

Winter Boost of Ancient Times for Health and Wellness

Evrendilek GA*

Department of Food Engineering, Abant İzzet Baysal University, Bolu, Turkey

*Corresponding author: Evrendilek GA, Faculty of Engineering and Architecture, Department of Food Engineering, Abant İzzet Baysal University, Golkoy Campus, Bolu, Turkey, Tel: +90 374 254 1000; Fax: +90 374 253 4558; E-mail: gevrendilek@yahoo.com

Received date: February 20, 2017; Accepted date: February 21, 2017; Published date: February 28, 2017

Copyright: © 2017 Evrendilek GA. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

With the growing number of cardiovascular diseases, diabetics, cancer and other chronic diseases, additive free and organic foods are getting popular. All people regardless of the age and gender have a desire to consume sweet foods to provide energy and to satisfy their sweet taste, and this fact cause consumption of unhealthy carbohydrate sources. Pekmez is a traditional Turkish food made by using different fruits such as grape, mulberry, fig, apple, and sugar beet that consumed by different ages of people especially in winter. Besides being a natural energy source, it also gets attraction with its nutritive value. Although it is an excellent source of health promoting compounds, the value of pekmez is not known and thus it stays as a local product.

Keywords: Pekmez; Nutritive value; Food culture; Traditional food

Introduction

Every culture has its own habits for preparation and consumption of different foods and food products. Some countries are popular due to their diverse culture, fascinating historical sites and of course amazing food. Food culture in every society is shaped by geographical and climate conditions as well as the seasonal differences with last two conditions being dominant for food preservation. While plenty of fresh food is available during summer time, food shortage is a problem for winter. Thus; drying, freezing, concentration, pickling and boiling were the most common food preservation methods since ancient times.

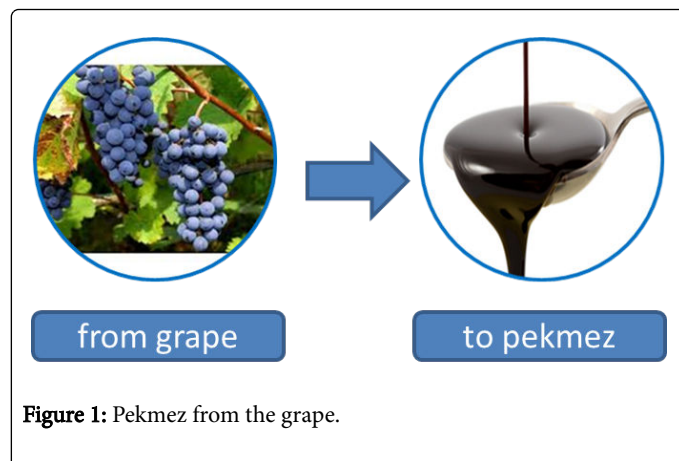


Figure 1: Pekmez from the grape.

Pekmez, the versatile and natural grape molasses made from the boiled down juices of fruit has been a part of Anatolian culture for centuries. Fresh fruits generally have a short shelf-life, and due to deterioration during storage significant losses occur. For this reason, pekmez production is a good way of protecting their nutritional value for longer periods [1]. Pekmez is one of the most common names of concentrated and shelf-life extended form of fruit juice produced by boiling/heating, concentrating the juice up to 70–80% of total soluble solids without addition of sugar or other food additives [2] (Figure 1).

Traditionally it is commonly made from grapes, but can also be made from different fruits including mulberries, plums, apples, pears, pomegranates and most recently Carob [3-6].

Grapes are harvested during fall season, and then stomped to squeeze out all of the fruit juice. Once the juice has been collected, it is pressed, stirred and boiled until it thickens into sweet molasses. After the long process of boiling, obtained thick molasses is put into jars and stored for use over the winter months.

Pekmez has a special importance in daily dietary intake due to its natural and organic origin in addition to being additive free as well as nutritive value. It has been well established by scientific research and epidemiologic evidences that fruits and vegetables have a protective role for cancer prevention as well as the coronary heart diseases. Moreover, there is a new scientific base is emerging to support a protective role of fruits and vegetables in prevention for cataract formation, chronic obstructive pulmonary disease, diverticulosis, and possibly, hypertension [6]. Although the exact mechanism regarding the health benefits from vegetables and fruits in relation to cancer and other diseases is not fully understood, it is more likely that more than one factor is effective for the prevention. It is reported that more than 100 beneficial vitamins, minerals, fiber, and other dietary components are effective to prevent these diseases [6-10]. Some of these healthful substances are found in particular types of fruits and vegetables. Pekmez-being made from different fruits-composition analyses revealed that in addition to sugars, it also contains important minerals, along with phenolic compounds, organic acids and some water soluble vitamins that are beneficial to human health as well as having the preventive role on some diseases. Carob bean pekmez, among the pekmez made from different fruits, is the richest in terms of the mineral content. Carob bean pekmez also contains the compound pinitol, which is known to balance blood sugar levels. Juniper berry pekmez (ardıç pekmezi) is another variation of this sweet syrup and is known to work as an antioxidant in the body [11].

A study conducted with the compositional analyses of the grape, white mulberry, carob and black mulberry molasses revealed that moisture content is changed from 10-17%. The highest level of total phenolic content was detected in plum pekmez, initially. While

changes in the total phenolic content during digestion was insignificant during Gastric Digestion (GD), a significant increase of 11-164% was detected at the end of the GD compared to the initial values for all samples besides grape molasses. Total flavonoid content changed from 14.2 mg CE per 100 g dw for grape to 752 mg CE/100 g dw for white mulberry. Based on the initial concentrations of total antioxidant capacity, total phenolic content, total proanthocyanidin content, total anthocyanin content, and their fate after the GD showed that fruit molasses are healthy snacks providing considerable polyphenol intake, which are preserved to a certain degree after digestion [1]. In addition to the vitamins, minerals and antioxidants; it is a great source of iron which is very beneficial to people diagnosed with anaemia, because pekmez consumption increases the body's blood content. Studies also revealed that pekmez is very rich in calcium, potassium and magnesium. For example, mineral concentration of mulberry pekmez was between 135.76 and 575.84 mg/kg for calcium, 5.853 and 8.146 g/kg for potassium, 187.96 and 389.86 mg/kg for magnesium, 20.40 and 43.55 mg/kg for sodium, 285.10 and 517.72 mg/kg for phosphorus and 121.21 and 303.57 mg/kg for sulphur [12].

Except for the carob bean, pekmez has significant amounts of sucrose, and most of the sugar in pekmez is either glucose or fructose which is quickly digested by the body to provide immediate energy. According to previous studies 250-300 calories are provided by 100 g of pekmez which is around the 10-20% of an adult's daily energy needs. Although pekmez is consumed by all age of people, diabetics must be very careful due to the high amount of sugar. On the other hand, if soft fruits with seeds (apple, pears, etc.) are used, it contains more fructose which is an advantage for people with hypoglycemia, as it means blood sugar levels rise and fall more slowly [13].

Pekmez's popularity comes from by both its great taste and health promoting effect that cause to call it "the healing syrup of Anatolia" for centuries. Pekmez is also traditionally consumed as tonic prepared by mixing it with warm water for people who are feeling weak or ill, and it is renowned as a cure-all for colds and flu [13]. Because pekmez is most commonly used to recover after giving birth, the healing effect of the pekmez mostly can be seen among pregnant women which have been a long-practiced tradition among women in Turkey [13].

Pekmez traditionally produced to preserve fresh fruits by boiling juice up to 70–80% of total soluble and concentrating of the syrup obtained by pressing the fruit. Because water activity is lowered to the point where microbial spoilage is prevented by boiling, the shelf life of the product is extended for more than couple years. Although pekmez is available throughout the whole year, it usually is consumed during winter season to compensate the sugar and energy needs especially for children. In addition, the increase in the amount of pekmez consumption during winter season can be related to the symptom of carbohydrate craving implicated theserotonin (5-hydroxytryptamine; 5-HT) system in the pathophysiology of Seasonal Affective Disorder (SAD) [14-17]. A decrease in the 5-HT concentration in brain stimulates ingestion of high-carbohydrate foods [18]. Krauchi and Wirz-Justice [19], on the basis of retrospective recall at the end of each season, revealed that the intake of sweet and starch increased during the winter and decreased during the summer in subjects with SAD. Beside seasonal intake, daily retrospective recall revealed that the increased intake of sweets and starches occurred during the late afternoon while SAD patients were depressed. It was also explored that depressed SAD subjects ate more sweets and starches in the late afternoon during the winter than did the obese group [20]. Thus, it is concluded that carbohydrate craving is a widely reported and

reasonably stable symptom associated with winter seasonal depression [18]. After the consumption of a high-carbohydrate meal, supporting the possibility of mood self-regulation through carbohydrate consumption, SAD patients experienced less fatigue and drowsiness then did normal volunteers [21-23]. Thus, the reason why pekmez is mostly consumed in winter season can be explained by also these scientific findings.

Considering all the factors regarding nutritive value, health promoting effect, and sensory properties, both production and consumption of pekmez need to be increased for raising healthy individuals and societies. With the increased debates about health concerns of artificial sweeteners and corn syrup originated sugar supplements; the use of natural sugar is getting popular, and thus the consumption of natural products such as pekmez need to be promoted. Moreover, studies also need to be focused on the standardization and industrial level production of pekmez.

References

1. Kamiloglu S, Capanoglu E (2014) *In vitro* gastrointestinal digestion of polyphenols from different molasses (pekmez) and leather (pestil) varieties. *Int J Food Sci Technol* 49: 1027-1039.
2. Kusu A, Bulantekin O (2016) The effects of production methods and storage on the chemical constituents of apple pekmez. *J Food Sci Technol* 53: 3083-3092.
3. Maskan A, Kaya S, Maskan M (2002) Hot air and sun drying of grape leather (pestil). *J Food Eng* 54: 81-88.
4. Tosun I, Ustun NS (2003) Nonenzymic browning during storage of white hard grape pekmez (*Zile pekmezi*). *Food Chem* 80: 441-443.
5. Liyana-Pathirana CM, Shahidi F, Alasalvar C (2006) Antioxidant activity of cherry laurel fruit (*Laurocerasus officinalis* Roem) and its concentrated juice. *Food Chem* 99: 121-128.
6. Van Duyn MA, Pivonka E (2000) Overview of the health benefits of fruit and vegetable consumption for the dietetics professional: Selected literature. *J Am Diet Assoc* 100: 1511-1521.
7. Jacques PF, Chylack LT (1991) Epidemiologic evidence of a role for the antioxidant vitamins and carotenoids in cataract prevention. *Am J Clin Nutr* 53: 352-355.
8. Hertog MGL, Feskens EJM, Hollman PCH, Katan MB, Kromhout D (1993) Dietary antioxidant flavonoids and risk of coronary heart disease: the Zutphen Elderly Study. *Lancet* 342: 1007-1011.
9. Steinmetz KA, Potter JD (1996) Vegetables, fruit, and cancer prevention: A review. *J Am Diet Assoc* 96: 1027-1039.
10. Klerk M, Jansen MCJF, Van't Veer P, Kok FJ (1998) Fruits and Vegetables in Chronic Disease Prevention, Grafisch Bedrijf Ponsen & Looijen BV, Wageningen, The Netherlands.
11. <http://www.faydalarizararlari.com/pekmez-in-faydalari>
12. Akbulut M, Ozcan MM (2009) Comparison of mineral contents of mulberry (*Morus* spp) fruits and their pekmez (boiled mulberry juice) samples. *Int J Food Sci Nutr* 60: 231-239.
13. Celik J (2015) The sweet curing syrup: Pekmez. *Daily Sabah Feature*.
14. Rosenthal NE, Sack DA, Gillin JC, Lewy AJ, Goodwin FK, et al. (1984) Seasonal affective disorder: A description of the syndrome and preliminary findings with light therapy. *Arch Gen Psychiatry* 41: 72-80.
15. Wurtman JJ (1988) Carbohydrate craving: A disorder of food intake and mood. *Clin Neuropharmacol* 11: 139-145.
16. Wurtman RJ, Wurtman JJ (1988) Do carbohydrate affect food intake via neurotransmitter activity? *Appetite* 11: 42-47.
17. Wurtman RJ, Wurtman JJ (1989) Carbohydrates and depression. *Sci Am* 68-75.
18. Fernstrom MH, Krowinski RI, Kupfer DJ (1987) Appetite and food preference in depression: effects of imipramine treatment. *Biol Psychiatry* 22: 529-539.

-
19. Krauchi K, Wirz-Justice A (1988) The four seasons: food intake frequency is seasonal affective disorder in the course of a year. *Psychiatry Res.* 25: 233-338.
 20. Krauchi K, Wirz-Justice A (1992) Seasonal patterns of nutrient intake in relation to mood. In: *The Biology of Feast and Famine*. Academic Press, Orlando, FL, USA pp: 157-182.
 21. Rosenthal NE, Genhart MJ, Caballero B, Jacobsen FM, Skwerer RG, et al. (1989) Psychobiological effects of carbohydrate and protein-rich meals in patients with seasonal affective disorder and normal controls. *Biol Psychiatry* 25: 1029-1040.
 22. Arbisi PA, Levine AS, Nerenberg J, Wolf J (1996) Seasonal alteration in taste and recognition threshold in seasonal affective disorder: The proximate source of carbohydrate craving. *Psychiatry Res* 59: 171-182.
 23. Koca I, Karadeniz B (2009) Physical, chemical and antioxidant properties of solid and sour apple pekmez. *J Food Agr Environ* 7: 58-60.