Health Services Vocational Collage

A Study on Kefir, a Popular Drink

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Abstract

Information was given about kefir, which is formed as a result of lactic acid fermentation made by milk with kefir grains. Kefir is a dairy product that is consumed by liking after yogurt, which is one of the fermented dairy products. It has multiple benefits on human health, both with its nutrients, its ingredients and its new ingredient content as a result of fermentation. In recent years, societies have become more aware of nutrition and have turned to healthier food consumption. In addition to healthy and safe food consumption, it has sought functional nutrients that will protect against diseases and contribute to health. In this article, explanations are made about the definition, history, effects and production of kefir on human health. With the survey study, a study was carried out on how much probiotics were adopted and consumed in society. In the study, individuals were asked questions related to probiotics and kefir and asked to be answered.

Keywords: Kefir, Kefir and Health, Healthy Food, Kefir Production, Kefir Fermentation.

Introduction

Kefir is a popularly consumed and traditional Middle Eastern drink. In Turkish, it means 'good feeling, good life, prosperity'. In Caucasian languages, it means the best quality. The reason for this is the slavic keif contained in it. When consumed, it leaves a relaxing effect on people. Kefir is a probiotic food made from kefir grains and kefir cultures of milk, which is formed as a result of their fermentation. Kefir grains contain beneficial yeasts(both lactose fermenting and lactose non-fermenting), beneficial probiotics and beneficial bacteria (including various types of lactobacilli, lactococci, leukococci, and acetobacteria) (Otles & Cagindi, 2003). In this regard, bifidokefir bifidum, which contains. Bifidobacterium, is more effective than regular kefir in reducing small bowel infections in young people and infants. Based on these health and nutritional claims, kefir can be classified as a great source of probiotics. An overview of the kefir; The chemical and nutritional composition of kefir, its effect on diseases and nutrition is reviewed in this article(Sarkar, 2007). Kefiran has an important place in human health and nutrition. Factors such as high expenditures on health, the need to improve quality of life, improving the aging process and developing new products are some important factors that can lead to the development of nutrition and therapeutic cultured milks. There are many benefits of consuming kefir in the diet. Kefir products are also considered mixed or artificial diets for infants and preschool children(Zaheer et al., 2013). Kefir grains have a length of 10-30 mm. In addition, kefir grains, which have the appearance of cauliflower flowers, have a tight texture and white yellow color. Kefir, which forms another milk culture, is a good source of beneficial bacteria and yeasts(casein matrix, complex sugars and polysaccharide matrix embedded in the mixture, lactic acid bacteria, acetic acid bacteria and yeast cells). Also the grains and technology used may differ significantly in the components of kefir. In various studies, the anti-tumor activity of kefir has been investigated, the antimicrobial activity of kefir grains, the therapeutic properties of many various gram-negative and gram-positive and some fungi have been discovered. In Russia it has been used for many years in the treatment of certain diseases. In Soviet countries, kefir is used as a prophylactic to alleviate the threat of chronic diseases. Recommended for the treatment of gastrointestinal diseases, IHD, allergies and hypertension(Dong-Hyeon et al., 2019).

Description and History of Kefir

Kefir; described as the drink of the age. It is a natural starter culture product of milk and is formed as a result of the fermentation of kefir grains and milk. The most important feature that distinguishes it from other milk fermented products is the metabolic activity in yeasts. It is stated that it was originally consumed by the Turks in the Southwest of the Asian continent as a slightly alcoholic sour and foamy milk product produced by alcohol and acid fermentations. It is also known that in the Caucasus it is made from fatty and lean (cow, sheep, goat, mare) milk and whey. It has been observed that the composition of kefir is 0.5% and 1.5% ethyl alcohol, approximately 0.7% milk acid and 3.2% fat(Yüksekdağ & Beyatlı, 2003).

Production in Russia and other countries began in the 1900s. As a result of the translation of the book Kefyr published in Russia into German by Mortiz SCHULZ in 1984, it was revealed that it was made at the foot of the Elburus Mountains in the Caucasus and that this construction was kept secret and from this date on, it began to be produced in Europer(Aşçı Arslan, 2015). The homeland of kefir, which has a history of about five thousand years, is considered to be the homeland of the geographical region between the Caucasus, Tibet and the Mongol mountains. It is not known when it was first found, but it is estimated that it was produced from the 18th century until this time. It is known that during the Hun Empire period, he took horses and goats with the Huns during their campaigns to Europe. It is thought that they made kefir from the milk of the goats they took with them. They attribute the reason why Turks are healthy, live for many years and are strong compared to other races to the kefir. With this idea, kefir attracted more attention and was multiplied and kefir grains began to be used in the production of the product(Şahin & Özmeriç, 2021). It is stated that Russia is the country with the highest production and consumption. According to the statistical data announced by the International Dairy Federation (IDF) in 1988, kefir production was carried out in many countries and some countries were explained as follows. Russia produces 1.206.200 tons of kefir annually, Hungary produces 12.900 tons, Sweden produces 16,000 tons, Norway produces 7.000 tons, Poland produces 17.000 tons and Denmark produces 2.000 tons of kefir. Kefir, whose consumption has increased in the world in recent years, is drunk with kefir as a functional product due to its positive effects on health in Western countries(Songun, 2016).

Kefir Grains

Kefir grains are obtained in the Caucasus countries as a result of coagulation of cow's milk in goat overalls together with veal and sheep syringes. Inside the goat overalls, where the coagulation process is carried out, begins to form a layer of bark. This layer has a spongy structure. This formed layer is taken and left to dry after splitting. The small earth-shaped structures that appear after the drying process is completed are kefir grains(Yaman et al. 2006). There are more than one method for long-term storage of kefir grains, and the longest storage method of these methods is the drying method. When the dried grains are used again, they are activated by mixing with sterilized milk. The outer surface of kefir grains forms the main microflora. Microflora consists of lactobacilli. As we go towards the inner parts, it is seen that this flora was formed by yeasts. These yeasts and bacteria have the consistency of a gel and are hidden as a polysaccharide structure in the matrix. It helps to ensure the symbiotic relationship between yeasts, microorganisms and, most importantly, produces carbon dioxide, which has a significant impact on the formation of characteristic taste and aroma(Özdemir, 2012). In the flora of kefir grains is formed not only yeast and lactobacilli; Saccharomyces Kefir, Torula Kefir, Lactobacillus caucasicum, Leuconostoc spp. and lactic acid streptococci. In addition, as a result of research on microflora, it was found that four compounds isolated on grains were effective in the fermentation process.

These yeasts are Kluyveromyces lactis, Candida valida, Brerranomycus anomalus and Saccharomyces unisporus. Some microflora found in kefir grains is shown in table 1(Simova et al. 2002). The color of kefir grains is usually yellowish. Its dimensions range from 10 to 30 mm. They have irregular shapes and do not dissolve in water shown in figure 1. After the completion of fermentation with milk, the method of straining the kefir grains is taken from kefir. After the completion of fermentation with milk, the method of straining the kefir grains is taken from kefir. The grain of quality kefir should have an elastic, soft and sticky shape. When the grains are kept carefully and clean, their use time increases. If the grains are not to be used in production again, they can be boiled and washed in cooled water again and then stored and stored at 4 0C for a period of 10 days(Gündüz, 2017).

Table 1 Types of microflora contained in kefir(Rosa et al. 2017).

LACTOBACILS	YEAST	ASETIC ACID BACTERIA
Lactobacillus kefir	Saccharomyces cerevisiae	Acetobacter sp.
Lactobacillus kefiranofaciens	Saccharomyces delbruecki	Acetobacter pasteurianus
Lactobacillus kefirgranum	Candida kefir	Acetobacter aceti
Lactobacillus parakefir	Kluyveromyces lactis	**LACTOCOCKS**
Lactobacillus brevis	Issatchenkia orientalis	Lactococcus lactis subsp. lactis
Lactobacillus plantarum	Saccaromyces unisporus	Lactobacillus plantarum
Lactobacillus helveticus	Saccharomyces exiguus	lactis biovar. diacetylactis
Lactobacillus acidophilus	Saccharomyces humaticus	Lactococcus lactis subsp. cremoris
Lactobacillus dellbrueckii	Kluyveromyces marxianus	**STREPTOCOCKS**
Lactobacillus rahmnosus	Saccharomyces turicensis	Streptococcus cremoris
Lactobacillus casei	Pichia fermentas	Streptococcus faecalis
Lactobacillus paracasei	Torulopsis holmii	Streptococcus durans
Lactobacillus fructivorans,	Candida holmii	Leuconostoc mesenteroides
Lactobacillus hilgardii	Torulospora delbrueckii,	
Lactobacillus fermentum,	Candida friedricchi,	
Lactobacillus viridescens	Candida albicans	
Lactobacillus gasseri		
Lactobacillus fermentum		
Lactobacillus mesenteroides		
Lactobacillus crispatus		

Fermentation of Kefir

Kefir; It can be made from various milks such as coconut, rice, soy, cow, sheep and goat's milk, the biggest feature that distinguishes it from other fermented dairy products is that its fermentation is made entirely from kefir grains(Karatepe et al., 2012). After the kefir grains are added to the milk and the optimum conditions are met, the fermentation process begins, which takes place at 25 0C and in a time frame of 22 hours. After the fermentation process is completed, the grains are separated from the kefir using the filtration method in such a way that the factors that will cause disease do not occur under appropriate conditions(Zaheer et al., 2013). Kefir is a dairy product with a complex structure formed by the fermentation of milk containing exopolysaccharide and protein complex symbiotically with kefir grains and yeasts and lactic acid bacteria(Tomar et al., 2017). While only lactic acid fermentation is present in many fermented milk products, it is a probiotic product that is formed by the participation of fermentation in yeasts other than lactic acid fermentation in kefir. It is ethanol and CO2 formed as a result of fermentation. CO2 is an important compound in getting an aromatic taste. Other aromatic minor components are amino acids, ethyl, acetaldehyde, diacetyl, etc(Ying et al., 2018).

Production of Kefir

Kefir production is based on several methods. Conventionally, it is formed as a result of fermentation of kefir grains with milk. The traditional and industrial method is widely used today. The Russian method is often used in the industrial method. In this method, instead of kefir grains, the main culture prepared from kefir grains or pure commercial cultures containing microorganisms produced from kefir grains are used. This rate is between 2% and 8% in milk. (Anar, 2000). Milk in the traditional kefir production method; 85 0C to 90 0C and after the pasteurization process is completed for 20 minutes, it is expected to cool until it reaches a temperature of 25 0C. After the cooling process is completed, kefir grain is added to the milk at the optimum rate of 2-3% and left to the incubation process for 20 to 25 minutes. As the proportion of added grain increases, the incubation process of kefir is adversely affected. As a result of incubation, when the pH reaches 4.6 levels, the fermentation process is completed by forming a curd. Thanks to the CO2 gas released as a result of fermentation, the kefir grains rise above the coagulate layer and the kefir grains are separated from the kefir by filtration. These separated grains are added to the milk for a new fermentation, while the separated liquid part is left to the maturation process for 1 day at 4 0C(Dinç, 2008). After this process is completed, kefir becomes available for consumption. The use of commercial products ensures that a standard product is obtained. After adding kefir culture to the pasteurized milk cooled to 25 0C, fermentation is provided at 25 0C for 20 to 24 hours. After the pH reaches 4.6 level, the fermentation process is terminated. At the stage after the termination of fermentation, the products are mixed and the aseptic filling process is carried out. The process after filling enters the 24-hour storage process at +4 0C. After 24

hours, the product is ready for use(Bulut Solak, 2020).

Nutritional Composition of Kefir

The combination of kefir product contains many macro and micronutrients that have positive effects on human health. The type of these nutrients varies according to the methods and materials used in kefir production. The reason for these changes depends on the fermentation time, the microbiological property of the kefir grains, the type of milk used, the storage time, the waiting time, the technology used in the production stage(Songun,2016). According to the Turkish Food Composition Database, it can be said that a 100 gram kefir composition contains 1.6 – 3.6% fat, 88 – 89% water, 3 – 3.3% protein and 3 – 6% carbohydrates. Apart from these nutrients, there are milk acids ‰ 8 – 9 around, ethyl alcohol ‰ 6 – 1.1% around, lactose 1.7 – 2.7% around, 2.5 – 2.9% Casein around and Albumin ‰ 1 – 3 around(Kadıoğlu, 2017). In the fermentation process of kefir, 30% of the lactose in milk is decomposed in water by the bacterial β-galactosidase enzyme and converted into glucose by galactose. The resulting glucose is transformed into lactic acid by kefir bacteria. Alcohol with CO2 in kefir is formed mainly as a result of the activity of yeasts. The pH value of kefir is in the range of 4.2 - 4.6 (Bellikçi Koyu & Büyüktuncer Demirel, 2018).

In its chemical composition includes macronutrients and micronutrients. Kefir; copper(Cu), zinc(Zn), iron (Fe), calcium (Ca), magnesium (Mg), phosphorus (P), manganese (Mn), cobalt (Co), molybdenum (Mo) etc. minerals, carotene, thiamine, riboflavin, vitamin C, vitamin A includes. It is stated that the composition of kefir is 0.5-1.5% ethyl alcohol, 0.7% milk acid and 3.2% fat. In a healthy, well-viscous kefir, it is expected to have a fluid consistency, homogeneous appearance and a bright structure. These nutrients have a very important place in homeostasis(Delikanlı Akbay, 2020).

Table 2 below shows the nutrient content of semi-skimmed and 200 ml kefir using the Bebis program.

Nutrient Contents	Analyzed	Proposed	Item's fulfillment %
Energy	130,0 kcal	1934,1 kcal	7 %
Water	175,0 g	-	-
Protein	6,6 gr (21%)	57,1 gr (12 %)	12 %
Oil	7,0 gr (50%)	65,6 gr (30 %)	11 %
Carbohydrate	7,2 gr (23%)	276,1 gr (58 %)	3 %
Fibre	0,0 gr	30,0 gr	0 %
Alkol	1,0 g (6%)	-	-
Vitamin A	86,0 µgr	801,0 µg	11 %
Retinol	80,0 µg	-	-
Vitamin D	0,1 µg	5,0 µg	1 %
Vitamin E	0,2 mg	-	-
Vitamin K	4,0 µg	60,0 µg	7 %
Vitamin B1/ Tiamin	0,1 mg	1,0 mg	8 %

Vitamin B2/ Riboflavin	0,3 mg	1,2 mg	28 %
Niasin	0,2 mg	-	-
B5 Vitamin / Pantothenic acid	0,7 mg	6,0 mg	12 %
B6 Vitamin / Pyridoxine	0,1 mg	1,2 mg	8 %
Biotin	8,0 µg	45,0 µg	18 %
Vitamin B12	1,0 µg	3,0 µg	33 %
Vitamin C	2,0 mg	100,1 mg	2 %
Lactose	7,2 g	-	-
Isolesin	378,0 mg	-	-
Leucine	624,0 mg	-	-
Lysine	470,0 mg	-	-
Methionine	152,0 mg	-	-
Cystine	52,0 mg	-	-
Phenylalanine	306,0 mg	-	-
Tyrosine	306,0 mg	-	-
Threonine	272,0 mg	-	-
Tryptophan	86,0 mg	-	-
Valine	412,0 mg	-	-
Arjinin	220,0 mg	-	-
Histidine	158,0 mg	-	-
Alanine	220,0 mg	-	-
Aspartame	490,0 mg	-	-
Glutamic acid	1346,0 mg	-	-
Glycine	138,0 mg	-	-
Proline	624,0 mg	-	-
Saturated fatty acid	4,2 gr	-	-
Polyunsaturated fatty acid	0,3 gr	10,0 gr	3 %
Short-chain fatty acid	0,4 gr	-	-
Medium-chain fatty acid	0,3 gr	-	-
Long-chain fatty acid	6,0 gr	-	-
Cholesterol	18,0 mg	-	-
Table salt	0,2 gr	-	-
Omega 3	0,1 gr	-	-
Omega 6	0,2 gr	-	-

Microbiological Composition of Kefir

Kefir grains in kefir making "Kefiran" is an insoluble polysaccharide and contains glucose and galactose in equal amounts. It also has anti-tumor activity(Yüksekdağ & Beyatlı, 2003). The bacteria most commonly found in kefir; acetic acid bacteria are bacteria of the genus Lactobacillus, Lactococcus, Leuconostoc and constitute an important part of the yeast community of Candida genera Saccharomyces, Kluyveromyces. TGK (Turkish Food Codex); In the Communiqué on Fermented Milk Products, it is stated as a fermented milk product that prefers different strains of Leuconostoc, Lactococcus, Acetobacter and Lactobacillus kefir species and starting cultures or kefir grains containing lactose fermenting and non-fermenting species specific to fermentation(Bellikçi Koyu & Büyüktuncer Demirel, 2018). As well as the composition in the content of kefir, the amount and quality of bacteria and yeasts and the bioavailability of the product are important. Again, in the TGK Fermented Milk Products Communiqué, it is stated that when the whole amount of microorganisms in kefir is examined, a minimum of 107 colonies is formed unit (kob) / g and the amount of yeast is a minimum of 104 cfu/g. It is also noted that it can have a significant impact on the quantities in the storage process(Yılmaz & İpek, 2021).

Effects of Kefir on Health

Kefir is known to have many positive effects on health. These effects are; Antiallergenic, Anticarcinogenic, Anti-inflammatory and Antimicrobial, as well as providing action, in the control of body weight, glycemic response, blood pressure and blood lipids, lactose intolerance and constipation etc. It is stated that there may be positive effects against GIS (gastrointestinal system) problems(Karatepe & Yalçın, 2014). Kefir has probiotic qualities and the presence of more than one Microorganism has been indicated. With the studies obtained, it has been determined that different bacteria and yeasts that are resistant to low pH and bile acids isolated from kefir are based on the mucosa in the digestive system, provide strong inhibitory effect against disease-causing microbes and have positive aspects of health(Saygılı & Karagözlü, 2019).

Antimicrobial Effect of Kefir

Alpha hydroxypropanoic acidcreates this effect by inhibiting the progression of bacteria and foodborne disease-causing microorganisms. The hydrogen power of kefir with its protective effect against microbes is associated with secondary metabolite proteins, carboxyl acids and hydrogen peroxide, which provide positive effects on health by affecting cellular activities and physiologically as a result of fermentation. The bacterial colony and fermentation period of the preferred kefir produced by artificial applications in the laboratory environment affect this effect(Özmen & Aydınlı, 2020).

Anti-inflammatory Effect of Kefir

Kefir is a food that has an effect on the immune system. In order to increase the quality of life and to protect and improve health, to ensure that the nutrients required for the body to continue its function are taken in sufficient proportion and at appropriate time intervals, and to do this consciously,

there are microorganisms that provide a mutual relationship directly related to the immune system(Dinç, 2008). A mechanism of defense that helps the homeostasis of the body against infection and or inflammation against tissue damage to the body, but a slow and prolonged infection lasting more than a few months at the minimum level that affects many organs of the body; is considered to be involved in the occurrence of more than one serious, long-term discomfort in the body or mind, distress and a specific abnormal condition that leads to a dysfunction of the body's duties(Gaware et al. 2011). It is the barrier of live bacteria and yeasts that are beneficial to the immune system and GI, protect intestinal health, cover many surfaces of the body structure of the intestines and act as protective barriers, and support the function that the organ normally does. The limited number of studies and data-based information in clinical trials indicates that kefir needs data to be planned in positive cases against the body's response to immunodamaging agents(Süzen, 2018).

Anticarcinogenic Effect of Kefir

The dosage of the structures formed by the different attachment of glucose units, the swelling of the cell a growth and division or the opposite of diseased expeansion, also depends on the on the variety of yeast, especially Laxtobacillus, whih has an active role in fermantation(Köroğlu et al. 2015). It is stated that the substance effects of kefir and yogurt, which are fermented milk products, which prevent the effect of the factor causing genetic change, are high when compared with unfermented milk. It has been stated that proteins and small peptides play a role in this effect, and that the immune system is one of the mechanism that pause the initiation of maignant tumors, wich appear with the tussue or organs, due to its antibacterial, immunological, antitimural and hypocholesterole mic effect(Sharifi et al, 2017). The proteins in the composition of kefir have been noted to serve as the opposite of the swelling or diseased expansion of the cell as a result of excessive growth and division. In our body with sulfur content alone, protein building block clusters have an important role in the task of protecting against cancer. Recent studies have shown that rapid research on kefir has been included in case of swelling or diseased expansion of the cell as a result of excessive growth and division (Kadıoğlu, 2017).

The Effect of Kefir on Body Weight

In the organization of the period between the cessation of the polymers forned by tge polymerization of the milk, the nutrients taken into the nody and feeling of hunger that develops after a certain period of time in the organization of the food an living things; there are nutrients that allow it to grow and survive. These nutrients are carbonhydrates, minerals, vitamins and proteins, fats. In the consumption of these nutrients, the effect of the disorder in the structure and functioning of the metabolic organism related to obesity, the deterioration of the physiology and duties of the organism is increasingly proven. Along with this reduction of fat storage and improvemenr of insulin sensitivity are provided. Regulation of the diet with milk and dairy products components has the potential to contribute to the prevention and management of

obesity(Köroğlu et al. 2015). Obesity is an important public health problem worldwide. In order to protect human health, increase and improve the quality of life, it is necessary to continue its activities in the necessary quantities. It is stated that the ways and methods applied to reach the predetermined goal for a behavior that should be done consciously in order to take this nutritional situation at the appropriate time are known by everyone in this respect. In the recommended health programs, fermented dairy products that are seen in many people, liked by many can be given as examples such as kefir, milk, yogurt, ayran, kimiz, etc. Studies in slightly obese or obese women have shown that consuming kefir is equivalent to weight loss when compared to milk, which is a secretion of the animals' mammary glands(Yalçın & Işık, 2017).

The Effect of Kefir on Lipid Profile

The effect of probiotic use on fat profile, including hyperlipidemia has been examined inmany studies, and according to the analyzes made, an average of 6.6-10.4 mg/dL in the amount of wax-like substances in foods of animal origin and in cells, an average of 7 in Low Density Lipoprotein(LDL) cholesterol level. It was found that a decrease of 3-8.9mg/dL was achieved(Güven A. & Alkış, 2018).

The Effect of Kefir on The Intestine

There are bacteria that are beneficial on the immune system and the digestive system. These bacteria, yeasts and live bacteria that protect intestinal health, have an effect on the removal of more frequent and watery or soft stools than normal, and fermented milk products may have similar effects. In people with developed lactose intolerance (LI), it has been shown that preferring yogurt instead of milk reduces LI complaints(Bellikçi Koyu & Büyüktuncer Demirel, 2018).

Antiallergenic Effect of Kefir

Food allergies are an important problem and their prevalence has increased gradually. Regulated kefir consumption suppresses Immunoglobulin E(IgE) and Immunoglobulin G1(IgG1) responses. However, the nutrients such as vitamins, minerals and proteins in the foods we eat and necessary for the survival and growth of living things; It is stated that the person takes an active role in preventing the body reaction to any allergenic substance. The excess of a type of white blood cell that fights diseases or the effect of this excess aims to prevent the deterioration of the functioning and structure of the organism and the deterioration of the physiological tasks of the organism. In correcting the disrupted physiological state and improving it, kefir has been stated to positively affect the excess of white blood cells and the secretion of excess mucus with albumin obtained from egg white in the structure of our basic respiratory organ(Özmen & Aydınlı, 2020).

Reducing Effect on Lactose Intolerance of Kefir

Lactose is a sugar found in nature only in the form of a disaccharide in milk. Problems in the gastrointestinal tract are frequent due to the lack of β-galactosidase in the part of the digestive organ from the stomach to the anus, consisting of the small intestine and the large intestine. Kefir has been shown to be as effective as yogurt in making

halitosis healthy in people with LI(Tomar et al., 2017).

Effect on Cholesterol of Kefir

Cholesterol is a kind of blood fat called lipid, and it is used in the living world to protect against microorganisms under the skin, to strengthen never tissues and red blood cells, to regulate the water balance in the body, etc. have such roles. Thus, it plays an active role in the prevention of cardiovascular disease(Delikanlı Akbay, 2020).

Properties of Kefir

There are events caused by bacterial communities living in every anatomical region of the body. The source of kefir seeds, the level of microorganisms in it, the temperature duration and storage time of the period from the moment the infection agent enters the body until the appearance of disease symptoms, etc. Affected by factors such as(Yüksekdağ & Beyatlı, 2003). Seeds are formed by symbiosis microorganisms with a protein that is one of the components of milk and is found in milk at a rate of 80% and whose digestion and absorption are very slow. It consists of polymers formed by the polymerization of amino acids in the inner part and chemical substances formed by the combination of more than one separate (non-combined) monosaccharide with a glycoside bond. In the seed structure, it contains the product and ethanoic acid that emerges when single-celled microorganisms, glucose in the body is converted into energy as a result of a number of chemical reactions. Kefir grains contain yeasts that ferment lactose and do not ferment(Stephan Moses & Sirirat, 2013). Kefir seeds; It consists of small clusters of microorganisms similar to common life, where cells between chemical substances formed by the combination of some kefiran in terms of triglycerides, casein in terms of protein, and glycoside bonds in their multiple and separate (non-combined) structures (monosaccharides) are attached together. Tohumlarındaki mikroorganizma türü ile birbirlerine olan tutarlığı, tohumların kaynağı durumuna göre değişmektedir (Yalçın & Işık, 2017).

Dietetic Properties of Kefir

It is stated that in people with lactose intolerance flatulence based on milk sugar expenditure more than three times a day, watery and loose stools will eliminate the problems. Because while kefir contains more than forty microorganisms that help regulate the digestive system and support the immune system, yogurt contains only two microorganisms bacteria that help regulate the digestive system and support the immune system. Compared to yogurt, it reduces e ll of lactose, glucose and galactose polymers, which are produced by microscopic, single-celled organisms that can repruduce in different environments. According to TGK' its calories are; that is 2% dietary fiber is added before the milk, which is preferred in the production of products with a 25% reduction in sugar, fat and carbohydrate, is brought to a fat-measured state (Yalçın & Işık, 2017).

Some Dairy Products Produced Using Kefir:

There are products that are produced using kefir. Products containing kefir cream, butter, cream, sauces(dill, arichoke, etc.), beverages mixed with kefir(smoothies, milkshakes, strawberry, banana, apricots, peach etc.), various

coffees and dairy products are produced. We can reproduce these products as kefir yogurt, kefir tarhana, kedir whey, kefir ice cream and kefir drag(Esmek & Güzeler, 2015).

Kefir Yogurt

Yogurt, which is often used in our home, is a food with high nutritional value in terms of its content. By changing the of yogurt milk(skim yogurt, semi-skimmed yogurt, full-fat yogurt), streptococcus thermophilus, lactobacillus delbrueckii subsp. It is formed as a result of fermantation by bulgaricus and lactic acid producing bacteria(bacteria can also be added to the culture)(Şahan & Say, 2003). The clot formed by the fermentation of milk is smaller (that is, the casein ratio is lower) and softer than the clot formed by the digestion of milk in the stomach. In other words, yogurt is a food item that is easy to digest. In this respect, it can be preferred more than milk. In addition, since the bacteria in yogurt break down some of the milk proteins, the body synthesizes the enzymes that enable the digestion of the proteins in the milk more intensively, making the digestion process of yogurt easier(Güven M. & Karaca, 2003). Due to fact that yogurt is more at the forenfront compared to milk, ,t has been canstantly studied to make it more nutritious. With these studies, the nutritional value of yogurt has changed in order to increase its effects continuously. Today, kefir yogurt is produced with the use of kefir culture. It has also been produced in the industrial sense and has taken its place in the market (Dorota et al., 2015).

The stages of obtaining yogurt from kefir are as follows:

Initially, the milk is pasteurized. This process is performed by applying it at 90°C for 15-20 seconds. After the pasteurization process there is a cooling stage. This stage is to wait for the milk to cool until it drops to a temperature level between 43 and 45°C,. After the cooling process is completed, a kefir culture of around 5% is added to the milk and incubated for 3 to 4 hours between 41 and 43 °C,. After the incubation period is completed, it is suitable for consumption after being kept for a day at a temperature of +4°C (Güzeler & Esmek, 2014).

Kefir Ice Cream

Ice cream; It is a dairy product prepared in accordance with the technique after mixing and pasteurizing cream, milk, water, eggs, sucrose and condiments and additives in a certain proportion. Ice cream; it is an important food item because it gives happiness, is easy to digest, has a high energy value is rich in vitamins and minerals(it is rich in vitamins and minerals because it is milk and there is ice cream made from various fruits). In terms of the high allergy level of ice cream, individuals with allergic diseases shold be careful when consuming. Ice cream, which everyone loves to consume, is produced using kefir, yogurt and similar fermented milk products(Esmek & Güzeler, 2015). Kefir ice cream in Turkey is currently not produced industrially. Ireland produces kefir ice cream. Kefir ice cream in Ireland is produced in varieties such as vanilla, raspberry and peach. . In America, varieties such as chocolate-raspberry, coffee, cinnamon, lemon-blueberry kefir ice cream were offered to people and it was determined that people

liked it by looking at the consumption rate (Avenue, 2013).

Kefir Whey Drink

If whey is evaluated, environmental pollution will be prevented and the use of a valuable dairy product will be ensured (Guimarães et al., 2010). It is the greenish-yellow liquid (the part that remains uncollapsed) that is outside the curd after the cheese produced from whey is coagulated by yeast or acid adding method during the production stage and the water formed behind after the separation of the milk casein. In some countries it is consumed as a drink. Whey can also be used as a food additive by pulverizing it and enriching food in terms of protein value. This liquid makes up 85% to 90% of the average milk by volume and contains 55% of the milk's nutritional composition. The most abundant of these nutrient compositions are lactose, soluble protein, fats and mineral salts(Karina et al. 2011). Whey is very much formed in cheese making and this product contains a very large amount of organic matter as an ingredient. Therefore, failure to evaluate this product causes environmental pollution. In this regard, the evaluation of whey is of great importance. Thus, as the best example of this purpose, kefir was produced from whey(Soltani et al., 2017).

Stages of whey formation:

After pasteurizing the whey accumulated in the production container from cheese making at 90 °C for 25 minutes, it is allowed to cool to 20 °C. After the filtration process, 50% milk and 50% whey are taken and 2% kefir culture is added to this mixture. It is left for 48 hours of incubation at 25 °C. The drink formed after incubation has become ready to be consumed. Foods such as fruit syrup, honey, cocoa, chocolate can be added to flavor(Güzeler & Esmek, 2014).

Kefir Tarhana

In the regions where we live in our country, tarhana is produced specifically for that region. Tarhana soup is also a type of soup that is seen in various forms of production in a wide geography including Central Asia, Turkey and the Balkans. Although the tarhanas made are close to one due to the materials in their content, the tarhana of each region varies in taste and shape according to the region where it is made. The main purpose of tarhana soup, which has many varieties, is that the Turks were the first to make tarhana. Turks produce tarhana by using the materials of that region in every geography they go. It is a food obtained by kneading the dough with yogurt, onion, pepper, tomato, salt, wheat flour, and flavoring vegetable substances and then leaving it to ferment and drying, grinding and sieving after this fermentation. These various vegetables and spices are mixed, kneaded and brought to the consistency of dough, the mixture is covered with a cloth and left for at least a week to ferment (ferment) and swell. The waiting time determines the type of tarhana. Tarhana that ferments in a longer time is sour, and tarhana that is kept for a shorter time and left to dry (processed) is sweeter. The fermented mixture (dough) is taken piece by piece and sorted on a cloth and left to dry in the open-topped, shaded area. When it becomes dry, it is rubbed by hand and powdered(Akbaş &Coşkun, 2006). Tarhana is often used in our country because of the practicality of its

production and because it is cheap, durable and rich in nutritional value. Yogurt and cereals are the main raw materials used in the production of tarhana, but since the types of these substances vary according to the region, there are differences with the changes in the substances used in the composition of tarhana(Sormaz et al, 2019). In order to further enrich the importance and nutritional value of the use of tarhana in our nutrition at Çanakkale 18 Mart University Biga Vocational School, the yogurt contained in the content of tarhana was removed and researches were carried out to use a different fermented product with more functional and nutritious properties as an alternative and tarhana production was made using kefir. Kefir tarhana contains flour, potatoes, carrots, celery, flax seeds, kefir onion, tomato or pepper paste and kefir cheese(Esmek & Güzeler, 2015).

Kefir Cheese

Cheese is generally obtained by coagulation of milk, separating whey from the curd, and then processing the curd in different ways. The benefits of cheese protect health by being rich in vitamins and minerals. It provides the body with vitamins and minerals such as vitamin A, vitamin B2, vitamin B12, omega 3, omega 6, fatty acids, proteins, calcium, phosphorus, selenium and zinc that the body needs during the day. Cheese, which is rich in these vitamins and minerals, is especially indispensable for breakfast tables and is a foodstuff that should be included in the nutrition of all age groups in society (Elmalı & Uylaşer. 2011).

Stages of cheese production from kefir:

For the cheese to be made, first of all, the milk is heated until it reaches a temperature of 60 ° C, At this stage of processing, kefir is added by mixing the milk lightly, stirring slowly and at a constant speed. Care should be taken to mix slowly and the resulting clot should not be broken down. Thanks to this process, the clots are separated from the whey. The whey should be clear. However, if the whey is not clear, the temperature can be increased or kefir can be added as much as it can take. In this way, the whey is continued until it reaches clarity. The resulting clot is filtered through a filter. It is put on a cloth to separate the excess water in this clot. Wait for it to drain for 15 minutes. If a cheese with a hard structure is desired, the time can be extended. If you want to obtain different flavors by increasing the flavor of the cream kefir cheese obtained in stages; dried tomatoes, zahter, onion powder, pepper flakes, dill, roasted sesame and basil can be added according to the taste (Anonim, 2015b). In cheese making, mainly cow, sheep, goat and buffalo milk is used. In addition to these, cream, whey, butter can also be used in cheese making. Coagulation, which is one of the basic processes in cheese making, can be done by using rennet (proteolytic enzyme) or harmless organic acids, or it is possible to use them together(Karabıyıklı & Erdoğmuş, 2019).

Kefir Surk

Surk is a dairy product belonging to Hatay region. The place of production is the villages, but it is also produced in small-scale enterprises in the region. The Arabic meaning of surk: The name ' precipitate ' comes from here. Surk is made from the precipitate formed as a

result of boiling milk or whey with high acidity. Surk, which belongs to the Hatay tradition, is also similar to the kurut prepared from buttermilk. However, it differs from the kurut due to its conical shape, its color close to red and the addition of spices during the construction phase. Kefir surk can also be made using kefir cheese, which is medium hard, instead of precipitate(Ördek & Öksüztepe, 2016).

Conclusions And Recommendations

Many health organizations, such as the World Health Organization (WHO), stated that the place of milk and its products is important for a healthy and balanced diet. Today, with the developing industrial technology, it has accelerated the production of food. Scientific studies on nutrients tend to increase day by day. In addition to the probiotic properties of kefir, which is contained in fermented milk products, it has been found to be a very useful drink in functional structure. Regular consumption of kefir in nutrition has been proven to have positive effects on health as a result of various studies. Kefir, in which acetic acid bacteria, leuconostoc, streptococcus, lactococcus and yeasts live symbiotically, is obtained from various milks. Therefore, the amount of nutritional components in its content varies considerably. It contains many important elements for the health of the human body and macro and micro nutrients. It contains many important elements for the health of the human body and macro and micro nutrients. Also on health; It also has many positive effects such as antimicrobial, anti-carcinogen. Since it contains different nutritional and growth factors, people of all ages can consume it safely and healthily. Kefir is an important food source in terms of biotin. Biotin; It helps in the absorption of B vitamins, pantothenic acid and folic acid by our body. For a healthy functioning of the nervous system; B vitamins, tryptophan, an essential amino acid, have a significant effect. Kefir has a lot of these nutrients. Kefir contains calcium and magnesium high in minerals. It is also a good source of phosphorus, which helps to use carbohydrates, fats and proteins. Kefir, which is very high in terms of nutritional values, contains all the nutrients in milk. It also has a therapeutic effect with its high nutritional value and antioxidant properties. Some microorganisms in its structure facilitate the digestion of kefir. These new microorganisms have an appetizing effect and create a refreshing taste and pleasant smell. Often kefir was used to increase the nutritional value of dairy products. Kefir yogurt, kefir ice cream, Whey drink, Kefir tarhana, Kefir cheese, Kefir vinegar are dairy products and kefir drinks produced using kefir. The benefit of kefir, which is a probiotic product that is beneficial for our digestive system and many diseases, can be further increased by adding it to the products we have. In our country, it is stated that kefir, like milk and other dairy products from the milk group, is not consumed much. In the researches, kefir, which has been found to have many positive effects on our health; Awareness should be raised by all segments of the public about its importance and studies can be carried out to increase consumption. In future studies, the positive effects of kefir consumption in the diet on diseases and health will be revealed even more. It is necessary to encourage people to consume more kefir

for their health. 'Consume kefir for your health'.

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