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Comparison of different commercial dairy desert characteristics in Iran

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ABSTRACT

In this study, it was aimed to measure the physicochemical and sensory characteristics of two kind of Iranian dairy product including fruity and flavored milk-based dessert that were obtained from local store. Fruity milk-based dessert included strawberry, cantaloupe and flavored milk-based dessert included capuchin, chocolate and coconut. In this samples mean the value for pH, acidity, fat, protein, salt, carbohydrate, calcium and phosphorus content was 6.62 ,0.25%,2.82%,2.87%,0.21%,11.69% ,0.26 % and 0.11 % respectively.

Key words: Dairy desert, chemical properties.

INTRODUCTION

Lactating mammals produce fresh natural milk to feed their young. Benefit of milk since ancient times have been recognized. Milk is a nature beverage containing nutrient component in suspension. The composition of milk affected diet, stage of lactation and Species. The product is an emulsion of saturated and unsaturated fats, proteins (whey proteins and casein), minerals (such as magnesium, calcium, potassium, and zinc), vitamins (including A, B, D and E) lactose, and other component in water. Today's dairy processors have ability to convert raw milk to different new products, inorder to improve efficiencies of traditional products and to introduce new products for expanding the dairy product market [1]. The new dairy industry is now focused with maximizing the content of the solids in milk. Worldwide, about 30% of milk is used as liquid milk, 35% is used to cheese processing, and the 35% is used to make butter and other dairy product [2], and 1.2% into condensed milk [3]. Milk consumption during life especially childhood is very important for achieving suitable lifetime bone health. Children who consume dairy desert get higher level of calcium, iron and folate compared to those who consume another beverage such as fruit drinks and sodas.

Milk-based products include desert are proven to be a valuable nutritional component with all essential amino acids [1].

Most of dairy desert produced with condensed and evaporated milk. This product is two kind of concentrated milk from which the part of the water has been eliminated. Evaporated milk is milk concentrated to less than one-half initial bulk by evaporation without the addition of other ingredient such as sugar that contains a high amount of solids and fat milk. Condensed milk product is evaporated milk with addition of sugar. The milk is then canned for consumer consumption and commercial use in different dairy product such as ice cream and dessert. Sweetened condensed milk is a dairy product that produced from concentrated milk and adding different sugar. Condensed milk

is used in different dessert in the entire world. Milk is considered to be a valuable food and addition of direct consumption many new milk based products like different dessert are consumed in large amount every day. According to flavor properties in Iranian standard dairy desert are divided into two categories; Fruity and flavored milk-based dessert. Fruity milk-based desserts with the addition of fruit, fruit puree concentrates, fruit, jam or marmalade are supplied. Flavored milk-based desserts by adding cocoa powder, coffee, caramel, chocolate, honey, malt extract, vanilla, grape syrup, date syrup, plant extracts and spices like cinnamon, saffron and natural flavors are produced [4]. Today's different new dairy desert is available and the investigated about its properties is interested, so, the aim of this study was compare of the physicochemical characteristics of some new commercial dairy desert in Iran.

MATERIALS AND METHODS

Material

Randomly selected different stores located in Tehran and then four samples of fruity and flavored milk-based dessert were obtained from selected local store. Fruity milk-based dessert include strawberry, cantaloupe and flavored milk-based dessert include capuchins, chocolate and coconut. Sampling of each product was done according to International standard number 326 [5].

Methods

The pH value of samples was measured using pH meter. PH and titratable acidity was measured according to the method of international standard number 2852 [5].

Moisture, protein and ash was measured according to the method of international standard number 637 [6], 639 [6] and 1755 [7] respectively. Salt content was measured according to the method of international standard number 694 [7]. Calcium and phosphors was measured according to AOAC, (1990) [8].

Data Analysis

Data collected from the aforementioned study samples were analyzed based on 0.05% coefficient of error by a software program. The data analysis was performed using MINITAB statistical software, release 14.2 (MINITAB Inc., state college, PA and USA). At first such software program proved samples normal conditions and then the significant difference among data was precisely studied via Anova-one- way test and *p*-value was determined.

Sensory Analysis

A 5 point hedonic scale (1= lowest desirability, 5= highest desirability) was designed to evaluate the sensory characteristics by using 15 trained panelists including overall acceptability, consistency, odor and taste properties. Water was provided to wash the mouth between two oral tests.

RESULTS AND DISCUSSION

Table 1 shows physicochemical properties of milk-based dessert. Milk fat and other dairy product is composed of mixture of lipids. Triglycerides are the major kind of lipid in dairy product fat. Fat is the important component of dessert and contribute texture, taste, quality, flavor, and nutritional value in the product. In these samples fat percent was between 2.67% to 3.01%, which was an effective factor on flavor of the final product. Between the samples the lowest and highest fat content refers to strawberry and cantaloupe dessert respectively. Statistical analysis didn't show significant difference between the fat content of all experimental samples ($P \leq 0.05$). According to national standard of Iran, minimum percent of fat for milk-based dessert is 3% so all of samples except cantaloupe dessert were acceptable, also cantaloupe dessert just showed a little higher fat content (0.01%) than acceptable standard.

There are different valuable types of proteins in milk and milk product. The total protein content of dairy product is composed of different specific proteins, that is one of the key factors for important of dairy product in human diet. Protein content of milk-based dessert was varied from 2.74% (Capuchins dessert) to 3.01% (Strawberry dessert). Protein content of these samples didn't show sharp difference but this difference statistically was significant. ($P \leq 0.05$).

The pH is used to define acidity; it is inversely refer to hydrogen ion percent. Natural milk has a pH of 6.7 and consequently milk is slightly acidic product. In milk-based dessert process there isn't any fermentation stage, and

therefore acidity and pH of this product should be similar to fresh milk. The mean value of pH for these samples was 6.62 and from a statistical standpoint was similar (P≤0.05). Acceptable limit of pH for fruity milk-based dessert and flavored milk-based dessert is 6.2-6.8 and 6.3-6.8 respectively; as a result all of samples were acceptable.

The mean value of acidity of these samples was 0.25% and all of them were similar (P≤0.05). Carbohydrate content of milk related to lactose but in desert production process different carbohydrate includes sucrose and glucose was added to formulation. In addition, other ingredients include fruit, coffee, chocolate, etc has high content of carbohydrate, so this dairy desert has higher carbohydrate content than fresh milk. Mean carbohydrate content of desert samples was 11.69 %. The highest carbohydrate refers to chocolate and coconut desert (14.31%) and the lowest refer to strawberry desert (9.25%), and this difference was statistically significant (P≤0.05). According to national standard acceptable limit of carbohydrate content for fruity milk-based dessert and flavored milk-based dessert is 13% to 17% respectively; therefore all of samples were acceptable.

Desert is sweet product and for its production, not salt added, therefore salt content of this product is very low. Average of salt content in this dessert was about 0.21% and according to statistical analysis all of samples were similar. Scientist's public is becoming increasingly aware of the importance of dietary phosphorous and calcium. This is due to the different studies that have demonstrated relation between calcium and phosphorous intake and diseases such as colon cancer, osteoporosis and arterial hypertension. These diseases have different reason, but specifically recognize that dietary phosphorous and calcium helps prevent them. Phosphorus content in these samples didn't show any significant difference, and its limit was 0.09% to 0.14%. But statistical measurement has shown that calcium content in chocolate and coconut desert (0.67%) was significant higher than other samples. This difference may be related to presents of chocolate and coconut. Sensory properties of different desert were shown in Table 2. According to statistical analysis different sensory properties in all the samples were similar and all of the samples showed high score, it means dairy desert with this flavored has good consumer acceptability.

Table 1: physicochemical properties of milk-based dessert

	Fruity milk-based dessert			Flavored milk-based dessert		
Properties (%)	Strawberry	cantaloupe	Acceptable* limit	Cappuccino	Chocolate and Coconut	Acceptable* limit
pH	6.70±0.01[a]	6.65±0.00[a]	6.2 -6.8	6.48±0.02[a]	6.67±0.00[a]	6.3 -6.8
Acidity	0.26±0.05[a]	0.26±0.03[a]	-	0.30±0.07[a]	0.20.±0.06[a]	-
Fat	2.67±0.11[a]	3.01±0.07[a]	Min 3	2.91±0.08[a]	2.71±0.12[a]	Min 3
Protein	3.01±0.10[a]	2.93±0.06[a]	-	2.74±0.09[b]	2.83±0.04[b]	-
Carbohydrate	9.25±1.03[b]	13.00±0.93[a]	Max 13	10.21±0.71[b]	14.31±1.05[a]	Max 17
Salt	0.21±0.06[a]	0.20±0.04[a]	-	0.22±0.02[a]	0.23±0.04[a]	-
Calcium	0.10±0.02[b]	0.13±0.08[b]	-	0.14±0.01[b]	0.67±0.01[a]	-
Phosphorous	0.09±0.01[a]	0.14±0.06[a]	-	0.08±0.02[a]	0.12±0.03[a]	--

**: Iranian national standard*

Table 2: sensory properties of milk-based dessert

Sensory properties	Cappuccino	Chocolate Coconut	Strawberry	cantaloupe
Flavor	4.60±1.01[a]	4.01±0.70[a]	4.22±0.09[a]	4.80±0.12[a]
Taste	4.40±0.06[a]	4.61±0.32[a]	4.62±0.42[a]	4.00±0.30[a]
Color	4.81±0.56[a]	4.60±0.51[a]	4.42±0.21[a]	4.61±0.60[a]
Texture	5.00±0.34[a]	4.81±0.06[a]	5.00±0.51[a]	5.00±0.33[a]
Mouth Feel	4.80±0.09[a]	4.80±0.53[a]	4.60±0.37[a]	4.61±0.39[a]
Total Score	4.72±0.45[a]	4.56±0.33[a]	4.56±0.09[a]	4.62±0.71[a]

1= lowest desirability, 5= highest desirability

CONCLUSION

According to The nutritional value of milk and dairy products, its consumption offered by the various agencies. Dairy consumption during life especially childhood is very important for achieving suitable lifetime bone health. Milk-based products include desert are proven to be a valuable nutritional component and its consumption was recommended.

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