

The Lebanese Kishk: A Traditional Dairy Product in a Changing Local Food System

Mabelle Chedid¹, Salwa Tohmé Tawk², Ali Chalak³, Sarah Karam¹ & Shadi K. Hamadeh¹

¹Environment and Sustainable Development Unit, Faculty of Agriculture and Food Sciences, American University of Beirut, Lebanon

²Faculty of Agriculture and Veterinary Sciences, Lebanese University, Lebanon

³Department of Agriculture, Faculty of Agriculture and Food Sciences, American University of Beirut, Lebanon

Correspondence: Salwa Tohmé Tawk, Associate Professor, Faculty of Agriculture and Veterinary Sciences, Lebanese University, BP 55-484, Dekwaneh, Beirut, Lebanon. E-mail: salwatawk@gmail.com

Received: February 6, 2018

Accepted: February 22, 2018

Online Published: June 11, 2018

doi:10.5539/jfr.v7n5p16

URL: <https://doi.org/10.5539/jfr.v7n5p16>

Abstract

This paper focuses on analyzing the production chain of traditional *kishk* prepared with wheat and milk in two Lebanese regions, the West Bekaa and the Chouf. It aims at assessing *kishk* processing to analyze the sustainability of this traditional product especially under the impact of changing wheat production and milk availability. A survey was conducted at the level of *kishk* producers and wheat farmers to identify the different production systems based on their scale and their practices. Results showed that *kishk* production has been sustained by rural women in the designated areas and was not affected by the changes that have occurred in the wheat sector which included introduction of new wheat varieties; on the contrary, this traditional product has adopted the new varieties. In addition, the versatility of *kishk* recipe prepared from cow, sheep or goat milk, makes this dairy product resilient to changes in milk availability and sources. However, the authors found that conserving traditional *kishk* requires substantial efforts in marketing, certification, and quality control.

Keywords: kishk, Lebanon, local food systems, milk, sustainable food, traditional food system, wheat

1. Introduction

Traditional food reflects culture, history and lifestyle; however, the world of globalization has been threatening culinary heritage and exposing many of the traditional food to extinction (Trichopoulou et al., 2006). Efforts to sustaining this heritage requires studies to understand the production process, the components and the impacts any change might impose on traditional food and its conservation.

Kishk, a traditional dairy product prepared with *bulgur* (dry cracked wheat) fermented in milk or yogurt, originates from two local products: wheat and milk (Ministry of Agriculture [MoA], 2007). These two components have differently responded, through time, to the various changes to which they were subject to, ranging from political changes on the national and regional levels including agricultural policies, fluctuations in the local and international markets and economy, to climate and social changes. While wheat production in Lebanon has changed in terms of cultivated land surfaces and used seed varieties (Ministry of Environment [MoE], United Nations of Development [UNDP] & Global Environment Facility [GEF], 2016; Lebanese Agricultural Research Institute [LARI], 2014), goat and sheep milk production showed more resilience facing different stressors and was able to maintain its production, however with a shift from a traditional pastoral system to a more sedentary one (Hamadeh et al., 1999; Bistanji et al., 2000).

This wheat and milk based fermented product has been prepared and consumed in Lebanon since the 10th century (Al Ghazi, 2001) mainly in the Bekaa region where wheat is grown then harvested starting June. It is prepared with cow, sheep or goat milk; however, while goat milk gives it a typical acidic (pungent) taste, cow milk is more used to prepare commercial *kishk*. *Kishk* is prepared during summer to serve as a provision for winter time. It is also known in other Arab countries like Syria, Jordan and Egypt with variations in its preparation method (Odunfa & Adeyele, 1985). The low moisture content and acidic pH of the final product makes it safe against the growth of pathogenic micro-organisms (Hamad & Fields, 1982). Although *kishk* is produced exclusively in rural areas, its consumption is common all over the country and constitutes an important part of the winter diet when

consumed as a thick soup containing *Qawarma* (preserved lamb meat) and eaten with bread (Salibi, 1997) as well as in pizza or *man'ousheh* (flat dough with a *kishk*-based topping).

1.1 Wheat Production in Lebanon

The yearly consumption of wheat in Lebanon ranges between 400 000 to 450 000 tons (Harrigan, 2014), of which around one forth is locally produced. The general agricultural census prepared by the Ministry of Agriculture (MoA), the Food and Agriculture Organization (FAO) and the Italian Cooperation in 2012 reports that 70% of the cereals planted in Lebanon is wheat, covering a surface of 29840 ha of which 44% are in the Bekaa (central and West) and only 14% in Baalbeck and Hermel (Northern Bekaa) (MoA & FAO, 2012). Zero percent is reported in Mount Lebanon. The main planted varieties of wheat in Lebanon are soft (23 %) and hard or *durum* wheat (77 %), the latter being used for the local food industry of *bulgur*, *kishk*, *freekeh* (roasted green wheat) and pasta rather than for bread. Between 2012 and 2016, an average of 140 000 tons of wheat were produced; most are processed by the local mills into flour and bran, and the rest are used as cracked whole wheat for local traditional recipes (FAO, 2018; Chalak & Sabra, 2007). Although wheat planted surfaces were increasing over the years, wheat production has declined mainly due to variability of rain and fluctuation of temperatures (MoE, UNDP & GEF, 2016).

1.2 Small Ruminant Production in Lebanon

Small ruminant production has always been an integral part of the rural communities in Lebanon, contributing to the livelihoods of these communities by securing mainly milk and meat products.

Pastoralism in Lebanon has witnessed several changes throughout the years (Hamadeh et al., 1999; Bistanji et al., 2000); it has endured many pressures such as 1) lack of policies related to pastoralism and land tenure, 2) increasing urbanization at the expense of pastures, 3) decreasing rural population along with a decline in the interest of the new generations to invest in the sector, 4) lack of technical skills for pasture management coupled with weak government support, 5) climate change with predicted rising temperatures and severe droughts, 6) political and security situation in the region, and 7) uncontrolled borders and market prices. Nonetheless, the system has proved to be resilient, as proven by the recorded numbers of augmenting herds and dairy production (FAO, 2011). Moreover, the national small ruminant herd, composed of the local black goat known as *Baladi* and the indigenous *Awassi* sheep both highly rustic, coupled with the adaptive strategies adopted by the shepherds including herd size modification, feed supplementation and income diversification (Dick et al., 2008) highly contributed to the survival of the pastoral system in the country. Furthermore, according to Roselier (2015), a growth of 76% in caprine dairy production accounting for over 54 million Euros has been recorded in Lebanon in 2014 accompanied with a rising consumer demand for goat dairy products such as *labneh* (strained yogurt), yogurt and different types of fresh and fermented cheeses including *kishk*.

Investigations have been previously undertaken to assess the nutritional composition, microbiological quality, and biophysical and rheological properties of the Lebanese *kishk* (Tamime et al., 1999a; Tamime et al., 1999b; Tamime & O'connor, 1995; Tamime & McNulty, 1999; Salameh et al., 2016). Such studies revealed the importance of the *kishk* product being highly nutritious characterized by its microbiological safety due to its overall inherent characteristics (Tamime & O'connor, 1995; Tamime & McNulty, 1999; Salameh et al., 2016). However, studies targeting the sustainability of this traditional product, especially under the impact of changing local food systems, are, to our knowledge, inexistant. Therefore, this study aims at filling this gap by analysing the production chain of *kishk* as influenced by the changes in wheat production and milk sources.

2. Materials and Methods

The methodology relies on the value chain analysis (Hellin & Meijer, 2006; Tohmé et al, 2011; Tohmé et al, 2014) of *kishk* from the production of wheat and bulgur to making the *kishk*, while describing the sources of milk, the *kishk* recipe and the marketing channels.

Data was collected through a survey during summer of 2014 in the West Bekaa and Chouf regions known for their *kishk* production and consumption. Two different questionnaires based on open-ended and closed-ended questions related to the production practices and selected socio-economic aspects were developed each including about 30 questions: one for the wheat farmers and one for the *kishk* processors. During the interview the farmers were asked questions regarding their farming practices and origins of wheat landraces. In addition, processors of *kishk* were asked questions about processing practices and input sources. The questions related to the sustainability of wheat and *kishk* production were inspired from the sustainability indicators of the French model IDEA - Indicateur de Durabilité des Exploitations Agricoles – (Zahm et al., 2008).

In order to achieve a representative sample in the absence of any previously assessed statistical data, a

geographical coverage was achieved to the largest extent in each region to avoid any selectivity bias. A total of 63 farmers and processors from the West Bekaa and 40 processors from the Chouf were interviewed. All producers were selected in a snowball sampling or chain sampling since they are sparsely distributed in the regions. Wheat producers representing small and large-scale farms and *kishk* producers were randomly selected with the help of local key informants in each region.

Descriptive statistics for the analysis of collected quantitative and qualitative data were conducted using STATA version 12.

3. Results

3.1 *Kishk* Production in West Bekaa and Chouf

Kishk in the West Bekaa and Chouf is a traditional hand-craft product and a family activity carried at the household level and lead by the women; however, in some cases (2 in the West Bekaa and 4 in the Chouf), the husband was also involved in the production process. Although *kishk* is usually produced at the household level, five cases of production at a group level were identified within the studied sample (i) three groups of women in the West Bekaa, including two small dairy processing units and one agro-food cooperative, all of them selling directly to consumers; (ii) and two other groups of women working from their homes were identified in the Chouf and procuring *kishk* to a retail shop. The average production of *kishk* ranged between 5 kg to 500 kg per year per producer or group of producers. None of the producers was considered solely commercial as they all produced *kishk* for their household consumption in the first place.

3.1.1 Mode of Production of *Kishk*

Kishk making starts with soaking coarse bulgur in yogurt in a large clay bowl – replaced today with plastic ones – and rubbing the mixture daily for four days, until the bulgur totally absorbs the yogurt. During this time, yogurt is added every day to prevent the *kishk* from drying and salt is gradually added to protect it from mold growth. “Green” *kishk* is obtained after the mixture is left to ferment for nine days. “Green” *kishk* can either be consumed fresh like “*labneh*” (strained yogurt) or cheese, or conserved in glass jars with olive oil for ulterior use. The final steps of making dry *kishk* consist of spreading the green *kishk* on clean cloth sheets on the rooftop to dry under the summer sun while rubbing it every morning to break it into smaller pieces and make sure it dries well. When it totally dries, it is grounded in the mill into a fine powder and is consequently ready to be sold. According to the interviewed producers, rubbing of *kishk* used to be a social event gathering women from the neighborhood to help each other and share stories. This method of processing *kishk* is closer to the one described in Davidson by Zurayk and Abdul Rahman (2008), compared to other recipes documented by the same authors.

3.1.2 Cost of Production and Labor Involved

Kishk production is a labor-intensive process involving 3 to 5 persons during 20 days over a month approximately and sometimes longer depending on the produced quantity and whether the producers process wheat into bulgur or simply purchase bulgur. The average production per household is 50 kilograms.

Based on the information collected from women processors during the interviews, 2 kilograms of *kishk* processed at the household level costs on average between LBP (Note 1) 22 950 (when yogurt and *labneh* are purchased ready-made) and LBP 17 500 (when milk is purchased and yogurt and *labneh* are processed at the household level).

Therefore, the profit ranges between 37 050 LBP and 42 500 LBP per 2 kilograms of *kishk* or LBP 18 525 and LBP 21 250 per kilogram. The average *kishk* processor produces around 50 kilograms per season, thus generating profit between LBP 926 500 and LBP 1 253 750 per season.

Hence, the cost of producing *kishk* depends on the origin of milk, yogurt and bulgur, and varies between LBP 8 745 and LBP 11 475 per kilogram of *kishk* without accounting for labor. The average selling price of one kilogram of *kishk* is LBP 30 000, and the average quantity of *kishk* produced is 50 kilograms per season per household, thus generated revenue ranges between LBP 1 062 750 and LBP 926 250 per season. *Kishk* production shows positive profitability for the different dairy ingredients used and irrespective of their source of procurement.

3.1.3 Marketing and Packaging

The marketing of *kishk* relies on direct sales to consumers through kinship and personal contacts upon pre-orders in the same town and/or neighboring towns and in the city. Few processors reported to regularly participate in weekly farmers’ market in the capital. *Kishk* is sold in transparent plastic bags or cloth bags with no labelling indicating the used ingredients, the production date or the geographical location and nutritional information.

Processors rely on the trust relationship with their clients and are reluctant to invest in extra packaging costs.

3.2 Impacts of Wheat Production and Milk Sources on Kishk Production

3.2.1 Wheat Production

Wheat remains a crop commonly planted in the Bekaa in rotation with vegetables and legumes on surfaces ranging between 0.2 and 300 ha, with an average yield of 4580 kg/ha, ranging between 1000 kg/ha and 8000 kg/ha, and exceeding the average of 3000 kg/ha reported in the latest national census (MOA &FAO, 2012). In the Chouf area, wheat is no longer part of any farming system where traditionally it was a main crop planted on small terraces. The fragmentation of land holdings and the steep topography of terraces which are more adapted to fruit orchards, in addition to the unavailability of suitable harvesting equipment, were the main reason behind the decline of wheat production in the Chouf, and consequently its absence.

During the survey, farmers were asked about the wheat varieties they planted, their common names and source of procurement. Farmers referred to the local wheat grown in their region as “*baladi*”, others used more specific names like “*Bekaii*” referring to the Bekaa or brown wheat (*asmar*), “*Salamouneh*” referring to its elongated form, and “*Hawraneh*” referring to the volcanic plateau Hawran in Syria; in addition, some called wheat by their color *ahmar* for brown and *biyadi* for white. These “*baladi*” or local varieties are used for processing the majority of the traditional by-products namely bulgur, *kishk* and flour for traditional “*saj*” flat bread. Both *durum* wheat (*kasi*) and soft wheat (*tareh*) are planted in the West Bekaa; however, to produce *kishk* and *bulgur*, only *durum* variety is used. Both brown and white wheat are used for processing; white bulgur is mainly used to process *kishk* to give it the light whitish color, as it is more preferred by consumers. Two sources of improved wheat varieties were identified: the Lebanese Agricultural Research Institute (LARI) which provided seeds to around 50% of farmers at subsidized prices, and commercial agricultural suppliers in the area who provided farmers with other varieties different than those supplied by LARI.

However, few farmers reported saving their own seeds from previous years for ulterior use, or even exchanging seeds with relatives and neighboring farmers. These farmers kept seeds for only two seasons before buying new ones. We were unable within the scope of this survey and the covered area to identify producers saving seeds from several years back. Moreover, none of the interviewed farmers referred to saving landrace seeds for their heritage value; they all denoted the high yields of the varieties available at LARI and the market.

While 68% of producers prefer to prepare *kishk* with white bulgur to give the final product a lighter color, the rest use the local wheat (23%) and brown wheat (9%) which gives *kishk* a darker color that is usually preferred by the producers’ family for own consumption.

3.2.2 Milk Sources

Besides wheat, *kishk* production requires milk and yogurt. While almost all processors in the West Bekaa use goat milk to make *kishk*, the preference in the Chouf is more towards the use of cow milk or even a blend of goat and cow milk. In few reported cases, “*labneh*” (strained yogurt) is used instead of milk and yogurt, and the end-product considered of high quality is consumed by the processor’s family and is not intended for sale.

Milk is either purchased from neighboring farmers or cooperatives or produced at home (Table 1). As for the yogurt (known as *laban*), if used in *kishk* making, it is either purchased from local farmers and dairies or processed from milk at home. In the West Bekaa, yogurt and milk are mainly purchased from neighboring producers or farmers. Only 18% of processors have their own milk production (from their own farm). The milk used is cow, goat milk or mixed cow and goat milk. Whereas in the Chouf area, 62% of the processors produce their own yogurt, 38% purchase the yogurt; 52% get their milk from their own livestock and 48% purchase it from neighboring farmers or cooperatives.

Table 1. Source of milk and yogurt used by *kishk* processors in the West Bekaa and Chouf

	Source of milk		Source of yogurt	
	Purchased milk	Milk from own farm	Purchased yogurt	Yogurt processed at home
West Bekaa	82%	18%	94%	6%
Chouf	48%	52%	38%	62%

Yogurt and milk are not transported in refrigerated vehicles since processors consider that the distances separating them from the milk and yogurt producers are short (few minutes of travel).

The difference in the mode of procuring milk and yogurt between the West Bekaa and the Chouf shows a more farm-localized procurement system in the Chouf than in the West Bekaa as people in the Chouf tend to produce

their raw material (milk or yogurt) rather than buying them. However, the procurement system adopted in the West Bekaa might be evidence of strong relationships between the different actors (processors and shepherds/farmers) involved in the *kishk* value-chain.

4. Discussion

4.1 *Kishk Production in West Bekaa and Chouf*

Sustaining traditional techniques and knowledge is essential in the preservation of the original identity of traditional food (Slow Food, 2013). This was demonstrated in the production of Stilton, a traditional cheese in the countries of Nottinghamshire, Leicestershire and Derbyshire when the use of pastoralized milk instead of raw milk deprived this traditional food from its aromatic richness and traditional identity. Hence, Slow Food is fighting for the reuse of raw milk in the production of Stilton cheese (Slow Food, 2017). So far, *kishk* has been preserved in its traditional way of production by the small-scale producers.

In addition, as this study reveals, *kishk* production is profitable, and *kishk* is highly demanded by the Lebanese population hence giving it an advantage for its preservation. However, marketing channels are not regulated, and packaging is poor lacking any kind of labelling (ingredients, the production date, the geographical location and nutritional information). If marketed appropriately, traditional products could have a significant competitive advantage based on their peculiarity as well as their nutritional and physiological advantages (Boros et al. 2013).

Therefore, building the capacities of *kishk* producers on food safety practices and improving their marketing skills would widen their opportunities not only in preserving a traditional food but also contributing to the livelihoods of the shepherds and producers involved in the value-chain. In addition, collective action has high potentials in addressing the inefficiencies, coordination problems and barriers to market access (Markellova et al., 2009); therefore, organizing agro-food cooperatives is highly recommended to aid *kishk* producers in overcoming challenges constraining access to markets and enticing the new generation to get involved in preserving the traditional food processing.

4.2 *Impacts of Changes in Wheat Production and Milk Sources on Kishk*

The results of this study revealing that *kishk* is being preferably produced with white bulgur, locally grown wheat and brown wheat agree with Zurayk and Abdul Rahman's (2008), according to whom coarse, soft and white bulgur is mostly used in *kishk* production. Processors have adapted their *kishk* production according to the wheat varieties available in the market. In addition, the fact that *kishk* recipe is already versatile and uses cow, sheep or goat milk, makes this dairy product more resilient to changes in milk availability and sources.

Among the challenges threatening the conservation of the original identity of traditional food is conserving its raw material. For example, before the intervention of Slow Food, tuma d'f' traditional cheese in the Langhe Cuneesi, Italy was at risk of dying out because its raw ingredient, milk product from Langhe breed sheep, was in danger of extinction (Taylor, 2012). Similarly, in the Peninsular Malaysia, *Ikan masak tanah liat* (clay-baked fish), *opok-opok* (glutinous rice crackers), *pulut kukus dalam periuk kera* (pitcher plant glutinous rice), and *kebebe* (mashed fruits in bamboo) are traditional dishes that are dying out due to the rarity of raw ingredients such as the *ikan loma* (a freshwater fish) which is close to extinction (Cheah, 2014). As revealed in this study, the *kishk* raw materials, wheat and dairy products, are highly available in Lebanon, and *kishk* identity so far is being preserved by using locally and freshly produced dairy products. Therefore, ensuring the sustainability of small-scale dairy production, and pertaining good connections between livestock breeders and *kishk* producers are essential to ensure the good quality and traditional characteristic of this product. However, concerning the other main raw ingredient, the wheat landraces traditionally used are being replaced by improved hybrid varieties of wheat which might be depriving the food from its original identity and added value. The reproduction of wheat landraces is a vital factor influencing the quality of food (Messa and Sottile 2015). Therefore, investigation and research are vital to identify the producers who are preserving and using wheat landraces in Lebanon at large; saving such varieties plays a major role in in-situ preservation of agro-biodiversity and cultural heritage.

4.3 *Conservation of Traditional Kishk*

Since *kishk* is highly demanded in urban settings, this fostered the probability for launching into the market commercially produced *kishk* hence misleading consumers and threatening rural production of this traditional food. This is a serious challenge confronting the conservation of traditional products (Trichopoulou et al., 2006), as supermarket dairy products can deteriorate a region's unique taste of place (Nuwer, 2014). In order to minimize the competitiveness of imitations and industrial production, the standardization and registration of the traditional products such as *kishk* would ensure their sustainability.

Small food producers are the last guarantors ensuring the preservation of an endangered heritage; however, they are seldom capable of competing with multi-national producers. Therefore, certifying the traditional quality of their products is important to obtain the administrative and financial protection that is vital to their commercial sustainability (Billiard, 2017). In Asia, several national initiatives have been implemented towards using labels expressing certification marks or trademarks relevant to the legal regime. Such initiatives result in promoting local produce based on the concept of “One Village One Product” which originated in 1979 in Oita, Japan. This concept is based on a local product or industry characteristic of a certain region and turns it into a nationally and globally accepted one. It has been employed in several Asian countries such as the ‘One Barangay, One Product’ project in the Philippines, ‘Satu Kampung, Satu Produk’ initiative in Malaysia, the ‘Back to Village’ campaign in East Java, Indonesia, and the nationwide ‘One Tambon, One Product’ initiative in Thailand (Wong & Fernandini, 2011; Zografos, 2007). In addition, Protected Designation of Origin and Protected Geographical Identification systems have been playing an important role in creating a strong regulatory framework across the European Union hence protecting traditional local products from falsification or imitation and promoting these products among consumers. However, even such systems must always be reconsidered to safeguard their efficiencies for small-scale producers. Small producers across EU for example have been facing difficulties in achieving market recognition and have been incapable of complying with the regulations due to their high costs (Slow Food, 2005).

Therefore, certifying the traditional quality of the *kishk* product would ensure its preservation and would support small-producers. In order to regulate the certification process and safeguard its practicality and effectiveness among small-scale producers, regional entities, from public and/or private sector can be important players in developing a system of quality control, certification, traceability, and labelling. In addition, incurring the production at group level / cooperative level would aid producers in complying with the standards and would facilitate the certification mechanism.

5. Conclusion

Kishk production has been sustained by rural women in the West Bekaa and Chouf and remains highly demanded in rural and urban settings. However, small-scale production of *kishk* lacks efficient marketing strategies and development of business plans; finding good marketing channels for this authentic product is a challenge and an opportunity at the same time to valorize this product.

Kishk recipe is proved to be flexible accommodating, cow, or goat milk; in addition, local farms are revealed to be maintained and local dairy products to be always available for purchase by *kishk* producers that do not own any farm. Hence, *kishk* production, till now, has not been affected by changes in the dairy sector. Similarly, *kishk* has not been affected by the changes occurring in wheat production as producers have adapted their *kishk* production according to the wheat varieties available in the market. Further studies are warranted to identify the origins of all wheat varieties specially the possibility of finding the landraces wheat varieties planted by the farmers across Lebanon and to deeply investigate the potential of protecting this traditional food by highlighting its unique identity and by assessing the added value of using landraces to up-grade the *kishk* and give it a traditional specialty value.

The authors presume that up-scaling and up-grading *kishk* production through certification, quality control, and labelling would play a substantial role in preserving this traditional food as well as supporting rural livelihoods in the regions where it is produced and creating a traditional food system that would encourage new generations to invest in.

Acknowledgement

The authors would like to thank the Lebanese National Council for Scientific Research (CNRS - <http://www.cnrs.edu.lb>) for financially supporting this research.

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Notes

Note 1. LBP, the Lebanese Pound, is the currency for Lebanon. Each USD 1 is equivalent to LBP 1 500.

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