tamime, 2004) or with a different name such as Rob in Sudan which is equivalent to lben in Algerian (Abdelghedir, 1998) and Jameed in the Middle East which resembles the Klila (Mazahreh et *al.,* 2008).

Marketing of milk and dairy products by the rural community

A pre-survey conducted at the Directorate of Agricultural Services and the Chamber of Commerce of Laghouat shows that the dairy industry in this region is completely absent (0%). All the commercial milk distributed in town comes from neighboring wilayas (Saida, Mascara, Tiaret, and Ghardaïa). This finding led us to ask questions in our survey of rural families about the destination of locally produced milk from their livestock. The results presented in Table 12 show that more than half of the farmers do not market their milk (54.84%) for two reasons: the low production of their animals (29.41%) and the lack of approval (70.59%). The excess milk is intended for self-consumption (100%) or neighbors and friends (35.48%). Only 25.81% of farmers sold their milk informally (directly to consumers) or industrial units (22.58%). Milk can represent an important source of cash income for this category of farmers. A survey conducted in the region of Laghouat among goat farmers also shows the absence of a marketing chain for milk in general and goat and sheep milk in particular. Unlike cow's milk, which is supported by the state, the milk of other animal species lacks a public support policy. In addition, to market milk and dairy products, farmers are required to check the milk in the laboratory for mainly tuberculosis and brucellosis, which is an additional and unwanted cost for these smallholders (Laouadi et *al.,* 2018). The low productivity reported by the region's breeders could be linked to several factors, including the nature of the region (steppe) and the breeding method, which is mainly extensive.

Table 1: Consumption of milk and dairy products in urban and rural areas.

Variables	Modalities	Frequencies and citations (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	2.13	0.00	*ns*
	Yes	97.87	100.00	
Reasons for consumption	Source of calcium	61.25	74.19	/
	Source of protein	2.50	0.00	
	Sources of vitamins	6.25	0.00	
	Eating habits	22.50	22.58	
	Food requirements	6.25	3.23	
	Good for your health	3.50	0.00	
Types of dairy products consumed	Raw milk	42.55	100.00	***
	Pasteurized and UHT milk	89.36	22.58	***
	Milk powder	84.04	12.9	***
	Lben	81.91	96.77	*
	Rayeb	62.77	67.74	*ns*
	Butter	88.30	100.00	*
	Yogurt	97.87	74.19	***
	Cheese	97.87	70.97	***

ns: not significant; * : P<0.05; **: P<0.01;***: P<0.001

Table 2: Raw milk consumption in urban and rural families.

Variables	Modalities	Frequencies and citations (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	57.45	0.00	***
	Yes	42.55	100.00	
Provenance	Local	32.50	100.00	***
	Purchased	77.50	0.00	
Animal species	Cow	82.5	41.94	/
	Goat	30.00	77.42	
	Ewes	2.50	3.23	
	Camel	0.00	3.23	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 3 : Pasteurized or UHT milk consumption in urban and rural families.

Variables	Modalities	Frequencies (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	10.64	77.42	***
	Yes	89.36	22.58	
Provenance	Traditional	0.00	0.00	*ns*
	Industrial	100.00	100.00	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 4 : Milk powder consumption in urban and rural families.

Variables	Modalities	Frequencies (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	15.96	87.10	***
	Yes	84.04	12.90	
Provenance	Traditional	0.00	0.00	*ns*
	Industrial	100.00	100.00	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 5: Consumption of Rayeb curd in urban and rural families.

Variables	Modalities	Frequencies and citations (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	37.23	32.26	*ns*
	Yes	62.77	67.74	
Origin	Traditional	16.94	95.24	***
	Industrial	91.53	23.81	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 6 : Lben consumption in urban and rural families.

Variables	Modalities	Frequencies and citations (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	18.09	3.23	*
	Yes	81.91	96.77	
Origin	Traditional	23.38	96.66	***
	Industrial	89.61	16.66	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 7 : Consumption of fermented milk "yoghurt" in urban and rural families.

Variables	Modalities	Frequencies (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	2.13	25.81	***
	Yes	97.87	74.19	
Origin	Traditional	0.00	0.00	*ns*
	Industrial	100.00	100.00	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 8 : Cheese consumption in urban and rural families.

Variables	Modalities	Frequencies and citations (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	2.13	29.03	***
	Yes	97.87	70.97	
Origin	Traditional	2.17	4.55	*ns*
	Industrial	100.00	100.00	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 9 : Butter consumption in urban and rural families.

Variables	Modalities	Frequencies and citations (%)		*P-value*
		Urban families (N=94)	Rural families (N=31)	
Consumption	No	11.70	0.00	*
	Yes	88.30	100.00	
Origin	Traditional	10.84	87.10	***
	Industrial	98.80	41.94	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 10 : Consumption levels in kg milk equivalent in urban and rural areas (mean ± standard error).

Types of dairy products	Conversion coefficient in Kg milk equivalent	Quantity consumed per household (Kg/household/year)		Quantity consumed per individual (Kg/individual/year)		*One factor ANOVA*
		Urban families (N=94)	Rural families (N=31)	Urban families (N=94)	Rural families (N=31)	
Raw milk	1	105.78±21.79	704.87±40.77	16.25±3.40	131.63±13.21	***
Pasteurized milk	1	288.42±25.35	21.19±12.24	46.89±4.10	4.00±2.41	***
Milk powder	7.6	115.94±9.70	5.88±2.79	17.64±1.41	0.89±0.43	***
Lben	1	87.60±11.15	326.21±53.91	14.06±1.87	68.82±14.47	***
Rayeb	1	42.50±9.60	138.68±39.13	6.50±1.29	18.89±5.12	**
Yogurt	1	114.28±12.28	54.20±17.13	18.39±1.99	12.37±6.02	ns
Cheese	3.2	23.38±2.07	22.45±7.27	3.62±2.07	3.77±1.20	ns
Butter	6.6	37.73±3.43	18.89±4.28	6.16±0.66	3.62±0.66	ns
Total milk equivalent consumption per year				147.17±8.20	241.89±27.84	***

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 11: Traditional milk processing into dairy products between urban and rural families.

Variables	Modalities	Frequencies and citations (%)		*P-value*
		Urban families	Rural families	
Traditional processing	No	71.28	6.45	***
	Yes	28.72	93.55	
Traditional processing reasons	Excess milk	7.41	0.00	/
	Guarantee of a healthy product	22.92	40.74	
	Traditional habit	40.70	55.28	
	Lower cost	11.11	3.70	
	Product diversification	14.81	0.00	
	Tastes better	7.41	7.40	

ns: not significant; * : P < 0.05; **: P < 0.01;***: P <0.001

Table 12: Marketing of milk in rural areas.

Variables	Modalities	Frequencies and Citations (%)
Marketing	No	54.84
	Yes	45.16
Destination of excess milk produced locally	Self-consumption	100.00
	Don	35.48
	Informally sold	25.81
	Sold to dairy industrials	22.58
Reasons for not marketing	No excess	29.41
	No approval	70.59

Conclusion

The results obtained allowed us to show that the consumption of milk and dairy products is a food habit strongly present among the inhabitants of the region of Laghouat, both in urban and rural areas. However, a disparity of consumption was identified. Indeed, consumption in the rural population remains specific and important because of the weight of self-production that characterizes it compared to the urban population. The milk sector in Laghouat district is very weak. This was measured on the one hand by the absence of a dairy industry of pasteurized or sterilized milk. On the other hand, by the absence of an effective marketing chain for locally produced milk. Finally, increasing the number of people in the sample would be interesting to establish more representative results. A greater concern of the wilaya authorities is necessary to revive the milk sector in Laghouat, as it is a region with a high milk potential.

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