Professional paper - Stručni rad

UDK: 637.072

Milk-based traditional Turkish desserts

Arzu Akpinar-Bayizit, Tulay Ozcan, Lutfiye Yilmaz-Ersan*

Uludag University, Department of Food Engineering
16059 Gorukle, Bursa, Turkey

Received - Prispjelo: 25.08.2009.
Accepted - Prihvaćeno: 15.11.2009.

Summary

Traditional foods are the reflection of cultural inheritance and affect the lifestyle habits. Culture can be viewed as a system of socially transmitted patterns of behaviour that characterises a particular group. Despite the fact of globalisation, these are key elements to accurately estimate a population's dietary patterns and how these have been shaped through time. In Turkey, a meal with family or friends traditionally ends with a dessert, which is a testimony to the hosts' hospitality or to the housewife's love and affection for her husband and children, since sweets and desserts are important elements of Turkish cuisine. However, the consciousnesses of nutrition and healthy eating, due to rapid change in popular life style and dietary patterns, has contributed to the increased interest in traditional foods with potential health benefits, with increased uncertainty for dessert consumption. Dairy desserts are extensively consumed due to their nutritive and sensoric characteristics. Some of traditional dairy desserts are Mustafakemalpasa, Gullac, Kazandibi, Hosmerim and Tavukgogsu, which are mainly made from milk or fresh cheese, and the current paper discusses their manufacturing processes and composition.

Key words: traditional dessert, milk

Introduction

Tradition is an important issue when considering food which can be described at different levels within social groups as small as a family or as a function of time scale. Traditional foods can be related to special events such as weddings, religious days specific for each country, and are often concerned with local foods and artisan foods referring to specific ingredients, location of the production and know-how. It could be the food made by grandmothers or by the native people of a country (*ethnic food*) (Cayot, 2007; Trichopoulou et al., 2007).

Turkish cuisine is considered as one of the three richest and oldest cooking traditions of the world together with French and Chinese. It has a rich and variegated tradition of soups, olive oil dishes, rice pilafs, stuffed vegetables, pastries, puddings and syrupy desserts underlying the popular dishes of kebab and baklava (Guvenc, 1996).

The diversity of Turkish cuisine reflects the culture of the populations living in regions highly dissimilar in geography and climate. This has led to an abundance of ingredients and cooking styles (Birer, 1991; Baysal, 1993; Surucuoglu and Akman, 1998).

Sweets and desserts have always been distinctive elements of Turkish cuisine. Even an old Turkish saying advises one to "eat sweet, speak in a sweet way". The main characteristic of desserts is the high energy and pleasure they give regarding to the ingredients. They fulfill an important social and ritual function; some, such as baklava and halvah, are pre-

*Corresponding author/Dopisni autor: Phone/Tel.: +90 224 29 41 496; E-mail: abayizit@uludag.edu.tr

ferred on the occasions of major changes in people's lives (birth, death, induction into the army, return from pilgrimage, moving to a new home, enrolling to/graduating from school; weddings and religious days), whereas dairy-based deserts can be consumed either with a meal or at any time of the day (Tezcan, 2000).

The taste and health aspects of foods, particularly desserts, are to be considered in an equal line, and should be improved and clarified for the consumers (Cayot, 2007). People are being more concerned about dessert consumption along with their consciousness on health and physical appearance, due to rapid change in popular life style and eating habits.

Milk-based products have important contributions to daily diet as being a major source of calcium and vitamin D, and also phosphorus, potassium, magnesium, riboflavin and niacin.

Therefore, the broad range of ready-to-eat dairy-based desserts, of varying textures, flavors and appearances with the use of different thickening and gelling agents, equipment and process conditions, can be evaluated as nutrient-dense foods which are necessary to promote bone health, to help reduce risk for chronic diseases like osteoporosis, and to promote overall health (Rapaille and Vanhemelrijck, 1992; Mleko, 1997; de Wijk et al., 2003; Tarrega et al., 2004).

Table 1: Nutritive values of some traditional milk-based desserts (for 100 g)
Tablica 1: Nutritivne vrijednosti nekih tradicionalnih mliječnih deserata (100 g)

	Mustafakemalpasa	Gullac	Hosmerim	Kazandibi	Tavukgogsu
Energija (cal) Energy (cal)	467	235	444	329	368
Proteini (g) Protein (g)	9.4	30.2	8.6	6.3	10
Masti (g) Fat (g)	15.7	9.3	20.7	3.9	5.5
Ugljikohidrati (g) Carbohydrates (g)	72.6	33.3	56.2	67.9	69.8
Kalcij (mg) Calcium (mg)	108	193	103	206	215
Željezo (mg) Iron (mg)	0.67	0.51	0.5	0.30	0.67
Fosfor (mg) Phosphorus (mg)	132	181	125	169	204
Cink (mg) Zinc (mg)	1	1	1	1	1
Natrij (mg) Sodium (mg)	100	76	41	84	96
Vitamin A (iu) Vitamin A (iu)	254	311	642	358	364
Tiamin (mg) Thiamine (mg)	0.04	0.09	0.06	0.07	0.08
Riboflavin (mg) Riboflavin (mg)	0.06	0.23	0.14	0.29	0.26
Niacin (mg) Niacin (mg)	0.32	0.27	0.58	0.34	1.59
Vitamin C (mg) Vitamin C (mg)	0	1	0	2	1
Kolesterol (mg) Cholesterol (mg)	97	17	4	18	21

Dairy desserts either served with or after main meal, being very light to the rich in body and flavour, are important components of the Turkish cuisine. The most well-known ones are Mustafakemalpasa, Gullac, Kazandibi, Hosmerim and Tavuk gogsu, which are mainly made from milk or fresh cheese with the addition of flour, starch, walnut, hazelnut, and slices of fruit (Ayok and Kurdal, 2002). They are widely consumed by many consumer groups like children and elderly people on almost daily basis due to their nutritive and sensoric characteristics (Table 1: http://www.kulturturizm.gov.tr/turizmlinkleri/yoreselyemekler (18.08.2009)).

Traditional dairy desserts are mainly manufactured at small-scale family plants by traditional methods. The information in literature regarding the standard manufacturing process, composition and quality characteristics of traditional dairy desserts is very limited (Alisarli, 1997; Alisarli et al., 2003; Ayok and Kurdal, 2002; Aydin et al., 2008). Thus, this review aims to summarize the manufacturing processes and the composition of some traditional dairy desserts.

Mustafakemalpasa dessert

Mustafakemalpasa dessert is one of the outstanding traditional dairy-based desserts, prepared with sugar syrup, which is consumed particularly in western parts of Turkey. The name of the dessert has been attributed to the town with the same name, Mustafakemalpasa (Bursa, TURKIYE), where the sweet originated from. As defined in TS 12102 (1996), Mustafakemalpasa dessert is "a half product, known also as cheese dessert, fully baked until desired yellowish-brown color in baking pans, without boiling with syrup". The dessert dough has to be prepared with high-quality wheat flour (*Triticum aestivum*), fresh unsalted cheese, semolina flour, eggs, drinking-quality water, baking powder, and other additives, if necessary. It is generally served with kaymak and crushed nuts following medium-flame boiling in sugar syrup and cooling to the room temperature (Akpinar-Bayizit et al., 2009).

According to the Geographical Registration Certificate (Anonymous, 2002), the distinctive feature of Mustafakemalpasa cheese dessert is the usage of unsalted cheese made from cows' milk, gathered from Mustafakemalpasa town area.

The production of Mustafakemalpasa dessert, with slight differences varying from plant to plant, has started firstly at home-scale in 1960s, and has been industrialized nationwide because of its convenience, nutritional quality, and palatability. The origin of the process is ascribed to another traditional cheese-based dessert named "hosmerim", mainly of Balikesir region, substituting sugar with flour, and obtaining a higher consistence.

Mustafakemalpasa dessert should have a bright and yellowish-brown color, convex shape, and an intensive fresh cheese flavour. It should not be broken, burned, or pale in color, and should have no undesired contaminants. Color is a key quality characteristic because of the visual impact at the point of sale. The diameter of desserts should be uniform, ranging from 0.59 to 0.98 inches (TS 12102, 1996).

Mustafakemalpasa dessert consists of 57 % fresh cheese, 30 % semolina flour, 10 % wheat flour, 2 % eggs and 1 % raising agents (TS 12012, 1996). For the production of fresh cheese, milk is pasteurized at 72-74 °C for 15-20 seconds, cooled to 35 °C, transferred to cheese vats and then inoculated with lactic starter culture which consists of *Lactococcus lactis* ssp. *lactis* and *Lactococcus lactis* ssp. *cremoris* at a level of 12 g/100 g. Liquid rennet is added to coagulate the milk, the coagulum obtained is cut into cubes (1-2 cm^3) and pressure is applied to the curds until whey is completely drained (Yetismeyen, 1995; Hayaloglu et al., 2002).

Dough development requires mixing of flour and other ingredients with water; kneading and giving a shape with the help of a spherical encrusting machine (Campos et al., 1997). The energy input for dough making contributes to a uniform distribution of all ingredients and to the hydration of the flour particles, leading to the formation of a continuous gluten structure (Peighambardous et al., 2006). Shaped dough is placed on a baking tray and baked in the preheated oven. The oven temperature is set at 280-300 °C for 15 minutes till the outer skin color is bright yellow. The baked pastry is described as "single-baked", and has a shelf life of 3 days. To prolong the shelf life, an optional subsidiary baking at 100-150 °C for 5 minutes is applied, and the baked dessert is called as "double-baked" with a shelf life up to six months (Korukluoglu et al., 2001; Ozenir, 2006). The cooled baked dessert is packed in polyethylene bags and should be kept under dry condi-

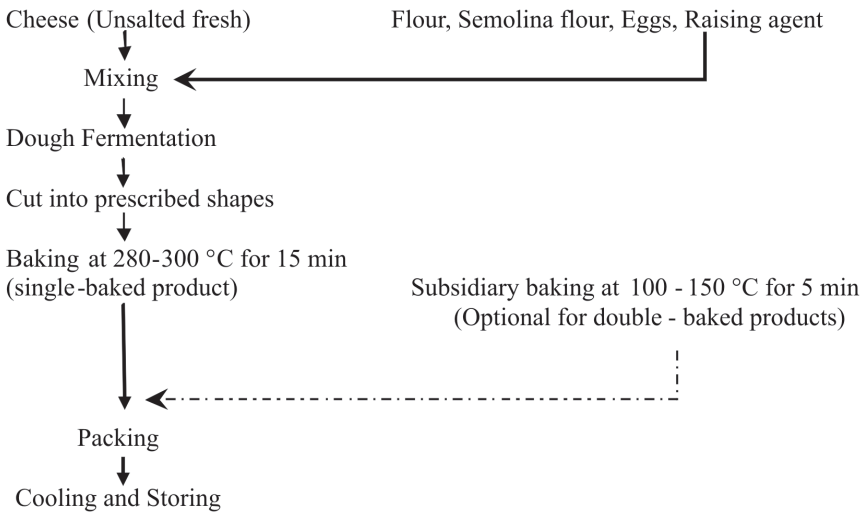

Fig. 1: The manufacturing process of Mustafakemalpasa dessert (Anonymus, 2002; Akpinar-Bayizit et al., 2009)

Slika 1: Proces proizvodnje Mustafakemalpasa deserta (Anonymus, 2002.; Akpinar-Bayizit i sur., 2009.)

tions at room temperature (25±1 °C) until consumption (Figure 1; Anonymous, 2002; Akpinar-Bayizit et al., 2009).

Mustafakemalpasa dessert is consumed after boiling in sugar syrup until desired softness. The sugar syrup used is prepared as follows: i) dissolve sugar in water (3:5, w/v), ii) allow boiling for 2-3 minutes on a medium flame, and iii) add 0.01 % lemon juice.

Gullac

Gullac, known as "Ramadan" dessert, is another traditional dessert which is especially made during the holy month of Ramadan and dates back to Ottoman Empire. The name gullac is the shortening of "gullu as", or "food with roses", a reference to the rosewater used in manufacturing. The story tells that in the cuisines of the Ottoman Palace, those thin dough layers were prepared with "prayers" as it was believed that if one did not pray while opening phyllo dough, it would never be possible to obtain such thin layers (Gun et al., 2008).

The manufacturing is generally carried out in a small scale by a traditional recipe and method. The first stage in manufacturing of this milk based dessert is making "yufka", the cooked version of the phyllo dough, which are basically starch wafers that are made of corn starch, flour and water. The optimum weight of a gullac dough layer should be between 30 to 35 grams. If the weight increases, gullac can be mashed. On the contrary, the weight decrease results in broken dough layers. The second stage is heating the milk in which sugar and rose water are added. The rose water used is a solution of the rose essence. A thin large dough layer is placed in a wide pan and a ladle of hot milk is poured over. This process is repeated with the four more layers, and grated walnuts, almonds, hazelnuts and marzipan are spread. Five more milk-soaked layers are put in the pan. The final dessert of nine layers is generally cut into squares, and each square is garnished with walnuts, hazelnuts, slices of fruit, pomegranate kernels or ground pistachio. Rose water can be sprinkled before serving for a noticeable flavour (Gunur and Isın, 1992).

The temperature of milk has a particular importance on pastry textural properties; using very hot milk will result in a tender dessert; otherwise cold milk results in mushiness. The gullac yufka is brittle and could be stored for two years at a dark dry place with air circulation. Gullac having wheat proteins, vitamins and minerals aside with the nutritive compounds of nuts and pomegranate can be a preferred dessert for a healthy diet, particularly as the light texture is a welcome-ending to an often heavy Ramadan meal (Anonymous, 2007).

Hosmerim

Hosmerim is a popular delicacy which is extensively manufactured in the Aegean, Marmara, Trakya and Central Anatolia regions of Turkey, and is presented with different names such as Hosmelim or cheese halva. It is generally consumed after a meal as a light dessert alone or combined with ice cream, honey or nuts. Hosmerim is served for 50-55 years as a commercial product in the markets and pastry shops. However, most of its manufacture occurs in a small scale with the recipes and methods differing from one region to another (Can, 2007; Kurultay et al., 1999, 2008). Traditional recipes include fresh unsalted cheese particularly from ovine milk, semolina and powdered sugar, however, for commercial production, cream, egg and riboflavin are included in the recipe with the traditional ingredients (Evyapan, 1995; Aydın et al., 2008; Ozcan et al., 2009) (Figure 2).

Kazandibi

The blanc mange or browned pudding, known as "Kazan dibi", is a type of milk pudding. The basic ingredients are full fat milk, sugar (sucrose), starch and rice flour or rice milk (subye) and vanilla which is prepared by soaking rice in water overnight and grinding this mixture in a mill to obtain a milky liquid (Erturk, 1979).

In the manufacture of kazandibi, full fat standardized milk (4.5 % fat), sucrose, vanilla, rice milk and starch are mixed in a stainless steel boiler and heated to 85 °C. The mixture is maintained at 85 °C for 20 min until it is thickened. Into a round flat teflon tray sugar is sprinkled and the thickened mixture is poured. The tray is heated until the colour of the bottom layer is turned brown. The tray is cooled to room temperature and held for at least 3-4 h in a refrigerator before serving. The dessert is cut into

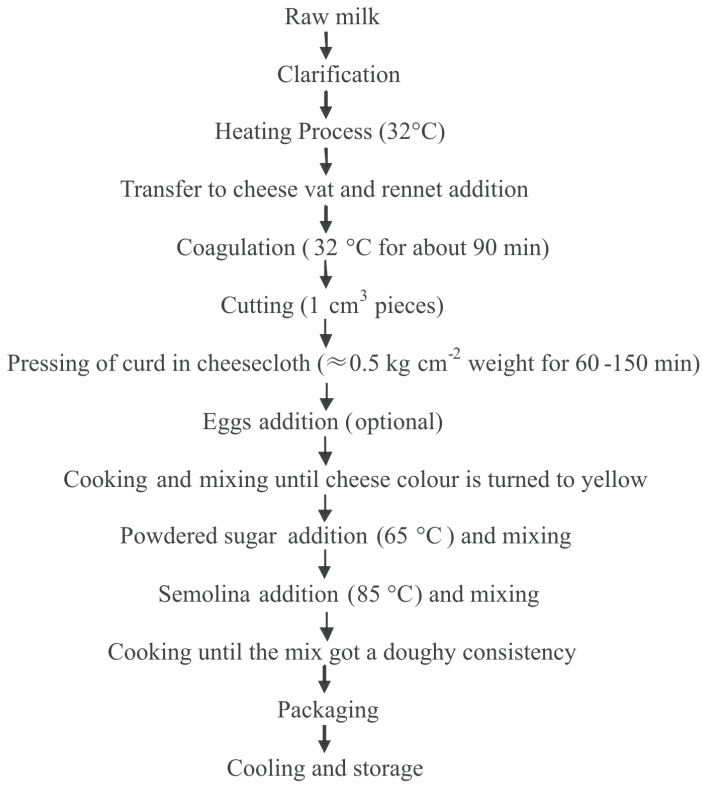

Fig. 2: The commercial manufacturing process of Hosmerim (Tezcan, 2000; Yetismeyen, 1995)
Slika 2: Proces komercijalne proizvodnje Hosmerim deserta (Tezcan , 2000.; Yetismeyen, 1995.)

squares; each square is rolled allowing the browned part being the outer layer, and sprinkled with cinnamon. The energy value of Kazandibi mainly comes from milk fat, sucrose and the starch in rice milk or flour, and one portion (150 g) contains about 295 kcal (Demirag et al., 1999).

Tavukgogsu

Tavukgogsu, made with chicken breast, milk, sugar, wheat starch, rice flour and water, is another Turkish milk based dessert which was well-known in ancient Roman times and introduced/or reintroduced into Anatolia by the Romans. The originality of this pudding comes from the fiber of the chicken breast. The chicken breast is well cooked in water for 10-15 minutes or until barely tender and deboned into very thin fine fibers or cut into very small pieces. In another saucepan rice is simmered for 2 hours and grounded by the help of a food processor. Ground rice, wheat starch and milk are blended and cooked together with constant stirring until the mix is thickened. To this thickened mixture chicken breast-torn into fibers and sugar are added and cooked until the sugar is thoroughly dissolved. The dessert is cooled, cut into squares and served with sprinkled cinnamon (Gunur and Isın, 1992).

Conclusion

Traditional dairy-based desserts have been an important part of our lives all over the world and are preferred to be produced on commercial scale. The traditional manufacturing technology applied is rather simple, and should be standardized and improved for safety and quality of the final product. Therefore, there is a need for research to address the standard manufacturing process that requires a concise understanding of a number of factors, including the knowledge of possible hazards, their occurrence and management in final product, and control of water activity during prescribed shelf life.

Most of the traditional dairy desserts of other countries have been well investigated and documented. Statistical data on the production, consumption, socioeconomy, microbiology, biochemistry, nutritional profile, and optimized production methods are available. However, in Turkey, complete scientific information on the various aspects of the traditional desserts is still lacking and need further investigation. Few studies on the selected desserts like Halva and Lokum have been reported so far. Even the traditional dairy desserts, as well as non-dairy desserts, are being commercialized; Turkey still has a long way to go in value addition to its traditional dairy desserts. There are many issues still to be studied in the dairy dessert production and this article might be quoted as a reference for further studies, considering the tradition and consumer demands, to improve standardization and regulatory acts.

Tradicionalni turski mliječni deserti

Sažetak

Tradicionalna hrana odraz je kulturalnog nasljeđa te utječe na životne navike. Kultura se može promatrati kao sustav socijalno prenešenih okvira ponašanja koja karakteriziraju pojedinu grupaciju. Usprkos globalizaciji, postoje ključni elementi koji točno mogu procijeniti prehrambene navike populacije te kako su one tijekom vremena nastale. U Turskoj, obrok s obitelji ili s prijateljima tradicionalno završava desertom, što je dokaz gostoljubivosti domaćina ili ljubavi domaćice prema njenoj obitelji, s obzirom da su deserti važni element turske kuhinje. Međutim, svjesnost o važnosti zdrave prehrane zbog značajnih promjena u načinu življenja i prehrambenim navikama, povećala je interes za tradicionalnom hranom s mogućim zdravstvenim pogodnostima uz smanjenje konzumacije deserata. Mliječni deserti obilato se konzumiraju zbog njihove nutritivne vrijednosti ali i senzorskih karakteristika. Neki od tradicionalnih mliječnih deserata su Mustafakemalpasa, Gullac, Kazandibi, Hosmerim i Tavukgogsu, koji se uglavnom pripremaju od mlijeka ili svježeg sira, a njihov postupak izrade objašnjava se u ovom radu.

Ključne riječi: tradicionalni desert, mlijeko

References

1. Akpinar-Bayizit, A. Ozcan, T., Yilmaz-Ersan, L. (2009): Mustafakemalpasa cheese-based dessert: a traditional Turkish taste. Pamukkale Milk and Dairy Products Symposium, 21-23 May, Denizli, pp. 145.
2. Anonymous (2002): *Geographical Registration Certificate for Mustafakemalpasa Cheese Dessert*. Turkish Patent Institute.

3. Anonymous (2007): The big gun of Ramadan: Gullac. *Kopru Journal*, No: 7. available online. http://www.asoxandan.com /kopru/7/10.pdf (12.12.2007)
4. Aydın, A., Aksu, H., Gunsen, U., Mercan, T., Taskanal, N. (2008): Occurrence of aflatoxins in Turkish desserts: cheese helva and hosmerim. *Archiv für Lebensmittelhygiene 59*, 16-19.
5. Ayok, S., Kurdal, E. (2002): A research on the chemical and microbiological properties of dairy desserts such as keskul, kazandibi, tavukgogsu and sutlac presented for consumption in Bursa province city center. Approved M.Sc Thesis, Uludag University Institute of Natural and Applied Sciences, Bursa.
6. Baysal, A. (1993): Changes in Turkish culture of cuisine, evaluation in sight of health and nutrition. In: Researches in Turkish Culture of Cuisine. Türk Halk Kulturunu Araştırma ve Tanıtma Vakfı Yayın No: 3, Ankara, pp. 12-241.
7. Birer, S. (1991): The diachronic change of Turkish cuisine and its current aspect. *Milli Kultur 87*, 47-50.
8. Campos, D.T., Steffe, J.F., Ng, P.K.W. (1997): Rheological behaviour of undeveloped and developed wheat dough. *Cereal Chemistry 74*, 489-494.
9. Can, S. (2007): A research on determination of the effect of cheese and addition of different starter culture on cheese helva's (Hosmerim) quality. Approved M.Sc Thesis, Trakya University Institute of Natural and Applied Sciences, Edirne.
10. Cayot, N. (2007): Sensory quality of traditional foods. *Food Chemistry 101*, 154-162.
11. Demirag, K., Elmaci, Y., Altug, T. (1999): Formulation and quality evaluation of reduced sugar and reduced calorie kazandibi. *Journal of Food Quality 22*, 101-108.
12. De Wijk, R.A., van Gemert, L.J., Terpstra, M.E.J., Wilkinson, C.L. (2003): Texture of semi-solids; sensory and instrumental measurements on vanilla custard desserts. *Food Quality and Preference 14*, 305-317.
13. Erturk, N. (1979): *Art of Turkish Desserts*. Nadir Basimevi, Istanbul, pp. 72-74.
14. Evyapan, Ö. (1995): A research on physical, chemical and microbiological properties of Balıkesir Hosmerim and Tekirdag's cheese helva. Approved M.Sc Thesis, Trakya University Institute of Natural and Applied Sciences, Edirne.
15. Alisarli, M. (1997): Vermehrung von Staphylococcus aureus und Enterotoxinbildung in turkischen Puddingspeisen. Inaug. PhD Thesis, Zurich.
16. Alisarli, M., Sancak, YC., Akkaya, L., Elibol, C. (2003): Investigation of *Staphylococcus aureus* isolation and thermonuclease activity and enterotoxin formation in some dairy desserts. *Turkish Journal of Veterinary and Animal Science 27*, 1457-1462.
17. Gun, I., Budak, H.N., Seydim, Z. (2008): A research on hygienic quality of Gullac prepared in Isparta and Burdur Provinces. Türkiye 10th Food Congress, 21-23 May, Erzurum, pp. 785-788.
18. Gunur, E., Isin, M. (1992): *Turkish cookery*. Net Turistik Yayinlar. 144 pp. ISBN 975-479-100-7.
19. Guvenc, B. (1996): Food, culture and food culture. In: Eskimeyen Tatlar, Türk Mutfak Kültürü. Vehbi Koç Vakfı Yayın No: 7, İstanbul, pp. 13-17.
20. Hayaloglu, A.A., Guven, M., Fox, P.F. (2002): Microbiological, biochemical and technological properties of Turkish white cheese 'Beyaz Peynir'. *International Dairy Journal 12*, 635-648.
21. Korukluoglu, M., Yigit, A., Ozmen, N. (2001): Moulds present in Mustafakemalpasa (cheese) dessert. *Dünya-Gida 6* (3), 92-94.
22. Kurultay, S., Oksuz, O., Gumus, T. (1999): Untersuchungen uber die chemischen. microbiologischen eigenschaften und brenwerte eines Turkischen kaese-desserts (Kaese-Halva). *Ernahrung/Nutrition 23*, 58-60.
23. Kurultay, S., Oksuz, O., Tas, M. (2008). Optimization of fat content and pH level of unsalted fresh cheese used in the manufacturing of cheese halva (Hosmerim). *International Journal of Food Science and Technology 43*, 330-332.
24. Mleko, S. (1997): Rheological properties of milk and whey protein desserts. *Milchwissenschaft 52*, 262-265.
25. Ozcan, T., Yılmaz-Ersan, L., Akpınar-Bayizit, A., Aydinol, P. (2009): Manufacturing and properties of Hosmerim. 2nd Traditional Foods Symposium, 27-29 May, Van, pp. 100-103.
26. Ozenir, A. (2006). *Assesment of some quality criteria and shelflife of Mustafakemalpasa cheese dessert*. Tarım ve Köyişleri Bakanlığı, Tarımsal Araştırmalar Genel Müdürlüğü, Proje No: TAGEM/GY/02/11/06/082, 30 pp.
27. Peighambardoust, S.H., van der Goot, A.J., Boom, R.M., Hamer, R.J. (2006). Mixing behaviour of a zero-developed dough compared to a flour-water mixture. *Journal of Cereal Science 44*, 12-20.
28. Rapaille, A., Vanhemelrijck, J. (1992): Milk based desserts. In: The technology of dairy products, R. Early, Ed., Blackie and Son Ltd: Glasgow, pp. 221-246.
29. Surucuoglu, M.S., Akman, M. (1998): The diachronic change of Turkish cuisine and the current reasons for this change. *Standart 37* (439), 42-45.
30. Tarrega, A., Duran L., Costell, E. (2004): Flow behaviour of semi-solid dairy desserts. Effect of temperature. *International Dairy Journal 14*, 345-353.
31. Tezcan, M. (2000). Anthropology of Turkish food. Genç Ofset, Ankara, 148 pp.
32. Trichopoulou, A., Soukara, S., Vasilopoulou, E. (2007): Traditional foods: a science and society perspective. *Trends in Food Science and Technology 18* (8), 420-427
33. TS 12102. (1996): *Turkish Standard of Mustafakemalpasa Dessert*. The Institute of Turkish Standards, Ankara.
34. Yetismeyen, A. (1995): *Süt Teknolojisi (Milk Technology)*. Ankara Üniversitesi, Ziraat Fakültesi Yayın No: 1420, Ankara.