



## Traditional Turkey Cheeses and Their Classification

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### SUMMARY

Milk, which is rich in nutrients, is a valuable source of nourishment not only for human beings, but also for microorganisms. Since this makes the storage of milk difficult, people have long processed it into more durable products such as "cheese". Cheese, an early symbol of the civilization of mankind, can lay claim to more inherent variety than any other dairy product. The aim of this article was to collate from amongst the more than 2000 varieties of cheese thought to exist worldwide the cheeses of Anatolia. It was established that more than 130 varieties of cheese are to be found in Anatolia. This study covers the nomenclature, areas of production and classification of these cheeses.

**Key Words:** Cheese, Variety, Turkey, Traditional

### ÖZET

### Geleneksel Türkiye Peynirleri ve Sınıflandırılması

Süt, kapsadığı zengin besin öğeleriyle insanlar için değerli bir gıda olduğu kadar mikroorganizmalar içinde iyi bir besin kaynağıdır. Sütün muhafazasının bu nedenle zor olmasından dolayı, insanlar sütü daha dayanıklı ürünlere işlemişlerdir. Bu işleme şekillerinden birisi de "peynir"dir. İnsanoğlunun uygarlığa geçişinin ilk simgelerinden birisi olan peynir, aynı zamanda süt mamulleri içerisinde de çeşitliliği en fazla olan üründür. Bu makalede; dünyada 2000'den fazla çeşidinin olduğu sanılan peynirin Anadolu'daki çeşitlerinin bir araya getirilmesi amaçlanmıştır. Anadolu'da 130'un üzerinde peynir çeşidinin bulunduğu tespit edilmiştir. Makalede peynirlerin isimlerine, yapıldıkları yerlere ve sınıflandırılmasına yer verilmiştir.

**Anahtar Kelimeler:** Peynir, Çeşit, Türkiye, Geleneksel

### INTRODUCTION

The variety inherent in cheese derives essentially from traditional adaptations of a few fundamental cheese making techniques (Nanted et al. 2002) and from different approaches in industrial production. Put otherwise, this variety originates from a nation's cultural practices, its natural environment, the types of milk used, and from differences in production technique. This is true of Turkey, where in each region the cheeses produced have their own distinct flavour. Moreover, in the production of many of these cheeses the old customs and practices are still followed. Cheese is a part of mankind's ancient cultural heritage; a foodstuff that over the ages has been consumed with pleasure by societies almost all over the world. No matter where you go throughout the world, you will inevitably encounter cheeses of varying shape, colour, flavour and constitution. In France 350 (Robuchon et al. 2000), in Italy 200 (Sardo et al. 2001), in Spain 50, in Switzerland 20, in Holland 15 (Anon 2012) and in Turkey more than 130 varieties of cheese (Kamber 2005) are to be found.

It is not known with any certainty by whom, where and how cheese was made for the first time. Despite numerous

anecdotes, opinions are divided on the issue. R.W. Menges recounts that the first cheese was obtained fortuitously by an Arab traveler when the milk he was carrying in an animal skin bag made from the stomach of a sheep curdled by accident. Herodotus suggests that Scythian Turks made the first cheese from mare's milk; while according to Kosikowski, it was produced by the ancestors of the Turks and Mongolians. In Eralp's book (1956), it is stated that the Turks knew how to make cheese before they migrated to Anatolia. The principal evidence for this is that in Dede Korkut's tales, the main foodstuff of the soldiers of Atilla as they fought the Romans was cheese; in Yusuf Has Hacib's (1069) work "Kutadgu Bilig" types of cheese are mentioned; and in the folk poet Karacaoğlan's poems the word for cheese (peynir) is used (Öztelli 1983). The first information about varieties of cheese is found in the Ottoman era. The first examples of this are a decree of Beyazıt II dated 1502, in which the varieties of cheese brought to Istanbul are mentioned (Taze Lor, Taze Dil Cheese, Taze Çayır Cheese, Mudurnu Cheese, Şumu Cheese, Karaman Cheese, Sofia Cheese, Eşme Cheese, Midilli Cheese, Teleme Cheese, White Cheese, Çimi Tulum Cheese, İzmir Tulum Cheese, Rumeli Tulum Cheese, Taze Kaşkaval Cheese and Balkan Kaşkaval Cheese); and reference to the

names of cheeses such as Kaşkaval Cheese, Kesme Cheese and Teleme Cheese in Evliya Çelebi's travel book (Anon 1993).

### Cheese making in Turkey

In Turkey, which has enormous potential for dairy production, as in many other countries, the actual production figures have not been established with certainty. The reasons for this are that agricultural enterprises are scattered; the raising of animals in general tends to be a sideline rather than a separate business; and in addition, production is often carried out on a small scale, in dairy farms or in family undertakings. Moreover, since many of the dairies operate on a seasonal basis in locations that change from one year to the next, the quantities of cheese they produce have not been determined with complete accuracy. For this reason the figures reported are not particularly reliable and it is only possible to give a rough estimate of the quantity of cheese produced. There are estimated to be a total of some 3000 enterprises engaged in dairy production in Turkey, whose daily capacity ranges from several hundred liters to 10-15 tons, and of which around 150 are modern. In most of these dairies production is carried out with basic equipment and materials and depends upon the knowledge and practices of skilled cheese makers. Of the cheese produced in Turkey, 60% is White Cheese, 17% Kaşar Cheese, 12% Tulum and Mihaliç Cheese, while the remaining 11% of production is accounted for by other local cheeses (Kamber 2005). As reported by the Food and Agriculture Organization of the United Nations (FAO) (Anon 2014), the country produces 749 million tons of milk and 18.5 million tons of cheese, with an annual per capita consumption of cheese of 3.1 kg in 2013 year.

### Turkey Cheeses

For thousands of years the cradle of diverse civilizations, and with a geography which lends itself to animal raising, Anatolia is well endowed in terms of the variety of its cheeses. If at first impression it appears that Turkey does not possess a rich cheese culture, there are in fact more than 130 varieties of cheese to be found in Anatolia (Table 1 and 2). The data in hand shows that, alongside several types of cheese such as White Cheese, Kaşar, Tulum, Lor and Çökelek which dominate the Turkish marketplace at large, there are to be found numerous varieties of cheese able to meet society's every requirement. Some of these are still produced in response to local preferences and needs, while others are now known and sold in many regions of the country. Since Anatolia has been the home of very diverse cultures cohabit, cheeses which closely resemble one another may be known by different names, or the same name may be given to different cheeses in different regions. According to Adam (1974) there are 33 varieties of local cheese in Turkey, while Tekinşen (1997) reports 25. In Ünsal's (1997) study, the names of almost 230 cheeses are given. However, this number includes the different names by which the same cheese is known, as well as the names of regions renowned for their cheeses. In Turkey numerous locally produced varieties of cheese are to be found, the majority of which are still consumed in the area where they are made. As a result of migration from the countryside to large cities, over the last 20 years the variety and flavors inherent in local cheeses has begun to receive attention and the way has been opened for the wider populace to become acquainted with them. As a consequence of this, certain local cheeses (such as Örgü, Mihaliç, Erzincan Tulumu, Urfa and Antep cheeses) have been put into industrial production. The microbiological

and chemical results of several studies carried out on Turkey cheeses are given in Table 3 and Table 4.

**Table 1.** Local cheeses produced in Turkey and in which they are production areas

Traditional Cheese Name	Area Name	Source
Abaza Cheese	Düzce, Sakarya, Kocaeli, Bolu, Sinop, Bilecik, Balıkesir, Çanakkale	(Uysal et al. 1998b)
Acı Cheese	Giresun	(Ünsal 1997)
Afyon tulum Cheese	Afyon, Şuhut	(Kurt 1990)
Aho Cheese	Trabzon, Gümüşhane, Bayburt	(Kamber and Terzi 2008c)
Antep Sıkma Cheese	Gaziantep	(Çağlar et al. 1998b)
Armola Cheese	İzmir (Seferihisar)	(Adam 1974)
Ayran Cheese	Rize	(Ünsal 1997)
Ayran kırmacı	Rize, Artvin	(Ünsal 1997)
Balkabağı küp Cheese	Adapazarı, Hendek, Arifiye	(Ünsal 1997)
Beyaz Cheese	All region	(Adam 1974)
Bez kaşar	Mut	(Ünsal 1997)
Bez tulum	Ereğli (Karaman)	(Ünsal 1997)
Biberli çökelek	Yozgat (Akdağmadeni)	(Kamber 2008d)
Cabaltı çökeleği	İnebolu	(Ünsal 1997)
Cacık	Van, Bitlis, Siirt, Hakkâri	(Küçüköner, Tarakçı 1998)
Cami boğazı	Trabzon	(Kamber and Terzi 2008c)
Carra	Hatay	(Konar and Güler 1998)
Civil (Çeçil) Cheese	Erzurum, Kars, Ağrı, Muş (Bulanık)	(Kurt and Öztekin 1976)
Çamur	İzmir (Tire)	(Ak and Nergis 1998)
Çanak (Testi)	Yozgat	(Coşkun 1995)
Çayır	İstanbul	(Tekinşen 1997)
Çayır Cheese	Manisa	(Tekinşen 1997)
Çerkez Cheese	Sinop, Düzce, Bolu, Balıkesir, Adapazarı, Çanakkale	(Uysal et al. 1998a)
Çimi Tulum	Akseki, Serik, Manavgat	(Kılıç et al. 1997)
Çoban Cheese	Bursa, Yenişehir	(İnal 1990)
Çökelek	All region	(Adam 1974)
Çömlek Cheese	Aksaray, Çankırı, Kırşehir, Nevşehir	(Tekinşen 1997)
Deve dili	Kars	(Kamber 2008d)
Dil Cheese	All region	(Ergüllü, Karacabey 1988)
Divle Tulum Cheese	Üç Harman (Divle)	(Gönç 1974)
Döyme Cheese	Hakkari	(Kamber 2008d)
Dolaz (Tort) cheese	Isparta	(Şimşek, Sağdıç 2006)
Ekşi	Çankırı	(Kamber and Terzi 2008b)
Ekşimik	Ordu, Giresun, Samsun	(Kamber and Terzi 2008c)
Eridik Cheese	Artvin	(Kamber and Terzi 2008c)
Erzincan Tulum Cheese	Erzincan, Elazığ, Tunceli	(Akyüz 1981)
Eritme Cheese	Industry	(Özer 1970)
Ezme Cheese	Hatay	(Kamber 2008c)
Gorcola	Ardahan, Artvin, Şavşat	(Kamber and Terzi 2008c)
Gödelek	Niğde	(Kamber and Terzi 2008b)
Gölbaşı tulum Cheese	Ankara (Gölbaşı)	(Adam 1974)
Gravyer Cheese	Kars	(Adam 1974)
Ham çökelek	Mersin (Silifke)	(Kamber 2008c)
Hellim Cheese	Kıbrıs, Mersin, Silifke	(Arıcı 1988)
İmansız Cheese	Trabzon	(Uysal et al. 1999)
İvriz Tulum Cheese	Konya Ereğlisi	(Tekinşen 1997)
İzmir Tulum Cheese	İzmir	(Yaygın 1971)
Kadina Cheese	Rize (Çamlıhemşin, Ayder)	(Kamber and Terzi 2008c)
Karabük Cheese	Karabük	(Kamber 2008e)
Karaman Cheese	İzmir (Tire)	(Kamber 2008c)

Traditional Cheese Name	Area Name	Source
Karaman Tulum	Karaman	(Ünsal 1997)
Kargı Tulum Cheese	Çorum (Kargı)	(Kamber and Terzi 2008c)
Karın kaymağı	Erzurum, Kars, Gümüşhane, Ordu	(Çakmakçı et al. 1995)
Kaşar Cheese	All region, Kars, Tekirdağ, Kırklareli, Tonya, Muş	(İzmen 1937) (Öztek 1974)
Kazıklı Cheese	Muğla (Milas)	(Adam 1974)
Kelle Cheese	Kahramanmaraş, Elbistan	(Altun 1995)
Kelle çökelek	Denizli (Çivril, Çal, Bekili)	(Kamber 2008c)
Kesik	Ordu, Giresun, Samsun	(Uysal et al. 1999)
Kesmük	Çankırı	(Uysal et al. 1999)
Keş	Ordu, Giresun	(Uysal et al. 1999)
Kırktokmak Cheese	Muğla (Milas)	(Adam 1974)
Kirlihanım Cheese	Balıkesir (Ayvalık)	(Adam 1974)
Kolette (Golot) Cheese	Rize, Artvin, Trabzon, Bayburt	(Çağlar et al. 1998a) (Tunçtürk, Özdemir 2005)
Koponesti Cheese	İzmir (Çeşme, Foça, Karaburun)	(Adam 1974)
Köçer Cheese	Siirt	(İzmen and Kaptan 1966)
Kurçı	Rize	(Ünsal 1997)
Kuru ezme	Aydın	(Ünsal 1997)
Küflü Cheese	Konya	(Kamber and Terzi 2008b)
Küflü köylü Cheese	Artvin (Yusufeli)	(Ünsal 1997)
Külek (Varella) Cheese	Trabzon, Artvin, Rize, Ardahan	(Yazıcı et al. 1998) (Kamber and Terzi 2008c)
Künefe Cheese	Urfa, Antep, Adana	(Kamber and Terzi 2008a)
Küp Cheese	Sivas, Bitlis	(Adam 1974)
Küp çökeleği	Tokat	(Kamber and Terzi 2008b)
Küpecik	Çankırı	(Adam 1974)
Lor	All region	(Adam 1974)
Lorlu kaşar kırığı	Bayburt	(Ünsal 1997)
Maraş (Finger) Cheese	Kahramanmaraş	(Tekinşen 1997)
Mengen Cheese	Bolu (Mengen)	(Kamber 2008e)
Mezele Cheese	Trabzon (Sürmene)	(Ünsal 1997)
Mihalıç Cheese	Bursa, Balıkesir	(Yöney 1955)
Minzi	Trabzon, Rize, Artvin	(Ünsal 1997)
Motal Cheese	Muş (Bulanık)	(Coşkun et al. 1998)
Oğma Cheese	Trabzon, Artvin,	(Kamber and Terzi 2008c)
Olaman	Ordu	(Ünsal 1997)
Otlu Cheese	Van, Bitlis, Siirt, Hakkâri	(Eralp 1953), (İzmen and Kaptan 1966) (Bakırcı et al. 1998)
Otlu Lor	Van	(Kamber and Terzi 2008b)
Ovma ve Basma Örgü (Eritme) Cheese	Ankara (Ayaş)	(Kaptan and Eralp 1974) (Akyüz et al. 1998)
Parmak	Maraş	Tekinşen 1997
Pesküten	Sivas	(Kurt and Çağlar 1988)
Pestigen	Bingöl, Elazığ	(Kurt et al. 1982)
Posa Cheese	Muğla (Bodrum)	(İnal 1988)
Saçak Cheese	Ardahan, Kars	(Kamber 2008d)
Sepet Cheese	İzmir, Balıkesir	(Kınık et al. 1999)
Sepet loru	Balıkesir (Ayvalık)	(Kamber 2008b)
Serto (Tomas)	Tunceli	(Kurt et al. 1979)
Sırvatka	Bursa, Balıkesir	(Yöney 1955)
Su (sulu) Cheese	Trabzon	(Ünsal 1997)
Surke	Hatay	(Kamber 2008c)
Sünme	Hatay	(Kamber 2008c)
Süt kırması	Trabzon	(Ünsal 1997)
Sütçüler Tortusu	Isparta	(Ünsal 1997)
Sütlü Cheese	Hakkâri, Antalya, Mersin	(Kamber 2008c, 2008d)
Şafak Cheese	Erzincan	(Adam 1974)
Şavak Cheese	Elazığ, Bingöl, Tunceli	(Töral 1969) (Kurt and Öztek 1984)
Şor Cheese	Artvin (Şavşat)	(Kamber and Terzi 2008c)
Şor loru	Kars	(Kamber 2008d)

Traditional Cheese Name	Area Name	Source
Tekne Cheese	Artvin	(Kamber and Terzi 2008c)
Teleme Cheese	Adana, Antep, Maraş, Bursa, Amasya	(Adam 1974)
Telli Cheese	Trabzon, Artvin	(Uysal et al. 1999)
Telli krema Cheese	Trabzon, Artvin (Yusufeli)	(Ünsal 1997)
Teneke Tulum Cheese	İzmir, Manisa, Aydın	(Yaygın 1971)
Tepti	Çanakkale	(Tekinşen 1997)
Torba Cheese	Ordu	(Ünsal 1997)
Toros Cheese	Ereğli	(Adam 1974)
Tulum Cheese	All region	(Adam 1974)
Tulum Kaşarı	Tokat, Trabzon	(Ünsal 1997)
Urfa White Cheese	Şanlıurfa	(Akın and Şahan 1998) (Yetişmeyen, Yıldız 2003)
Yalvaç Küp Cheese	Yalvaç	(Kamber 2008c)
Yaprak Cheese	Hakkâri	(Kamber 2008d)
Yayla Cheese	Trabzon, Artvin	(Ünsal 1997)
Yer Cheese	Artvin, Trabzon	(Kamber and Terzi 2008c)
Yörük Cheese	Taurus mountains (Mersin, Antalya, Denizli, Isparta, Burdur)	(Adam 1974)
Yumne Cheese	Artvin	(Kamber and Terzi 2008c)

Table 2. Cheese production by region in Turkey

Traditional Cheese Name	Area Name	Source
Abaza Cheese	Düzce, Sakarya, Kocaeli, Bolu, Sinop, Bilecik, Balıkesir, Çanakkale	(Uysal et al. 1998b)
Acı Cheese	Giresun	(Ünsal 1997)
Afyon tulum Cheese	Afyon, Şuhut	(Kurt 1990)
Aho Cheese	Trabzon, Gümüşhane, Bayburt	(Kamber and Terzi 2008c)
Antep Sıkma Cheese	Gaziantep	(Çağlar et al. 1998b)
Armola Cheese	İzmir (Seferihisar)	(Adam 1974)
Ayran Cheese	Rize	(Ünsal 1997)
Ayran kırması	Rize, Artvin	(Ünsal 1997)
Balkabağı küp Cheese	Adapazarı, Hendek, Arifiye	(Ünsal 1997)
Beyaz Cheese	All region	(Adam 1974)
Bez kaşar	Mut	(Ünsal 1997)
Bez tulum	Ereğli (Karaman)	(Ünsal 1997)
Biberli çökelek	Yozgat (Akdağmadeni)	(Kamber 2008d)
Cabaltı çökeleği	İnebolu	(Ünsal 1997)
Cacık	Van, Bitlis, Siirt, Hakkâri	(Küçüköner, Tarakçı 1998)
Cami boğazı	Trabzon	(Kamber and Terzi 2008c)
Carra	Hatay	(Konar and Güler 1998)
Civil (Çeçil) Cheese	Erzurum, Kars, Ağrı, Muş (Bulanık)	(Kurt and Öztek 1976)
Çamur	İzmir (Tire)	(Ak and Nergis 1998)
Çanak (Testi)	Yozgat	(Coşkun 1995)
Çayır	İstanbul	(Tekinşen 1997)
Çayır Cheese	Manisa	(Tekinşen 1997)
Çerkez Cheese	Sinop, Düzce, Bolu, Balıkesir, Adapazarı, Çanakkale	(Uysal et al. 1998a)
Çimi Tulum	Akseki, Serik, Manavgat	(Kılıç et al. 1997)
Çoban Cheese	Bursa, Yenişehir	(İnal 1990)
Çökelek	All region	(Adam 1974)
Çömlek Cheese	Aksaray, Çankırı, Kırşehir, Nevşehir	(Tekinşen 1997)
Deve dili	Kars	(Kamber 2008d)
Dil Cheese	All region	(Ergüllü, Karacabey 1988)

Traditional Cheese Name	Area Name	Source
Divle Tulum Cheese	Üç Harman (Divle)	(Gönç 1974)
Dövme Cheese	Hakkari	(Kamber 2008d)
Dolaz (Tort) cheese	Isparta	(Şimşek, Sağıdıcı 2006)
Ekşi	Çankırı	(Kamber and Terzi 2008b)
Ekşimik	Ordu, Giresun, Samsun	(Kamber and Terzi 2008c)
Eridik Cheese	Artvin	(Kamber and Terzi 2008c)
Erzincan Tulum Cheese	Erzincan, Elazığ, Tunceli	(Akyüz 1981) (Kurt and Öztekin 1984)
Eritme Cheese	Industry	(Özer 1970)
Ezme Cheese	Hatay	(Kamber 2008c)
Gorcola	Ardahan, Artvin, Şavşat	(Kamber and Terzi 2008c)
Gödelek	Niğde	(Kamber and Terzi 2008b)
Gölbashi tulum Cheese	Ankara (Gölbashi)	(Adam 1974)
Gravyer Cheese	Kars	(Adam 1974)
Ham çökelek	Mersin (Silifke)	(Kamber 2008c)
Hellim Cheese	Kıbrıs, Mersin, Silifke	(Arıcı 1988) (Usca and Erol 1998)
İmansız Cheese	Trabzon	(Uysal et al. 1999)
İvriz Tulum Cheese	Konya Ereğlisi	(Tekinşen 1997)
İzmir Tulum Cheese	İzmir	(Yaygın 1971)
Kadina Cheese	Rize (Çamlıhemşin, Ayder)	(Kamber and Terzi 2008c)
Karabük Cheese	Karabük	(Kamber 2008e)
Karaman Cheese	İzmir (Tire)	(Kamber 2008c)
Karaman Tulum	Karaman	(Ünsal 1997)
Kargı Tulum Cheese	Çorum (Kargı)	(Kamber and Terzi 2008c)
Karın kaymağı	Erzurum, Kars, Gümüşhane, Ordu	(Çakmakçı et al. 1995)
Kaşar Cheese	All region, Kars, Tekirdağ, Kırklareli, Tonya, Muş	(İzmen 1937) (Öztekin 1974)
Kazıklı Cheese	Muğla (Milas)	(Adam 1974)
Kelle Cheese	Kahramanmaraş, Elbistan	(Altun 1995)
Kelle çökelek	Denizli (Çivril, Çal, Bekili)	(Kamber 2008c)
Kesik	Ordu, Giresun, Samsun	(Uysal et al. 1999)
Kesmük	Çankırı	(Uysal et al. 1999)
Keş	Ordu, Giresun	(Uysal et al. 1999)
Kırktokmak Cheese	Muğla (Milas)	(Adam 1974)
Kirlihanım Cheese	Balıkesir (Ayvalık)	(Adam 1974)
Kolette (Golot) Cheese	Rize, Artvin, Trabzon, Bayburt	(Çağlar et al. 1998a) (Tunçtürk, Özdemir 2005)
Koponesti Cheese	İzmir (Çeşme, Foça, Karaburun)	(Adam 1974)
Köçer Cheese	Siirt	(İzmen and Kaptan 1966)
Kurçi	Rize	(Ünsal 1997)
Kuru ezme	Aydın	(Ünsal 1997)
Küflü Cheese	Konya	(Kamber and Terzi 2008b)
Küflü köylü Cheese	Artvin (Yusufeli)	(Ünsal 1997)
Külek (Varella) Cheese	Trabzon, Artvin, Rize, Ardahan	(Yazıcı et al. 1998) (Kamber and Terzi 2008c)
Künefe Cheese	Urfa, Antep, Adana	(Kamber and Terzi 2008a)
Küp Cheese	Sivas, Bitlis	(Adam 1974)
Küp çökeleği	Tokat	(Kamber and Terzi 2008b)
Küpecik	Çankırı	(Adam 1974)
Lor	All region	(Adam 1974)
Lorlu kaşar kırığı	Bayburt	(Ünsal 1997)

Traditional Cheese Name	Area Name	Source
Maraş (Finger) Cheese	Kahramanmaraş	(Tekinşen 1997)
Mengen Cheese	Bolu (Mengen)	(Kamber 2008e)
Mezele Cheese	Trabzon (Sürmene)	(Ünsal 1997)
Mihalıç Cheese	Bursa, Balıkesir	(Yöney 1955)
Minzi	Trabzon, Rize, Artvin	(Ünsal 1997)
Motal Cheese	Muş (Bulanık)	(Coşkun et al. 1998)
Oğma Cheese	Trabzon, Artvin,	(Kamber and Terzi 2008c)
Olaman	Ordu	(Ünsal 1997)
Otlu Cheese	Van, Bitlis, Siirt, Hakkâri	(Eralp 1953), (İzmen and Kaptan 1966)
Otlu Lor	Van	(Bakırcı et al. 1998)
Ovma ve Basma	Ankara (Ayaş)	(Kamber and Terzi 2008b)
Örgü (Eritme) Cheese	Diyarbakır	(Kaptan and Eralp 1974) (Akyüz et al. 1998)
Parmak	Maraş	(Tekinşen 1997)
Pesküten	Sivas	(Kurt and Çağlar 1988)
Pestigen	Bingöl, Elazığ	(Kurt et al. 1982)
Posa Cheese	Muğla (Bodrum)	(İnal 1988)
Saçak Cheese	Ardahan, Kars	(Kamber 2008d)
Sepet Cheese	İzmir, Balıkesir	(Kınık et al. 1999)
Sepet lor	Balıkesir (Ayvalık)	(Kamber 2008b)
Serto (Tomas)	Tunceli	(Kurt et al. 1979)
Sırvatka	Bursa, Balıkesir	(Yöney 1955)
Su (sulu) Cheese	Trabzon	(Ünsal 1997)
Surke	Hatay	(Kamber 2008c)
Sünme	Hatay	(Kamber 2008c)
Süt kırmısı	Trabzon	(Ünsal 1997)
Sütçüler Tortusu	Isparta	(Ünsal 1997)
Sütlü Cheese	Hakkâri, Antalya, Mersin	(Kamber 2008c, 2008d)
Şafak Cheese	Erzincan	(Adam 1974)
Şavak Cheese	Elazığ, Bingöl, Tunceli	(Töral 1969) (Kurt and Öztekin 1984)
Şor Cheese	Artvin (Şavşat)	(Kamber and Terzi 2008c)
Şor lor	Kars	(Kamber 2008d)
Tekne Cheese	Artvin	(Kamber and Terzi 2008c)
Teleme Cheese	Adana, Antep, Maraş, Bursa, Amasya	(Adam 1974)
Telli Cheese	Trabzon, Artvin	(Uysal et al. 1999)
Telli krema Cheese	Trabzon, Artvin (Yusufeli)	(Ünsal 1997)
Teneke Tulum Cheese	İzmir, Manisa, Aydın	(Yaygın 1971)
Tepti	Çanakkale	(Tekinşen 1997)
Torba Cheese	Ordu	(Ünsal 1997)
Toros Cheese	Ereğli	(Adam 1974)
Tulum Cheese	All region	(Adam 1974)
Tulum Kaşarı	Tokat, Trabzon	(Ünsal 1997)
Urfa White Cheese	Şanlıurfa	(Akan and Şahan 1998) (Yetişmeyen, Yıldız 2003)
Yalvaç Küp Cheese	Yalvaç	(Kamber 2008c)
Yaprak Cheese	Hakkâri	(Kamber 2008d)
Yayla Cheese	Trabzon, Artvin	(Ünsal 1997)
Yer Cheese	Artvin, Trabzon	(Kamber and Terzi 2008c)
Yörük Cheese	Taurus mountains (Mersin, Antalya, Denizli, Isparta, Burdur)	(Adam 1974)
Yumne Cheese	Artvin	(Kamber and Terzi 2008c)

### Classification of the Cheeses

Since there are so many varieties of cheese and since they may resemble each other in terms of certain of their characteristics, classification is rather problematic. With more than 2000 varieties of cheese worldwide, cheeses may only be studied by dividing them into groups. The grouping or classification of cheeses is carried out according to different principles in different countries. Even when classifying on the same basis, it is sometimes possible for differences in classification to occur. For example, in many countries the hardness or softness of a cheese is evaluated differently: in some countries, a cheese with a moisture content of 40% is classed as soft, while in others it is classed as semi-hard. In classifying cheeses consideration is usually given to the following factors: milk type, consistency, degree of maturation, method of production, microbiological characteristics, chemical composition, presence or absence of additives, fat content, type of raw materials used, salt content and method of salting, and place of production. For instance, cheese may be classified according to the origin of the milk used in its production, as cow's, ewe's or goat's milk cheese; according to how it is made, as being produced with rennet, or by a souring or heating process; according to its consistency, as soft, semi-hard or hard cheese; according to its fat content, as full-fat, fat, semi-fat or non-fat cheese; according to its degree of maturation, as unripened, semi-ripe or matured cheese; according to the raw materials used, as made from fresh milk, sour milk, whey or ayran; according to its appearance, as plain, smoked, moldy or containing additives; or, according to its microbiological characteristics, as cheese with or without mould. Classification of cheese according to its physical, microbiological and chemical characteristics is more readily acceptable because it is based upon scientific evidence. Furthermore, classification based upon chemical analysis of moisture content is widely used because it gives a rough idea of the nutritional value of the cheese. Here for the first time, Turkish cheeses have been classified according to their various characteristics and the results are presented in table form below (Table 5) (Kamber 2005).

### CONCLUSION

Essentially, variety in cheese derives from local and/or traditional adaptations of a few fundamental cheese making techniques and from differences in approach in industrial production. In fact, most of the variety in cheese production is determined by whether raw or pasteurized milk is used; by the different temperatures at which the milk coagulates; by the use of different rennets and starter cultures; by the different-sized pieces into which the soft curd is fragmented; by different forms and methods of straining and pressing it; by whether or not the mass of cheese is fragmented after it has been drained; by whether or not it is boiled; by different climatic conditions; by differences in shape; and by differences in the temperature, location and duration of its maturation. This all holds true for Turkey, where the cheeses produced in every region differ in flavour.

Despite the fact that cheese making is a developing industrial sector in Turkey, aside from production in dairies and factories, home production of local cheeses is still of an order which cannot be overlooked. A significant proportion of this, estimated to be around 60%, remains in the hands of village women. For this reason, it has not been possible to fully exploit the potential of milk and cheese.

People continue to produce cheese in the traditional ways in order to meet their own requirements. To introduce technology and more variety into production and in so doing to produce cheeses capable of meeting different tastes and requirements, attention must be given, alongside commercial cheese varieties, to those varieties of cheese currently produced to meet needs in villages and in rural areas. Apart from Ünsal's (1997) sociological work on this subject, there are very few studies available on traditional cheeses. Insufficient scientific research has been carried out on local cheeses. Moreover, it cannot be said that every variety of cheese has been included in this publication. Varieties of cheese that are gradually being forgotten or which have been displaced by cheeses from the big cities may still come to light. Local cheese making technologies should be studied, developed and raised to industrial standards, and local cheeses should be introduced into the wider marketplace. However, in the work which must be carried out for the sake of modernization, the variety, distinctive local characteristics, traditional flavours and constitution of the cheeses should not be lost. In this way, through combining traditional cheeses with modern technology, while still preserving their local characteristics, the rescue of large business enterprises from their focus on a single type of cheese making may be assisted.

When cheese production is evaluated on a regional basis, the following facts emerge. In the Middle Anatolian region, the varieties of cheese most often encountered are those made in earthenware jars or animal skins. Again in the same region, almost all cheese is produced from ewe's or goat's milk. It is also of note that earthenware containers are used to store the cheeses and that they are buried in the ground to mature. White Cheese and Mihaliç Cheese, which are known nationally and indeed worldwide, originate in the Marmara region. In this region there is a greater variety and predominance of white cheese (Mengen Cheese, Karabük Cheese, Çoban Cheese). Moreover, there is a high level of industrial production of cheese here. A considerable proportion of the cheese production takes place in dairies or factories and a large proportion of the national demand for White cheese and Kaşar Cheese is supplied from this region. Since cattle's rearing predominates in the Marmara region, there is widespread use of cow's milk in its cheese production. In the Mediterranean region, goat's milk cheeses are common (Sütçüler Çayır Cheese and Eğridir Goat's Cheese, Yayladağ Goat's Cheese and Denizli White Goat's Cheese, Çimi, Testi, Sütlü and Eğridir Taze Kelle Cheese). In this region, varieties of tulum (animal skin) cheese are prevalent (Çimi, Yörük, Süller, Tulum Keşi, Sütlü Cheese). In the Eastern Anatolian region, since the use of animal skins to store cheese is widespread, there are many varieties of cheese known by the name tulum. A much-employed feature of cheese production in the South-eastern Anatolian region is the process of heating the soft curd (Antep Sıkma Cheese, Urfa White, Örgü and Eritme Cheese). In this region, varieties of white cheese predominate (Urfa White Cheese, Otlu Cheese and Kartal Cheese) and goat's milk is most often used. Moreover, since this region's cheeses (Antep Sıkma Cheese, Urfa White and Örgü Cheese) have been introduced into many other regions, their share of the wider market is greater than that of other local cheeses. Amongst all regions, the Black Sea region takes first place in terms of the diversity of its cheese. Both the quantity and the variety of the region's cheeses are considerable (Kamber 2005).

**Table 3.** Chemical composition of Turkey cheeses

Variety of Cheese	Moisture content	Fat Free Dry matter	Fat	Protein	Ash	Salt	Acidity	Maturated unit	Source
Abaza Cheese	40.80	37.66	21.54	23.66	-	6.36	28.64**	-	(Uysal et al.1998b)
White cheese (Ankara)	56.46	23.92	19.62	15.29	5.91	4.28	116**	-	(Izmen 1939)
White cheese (Erzurum)	60.11	21.61	18.28	16.57	3.59	2.88	103.6**	-	(Şimşek 1986)
White cheese (Konya)	62.15	24.41	13.47	-	-	4.46	0.99*	-	(Nizamlıoğlu et al.1989)
White chese (Diyarbakır)	60.61	24.83	14.56	17.06	6.42	5.32	37.92**	-	(Çelik et al. 1998)
White cheese (İzmir)	58.24	-	-	20.75	-	4.13	45.28**	-	(Demiryol and Yaygın 1984)
White cheese (Van)	63.39	21.83	14.78	15.22	-	4.7	1.18*	-	(Sancak and Sancak 1995)
Cacık cheese (Jaji)	77.93	19.38	2.69	14.51	3.31	1.97	1.93*	-	(Küçüköner and Tarakçı 1998)
Cara Cheese	46.57	28.57	24.86	18.86	-	8.83	0.85*	21.84	(Konar and Güler 1998)
Civil (Çeçil)	56.64	40.58	2.78	16.46	9.40	9.15	0.64*	1.86	(Bakırcı and Andıç 1999)
Civil (Çeçil) (Kars)	64.4	42.8	21.5	22.3	-	-	-	-	(Kamber 2005b)
Civil (Çeçil) (Erzurum)	58.75	38.19	3.06	30.9	6.24	5.51	48**	-	(Kurt and Öztekin 1976)
Çanak Cheese	48.51	37.9	13.5	26.6	6.6	6.1	1.6*	-	(Akyüz and Gülümser 1984)
Çökelek Cheese	81.4	17.4	1.2	8.04	-	1.09	0.96*	-	(Ağaoğlu et al. 1997)
Çerkez Cheese	55.94	22.89	21.17	16.74	-	4.81	29.30**	-	(Uysal et al. 1998)
Çimi Cheese	46.43	1.52	43.30	25.34	5.43	7.74	82**	-	(Öztürk 1971)
Çömlek Cheese	32.16	26.96	40.88	-	6.52	5.03	0.43*	-	(Şahin 1997)
Dil Cheese	49.62	27.77	21.61	25.78	-	1.82	0.65*	-	(Koçak et al. 1997)
Divle Cheese	43.71	32.81	23.46	25.90	4.96	3.99	1.07*	-	(Morul and İşleyici 2012)
Dolaz Cheese	47.96	34.34	17.70	-	-	-	1.62*	10.95	(Şimşek and Sağdıç 2006)
Erzincan Tulum	37.29	27.75	34.96	21.54	4.69	5.50	1.66*	-	(Akyüz 1981)
Eritme Cheese	46.77	32.89	20.27	11.7	-	10.2	-	-	(Özer 1970)
Gravyer Cheese	31.80	35.28	33.45	28.95	4.94	3.70	1.87*	-	(Ulutaş 1989)
Görçola Cheese	37.9	36.0	26.1	25.8	5.4	4.8	0.5*	-	(Kamber and Çelik 2007)
Hellim (Vacum)	60.67	12.22	27.11	-	4.36	3.76	0.59*	-	(Atasever et al. 1999)
Hellim (KKTC)	29.61	60.39	-	-	-	3.41	-	-	(Usca and Erol 1998)
İzmir Tulum Cheese	38.19	35.21	26.60	27.44	7.84	5.96	115.5**	46.5	(Eralp 1953)
Kargı Tulum Cheese	34.66	44.81	20.53	21.37	-	3.69	0.62	16.86	(Dinkçi et al 2012)
Karın kaymağı Cheese	30.9	30.1	39.0	19.0	6.1	-	1.0*	19.2	(Çakmakçı et al.1995)
Kaşar (Kars)	30.87	34.28	34.83	29.52	3.90	1.60	130.3**	20.90	(Öztekin 1974)
Kaşar (Trakya)	44.8	29.2	25.0	22.6	4.5	3.21	52.2**	-	(Hamzaçebi and Anter 1978)
Kaşar (Elazığ-vacum)	35.85	64.15	12.4	-	-	2.74	0.42*	-	(Öksüztepe et al. 2009)
Kelle Cheese	32.50	35.29	32.20	21.56	11.7	7.96	0.81*	2.22	(Altun 1995)
Kirlihanım Cheese	46.40	35.70	17.9	10	-	4.9	-	-	(Akgün 1988)
Kolette Cheese	56.49	38.20	5.31	33.64	-	3.12	0.73*	7.97	(Çağlar et al. 1998a)
Kolette Cheese	51.37	41.42	7.41	35.68	-	2.95	0.93*	-	(Tunçtürk and Özdemir 2005)
Koponesti Cheese	57.78	29.96	14.28	16.18	6.30	4.14	117.7**	-	(Ergüllü et al.1998)
Külek Cheese	53.64	39.61	6.75	28.22	8.16	7.09	2.16**	34.92	(Yazıcı et al.1998)
Küp Cheese	50.49	40.07	9.44	-	9.1	6.7	0.87*	-	(Pekel and Korukoğlu 2009)
Lor	74.01	20.65	5.34	13.50	1.24	-	58.23**	-	(Demirci et al. 1991)
Çökelek (Skin)	61.67	33.20	5.13	-	4.33	3.77	1.0*	-	(Keven et al. 1998)
Mihaliç Cheese	36.90	38.10	25.0	26.10	-	9.08	1.43*	-	(Şen 1991)
Motal Cheese	46.24	39.62	14.14	24.69	-	5.51	0.54*	-	(Coşkun et al. 1998)
Otlu Cheese	32-56	44-68	14-34	19-27	-	3-14	34-128**	-	(Eralp 1953)
Otlu Cheese	41.86	34.76	23.38	-	-	7.21	2.46*	-	(Sancak 1990)
Otlu Cheese	52.22	-	-	-	-	5.69	0.81*	-	(İşleyici and Akyüz 2009)
Otlu lor	66.34	26.35	7.31	17.31	6.96	5.05	1.50*	11.42	(Bakırcı et al. 1998)
Örgü Cheese	55.16	30.12	14.72	21.69	7.43	6.02	22.86**	3.09	(Özdemir et al. 1998)
Örgü Cheese	45.36	36.80	17.84	-	-	5.45	0.34*	-	(Aksu et al. 1999)
Parmak Cheese	45.40	31.40	23.2	24.1	-	5.3	0.39*	-	(Tekinşen et al. 1999)
Pestigen	69.04	27.30	3.66	22.08	15.9	12.1	83.9**	-	(Kurt and Çağlar 1988)
Posa Cheese	54.1	26.9	19.0	18.9	-	5.6	124**	-	(İnal 1988)
Sepet Cheese	46.9	29.3	23.8	18.4	8.30	1.06	1.04*	-	(Kımk et al. 1999)
Sepet Cheese	45.7	29.9	29.9	24.4	-	1.1	0.72*	-	(Karakaş and Korukluoğlu 2006)
Sıkma Cheese	47.0	29.72	23.28	20.25	-	3.24	1.71*	17.05	(Çağlar et al. 1998b)
Surk Cheese	47.2	41.8	11.0	-	-	8.1	2.1*	-	(Kamber and Şireli)
Şavak Cheese	52.90	22.54	24.61	12.50	2.50	0.3	2.72*	-	(Töral 1969)
Şavak Cheese (Tunceli)	37.29	27.75	34-96	21.54	5.50	541	1.66*	-	(Akyüz 1981)
Tire Çamur Cheese	62.06	12.12	25.82	6.75	3.16	3.16	-	-	(Ak and Nergiz 1998)
Tomas Cheese	52.51	29.37	18.13	22.56	3.42	3.05	1.25*	-	(Kurt et al. 1979)
Tulum (Skin)	42.43	25.30	32.27	21.07	-	2.55	1.83*	27.1	(Güven and Konar 1995)
Tulum (Plastic)	43.19	25.66	31.15	20.85	-	2.35	2.35*	34.8	(Güven and Konar 1995)
Tulum (Brine)	48.88	28.42	28.70	21.27	7.22	5.81	1.5*	-	(Yaygın 1971)
Urfa White Cheese	51.67	25.37	22.96	17.53	2.1	6.80	1.12*	-	(Yetişmeyen and Yıldız 2003)
Urfa White Cheese	51.48	26.05	22.02	-	-	9.51	0.29*	-	(Yağcı et al.2007)
Yörük Cheese	57.30	21.7	21.0	-	4.0	1.9	32.5*	-	(Akgün 1988)

\*LA cinsinden \*\*SH cinsinde

**Table 4.** Microbiological characteristics of Turkey cheeses

Variety of Cheese	Total Microbes	Lactic Bacteria	Lactococcus	Proteolytic Bacteria	Lipolytic Bacteria	Yeast and Mould	Source
Abaza Cheese	3.3x10 <sup>7</sup>	-	-	-	-	1.8x10 <sup>4</sup>	(Uysal et al. 1998)
White cheese (Ankara)	2.7x10 <sup>8</sup>	1.7x10 <sup>8</sup>	-	-	-	-	(Yalçın 1986)
White cheese (Bursa)	3.5x10 <sup>8</sup>	2.2x10 <sup>8</sup>	-	-	-	5.4x10 <sup>4</sup>	(Tayar 1995)
White cheese (Erzurum)	2.2x10 <sup>5</sup>	-	-	-	-	1.5x10 <sup>4</sup>	(Şimşek 1986)
White cheese (Van)	2.0x10 <sup>7</sup>	-	-	-	-	1.9x10 <sup>5</sup>	(Sancak and Sancak 1995)
White cheese (Konya)	2.9x10 <sup>8</sup>	-	-	-	-	5.3x10 <sup>6</sup>	(Nizamoglu et al. 1989)
White cheese (D.bakır)	8.9x10 <sup>7</sup>	8.4x10 <sup>5</sup>	-	-	-	1.1x10 <sup>5</sup>	(Çelik et al. 1998)
Cacık cheese (Jaji)	2.6 x10 <sup>7</sup>	-	-	-	-	7.8 x10 <sup>6</sup>	(Küçüköner and Tarakçı 1998)
Civil (Çeçil) Cheese	1.7x10 <sup>8</sup>	-	-	-	-	2.5x10 <sup>5</sup>	(Bakırcı and Andıç 1999)
Civil Cheese (Kars)	7.25*	-	-	-	-	6.45*	(Kamber 2005b)
Civil Cheese (Erzurum)	3.07x10 <sup>2</sup>	2.06x10 <sup>4</sup>	-	-	-	1.32x10 <sup>5</sup>	(Başkaya et al. 2006)
Çerkez Cheese	6.5x10 <sup>7</sup>	-	-	-	-	6.2x10 <sup>4</sup>	(Uysal et al. 1998)
Çimi Tulum Cheese	7.0x10 <sup>8</sup>	2.0x10 <sup>7</sup>	6.0x10 <sup>7</sup>	-	1.0x10 <sup>7</sup>	4.2x10 <sup>6</sup>	(Kılıç et al. 1997)
Çimi Tulum Cheese	1.3x10 <sup>7</sup>	-	-	-	-	5.3x10 <sup>4</sup>	(Alpkent et al.2009)
Çömlek Cheese	9.9x10 <sup>7</sup>	3.0x10 <sup>7</sup>	3.0x10 <sup>7</sup>	6.0x10 <sup>6</sup>	-	2.4x10 <sup>6</sup>	(Şahin 1997)
Çökelek (Van)	9.8x10 <sup>6</sup>	-	-	-	-	1.3x10 <sup>5</sup>	(Ağaoğlu et al. 1997)
Çökelek (Diyarbakır)	8. 49	8. 58	-	8. 49	-	6. 67	(Önganer and Kırbag 2009)
Çökelek (skin)	3.4x10 <sup>6</sup>	-	-	-	-	6.2x10 <sup>5</sup>	(Keven et al. 1998)
Dil Cheese	5.9x10 <sup>6</sup>	-	-	-	-	-	(Ergüllü and Karacabey 1988)
Divle Cheese	6.78*	6.93*	-	-	-	6.36*	(Morul and İşleyici 2012)
Divle Cheese	-	-	5.5x10 <sup>7</sup>	-	-	3.5x10 <sup>6</sup>	(Keleş and Atasever 1996)
Dolaz Cheese	5.41*	-	-	-	-	4.13*	(Şimşek and Sağdıç 2006)
Erzincan Tulum	2.1x10 <sup>9</sup>	8.5x10 <sup>6</sup>	-	1.7x10 <sup>7</sup>	1.9x10 <sup>6</sup>	1.8x10 <sup>6</sup>	(Kurt et al. 1991)
Gorcola Cheese	1.9x10 <sup>7</sup>	2.9x10 <sup>4</sup>	1.0x10 <sup>7</sup>	-	-	1.4 x10 <sup>5</sup>	(Kamber and Çelik 2007)
Eritme Cheese	2.0x10 <sup>7</sup>	-	-	-	-	5.3x10	(Özer 1970)
Hellim (Vacum)	6.6 x10 <sup>6</sup>	3.2 x10 <sup>5</sup>	-	-	-	3.7 x10 <sup>5</sup>	(Atasever et al. 1999)
Hellim (KKTC)	1.0x10 <sup>4</sup>	-	-	-	-	1.0x10 <sup>3</sup>	(Usca and Erol 1998)
İzmir Tulum Cheese	6.4x10 <sup>8</sup>	9.2x10 <sup>5</sup>	4.2x10 <sup>6</sup>	-	1.6x10 <sup>4</sup>	5.0x10 <sup>3</sup>	(Kılıç and Gönç 1990)
Kargı Tulum Cheese	6.98*	7.39*	7.28	-	-	6.1*	(Dinkçi et al. 2012)
Karın kaymağı Cheese	6.47*	6.64*	-	-	-	3.55*	(Turgut et al. 2012)
Kaşar (Erzurum)	6.3x10 <sup>7</sup>	1.2x10 <sup>2</sup>	-	5.0x10 <sup>1</sup>	1.8x10 <sup>3</sup>	1.9x10 <sup>4</sup>	(Kıvanç 1989)
Kaşar (Trakya)	3.7x10 <sup>7</sup>	-	-	-	-	2.8x10 <sup>4</sup>	(Demirci and Dıraman 1990)
Kaşar (Elazığ)	1.0x10 <sup>7</sup>	1.0x10 <sup>7</sup>	6. 53x10 <sup>6</sup>	-	-	5. 82x10	(Öksüztepe et al. 2009)
Kelle Cheese	4.6x10 <sup>4</sup>	-	-	-	-	2.9x10 <sup>2</sup>	(Altun 1995)
Koponesti Cheese	3.2x10 <sup>5</sup>	-	-	2.7x10 <sup>4</sup>	2.5x10 <sup>4</sup>	4.6x10 <sup>3</sup>	(Ergüllü et al. 1998)
Kolete Cheese	2.99*	3.07*	-	-	-	2.35*	(Tunçtürk, and Özdemir 2005)
Külek Cheese	5.9x10 <sup>5</sup>	-	-	-	-	1.3x10 <sup>6</sup>	(Yazıcı et al. 1998)
Küp Cheese	7.31*	-	-	-	-	7.57*	(Pekel and Korukoğlu 2009)
Lor	1.3x10 <sup>6</sup>	-	-	-	-	-	(Demirci et al. 1991)
Mihaliç Cheese	5.3x10 <sup>7</sup>	4.7x10 <sup>3</sup>	1.7x10 <sup>5</sup>	-	-	-	(Şen 1991)
Motal Cheese	2.8x10 <sup>7</sup>	-	-	-	-	2.2x10 <sup>7</sup>	(Coşkun et al. 1998)
Otlu Cheese	8.6x10 <sup>6</sup>	9.9x10 <sup>5</sup>	-	-	-	5.6x10 <sup>4</sup>	(Sancak 1990)
Otlu Cheese	6.6x10 <sup>5</sup>	1.4x10 <sup>5</sup>	-	1.8x10 <sup>5</sup>	1.4x10 <sup>6</sup>	4.7x10 <sup>6</sup>	(Coşkun 1995)
Otlu Cheese	7.14	-	-	-	-	3.48	(Coşkun and Öztürk 2002)
Otlu Cheese	7.82	-	8.08	6.05	4.54	5.81	(İşleyici and Akyüz 2009)
Otlu lor	2.1 x10 <sup>6</sup>	-	-	-	-	2.2 x10 <sup>6</sup>	(Bakırcı et al. 1998)
Örgü Cheese	1.0x10 <sup>7</sup>	1.7x10 <sup>6</sup>	-	-	-	1.0x10 <sup>5</sup>	(Özdemir et al. 1998)
Örgü Cheese	3.9x10 <sup>5</sup>	-	-	-	-	4.9x10 <sup>4</sup>	(Aksu et al. 1999)
Parmak Cheese (cattle)	2.2x10 <sup>6</sup>	-	1.4x10 <sup>5</sup>	-	-	3.9x10 <sup>5</sup>	(Tekinşen et al. 1999)
Parmak Cheese	6.98*	-	-	-	-	5.75*	(Tekinşen 2005)
Pesküten	3.7x10 <sup>6</sup>	-	-	1.2x10 <sup>5</sup>	1.0x10 <sup>5</sup>	1.4x10 <sup>6</sup>	(Kurt and Çağlar 1988)
Posa Cheese	9.0x10 <sup>6</sup>	-	-	-	-	7.0x10 <sup>6</sup>	(İnal 1988)
Sepet Cheese	1.1x10 <sup>9</sup>	6.3 x10 <sup>6</sup>	-	1.5 x10 <sup>3</sup>	2.5 x10 <sup>5</sup>	7.9 x0 <sup>2</sup>	(Kımk et al. 1999)
Sepet Cheese	1.8x10 <sup>4</sup>	-	-	-	-	2.8x10 <sup>6</sup>	(Karakaş and Korukluoğlu 2006)
Surk Cheese	6.5x10 <sup>6</sup>	4.7x10 <sup>7</sup>	2.8x10 <sup>2</sup>	-	-	2.7x10 <sup>5</sup>	(Kamber and Şireli 2007)
Tire Çamur Cheese	4.9x10 <sup>9</sup>	-	-	-	-	5.9x10 <sup>6</sup>	(Ak and Nergiz 1998)
Tomas Cheese	2.6x10 <sup>8</sup>	1.2x10 <sup>7</sup>	5.7 x10 <sup>7</sup>	6.5 x10 <sup>7</sup>	1.3 x10 <sup>7</sup>	2.0 x10 <sup>7</sup>	(Gündüz 1982)
Tulum Cheese	1.8x10 <sup>7</sup>	5.5x10 <sup>6</sup>	-	2.3x10 <sup>6</sup>	5.3x10 <sup>6</sup>	1.1x10 <sup>6</sup>	(Güven and Konar 1994)
Tulum (Skin)	1.9x10 <sup>8</sup>	1.0x10 <sup>8</sup>	-	-	-	2.8x10 <sup>6</sup>	(Bostan 1996)
Tulum (Plastic)	3.7x10 <sup>8</sup>	2.7x10 <sup>8</sup>	-	-	-	4.3x10 <sup>5</sup>	(Bostan 1996)
Tulum (Elazığ)	7.1x 10 <sup>7</sup>	5. 6 x 10 <sup>7</sup>	3. 2 x 10 <sup>7</sup>	-	-	2.9 x 10 <sup>5</sup>	(Patr et al. 2001)
Urfa White Cheese	1,0x10 <sup>9</sup>	-	-	-	-	1,0x10 <sup>7</sup>	(Yetişmeyen and Yıldız 2003)
Urfa White Cheese	2,3x10 <sup>8</sup>	2,0x10 <sup>7</sup>	-	-	-	3,1x10 <sup>4</sup>	(Yalçın et al. 2007)

\* log kob/g

**Table 5.** Classification of Turkish cheeses according to their various characteristics

Cow's milk cheeses	Ewe's milk cheeses	Goat's milk cheeses	Buffalo milk cheeses	Cheeses in which the soft curd is heated or which undergo some heating process	
Gravyer Cheese Saçak Cheese Deve dili Cheese Tonya kaşarı Torba Cheese Sulu Cheese Yayla Cheese  (*In the production of many Turkish cheeses cow's milk is now used)	Abaza Cheese Antep Sıkma Cheese Aya Ovma Cheese Cabaltı çökeleği Divle Cheese Erzincan Tulum Giresun Acı Cheese Kaşar Cheese Kazıklı Cheese Kelle Cheese Mihaliç Cheese Otlu Cheese Şavak Cheese Tel Cheese Tomas Cheese Tulum Cheese Urfa White Cheese Yaprak Cheese	Antep Sıkma Cheese Çepni Cheese Çimi Cheese Eğridir Kelle Cheese Gönen Yörük Cheese Kartal Cheese Kelle Cheese Kıbrıs Goats Cheese Koponesti Cheese Sepet Cheese Sütlü Cheese (Toros) Teleme Cheese Urfa White Cheese	*There is no special Cheese of this type in Turkey	Abaza Cheese Antep Sıkma Cheese Ayaş Basma Cheese Ayaş Oğma Cheese Bez Tulum Civil Cheese Çerkez Cheese Deve Dili Cheese Dil Cheese Eridik Cheese Eritme Cheese Gravyer Cheese Hellim Cheese	Kaşar Cheese Kayseri Çömlek Kolete Cheese Küp Cheese Mengen Cheese Örgü Cheese Parmak Cheese Sıkma Cheese Sünme Cheese Telli Cheese Yaprak Cheese Yumne Cheese
Cheeses with spices	Herb cheeses	Cheeses made from whey	Sour milk cheeses	Cheeses made from Ayran	Mould cheeses
Armola Cheese Ayaş Ovma Cheese Karaman Cheese Konya Küflü Cheese Sırvatka Surke	Biberli çökelek Cacık Cheese Cara Cheese Çimi Cheese Çoban Cheese Koponesti Cheese Otlu lor Sütçüler Tulum Van Otlu Cheese Yalvaç Küp Cheese	Ekşi Cheese Kirlihanım Cheese Koponesti Lor Minzi Otlu lor Sırvatka Şor lor Yumne Cheese	Armola Cheese Biberli çökelek Civil Cheese Çerkez Cheese Çökelek Ekşimik Erdik Cheese Kıktokmak Cheese Kolete Cheese Külek Cheese Malatya Çökeleği Şor Cheese Tokat Küp Çökelek	Ayran kırması Cacık Cheese Çökelek Kesmük Keş Kurç Minzi Pesküten Serto Surke	Araklı Cheese Civil Cheese Divle Cheese Eridik Cheese Gorcola Gölbaşı Tulumu Karın Kaymağı Kirlihanım Konya mold Cheese Surke Tokat Küp Çökeleği Tulum Cheese Yayla Cheese
Salted cheeses	Unsalted cheeses	Cheeses kept in brine	Tel (stringy) cheeses	Tulum cheeses	Porous cheeses
Aho Cheese Antep Sıkma Cheese Civil (salamura) Hellim Cheese Koponesti Cheese Mihaliç Cheese Sepet Cheese Sıkma Cheese Şor lor Van otlu (salamura)	Ham Çökelek Künefe Teleme Tulum Kaşar Cheese	White Cheese Civil Cheese Eğridir Kelle Cheese Ezme Cheese Hellim Cheese Mihaliç Cheese Otlu Cheese	Civil Cheese Kadina Cheese Saçak Cheese Sünme Cheese Tekne Cheese Telli Cheese Telli kremalı Cheese Yayla Cheese Yusufeli Külek Cheese	Bergama Çimi Erzincan Gölbaşı Kargı Serto Sütçüler Tulum Kaşar Cheese	Gravyer Cheese Mihaliç Cheese Torba Cheese
Hard cheeses	Soft cheeses	Cheeses consumed fresh and unripened	Cheeses matured below ground	Full-fat cheeses	Non-fat cheeses
Çerkez Cheese Gravyer Cheese Hellim Cheese Kaşar Cheese Mihaliç Cheese Minzi kurut Tulum Kaşar Cheese	Armola Cheese White Cheese (in some regions) Deve dili Koponesti Cheese Pestigen Fresh kaşar Fresh lor Tire Çamur Cheese	Abaza Cheese White Cheese Çerkez Cheese Dil Cheese Ekşi Cheese Eridik Cheese Ezme Cheese Ham çökelek Kaşar Cheese Künefe Cheese Lor Minzi Sünme Cheese Tel Cheese Teleme Tonya Kaşar Cheese Yumne Cheese	Aho Cheese Ayaş Basma Ayaş Oğma Cara Cheese Çanak Cheese Dövme Cheese Kırktokmak Cheese Külek Cheese Küp Cheese Küpecik Cheese Minzi Testi Cheese Yalvaç Küp Cheese Yaprak Cheese Yayla Cheese Yer Cheese	Abaza Cheese Ayaş Ovma Cheese Çanak Cheese Çimi Tulum Cheese Divle Tulum Cheese Eridik Cheese Erzincan Tulum Gödelek Cheese Gravyer Cheese Karın kaymağı Kaşar Cheese Mihaliç Cheese Pesküten Sepet Cheese Serto Cheese Yumme Cheese	Abaza Cheese Ayaş Basma Cheese Civil Cheese Çerkez Cheese Ekşimik Ham Çökelek İmansız Cheese Kadina telli Cheese Karaman tulum chee Kelle çökelek Kesmük Kolete Cheese Lor Malatya çökeleği Saçak Cheese Süt kırması Tel Cheese

(Kamber 2005a)



Numerous varieties of non-fat and tel (stringy) cheeses are to be found. In this region, in contrast to other regions, the use of wooden containers to store cheese is noteworthy. In the Aegean region, the use of goat's milk in cheese production is extensive. The variety of lor cheeses to be found here is striking (Koponesti Cheese, Tire Çamur Cheese, Kirlihanım Cheese and Karaburun Lor Goat's Tulum Cheese). Furthermore, softer cheeses of a consistency suitable for spreading (Armola, Tire Çamur Cheese, and Koponesti Cheese) are to be encountered in this region (Kamber 2005).

In conclusion, despite the fact that cheesemaking is a developing industrial sector in Turkey, it is not able to fulfil its potential since many varieties of cheese remain in the hands of village women and are still produced according to local customs and practices. That said, Turkey possesses the capacity to increase the amount of variety in its cheese production several times over. Anatolian cheeses could constitute a valuable resource in expanding the variety of cheeses available throughout Turkey and abroad. This article was written as an introduction to Anatolian cheeses and to assist in protecting traditional cheeses. By introducing traditional cheeses in this way, it may assist in the rescue of business enterprises from their focus on a single type of cheese production and in the introduction of local cheeses into the world market.

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