

Study the Impact of Adding Date Syrup Alternative to Sucrose on the Quality as Characteristics of Apricot Nectar

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ABSTRACT

Apricot (*Prunus armeniaca L.*) belongs to Rosaceae family. It plays an important role in maintenance of human health, because the fruit contains carotene and lycopene pigments that protect the heart and eyes, as well as disease fighting effects of fiber that prevent digestive condition called diverticulosis and having antipyretic, antiseptic, emetic, and ophthalmic properties (Egea *et al.*, 2007).

Recently spread in the so-called functional foods and favored by human food treatment and protect him from diseases and are considered the fruit of the most important sources of antioxidants where the study showed the possibility of producing molasses economic fruits of Balah special varieties Almilcaby and Siwi lower Saarama and worth the economic but nutritionally is molasses food high in thermal energy and a good source of minerals.

In this research apricot (Class Amar) was used in the manufacture of nectars subsidized Bdbb Balah as a source of antioxidants (beta-carotene and vitamin C, phenolic compounds, and zinc) have been estimated viscosity and total solids, acidity, pH, as well as estimate the beta-carotene and vitamin C, phenolic compounds and various metals, especially sodium, potassium, iron, zinc, have differed results for different additives and focus. The results showed that the strengthening Nectar apricot rates of 25% .50% .75% of the molasses -Balah (Almilcaby - Siwi) got the highest results in arbitration sensuous, respectively, and in addition to that Nectar apricot subsidized Balddb was better than sucrose in terms of sensory evaluation and food.

The piece is recommended to use molasses Balah special varieties Almilcaby and Siwi and use an alternative to sugar in the manufacture of other food products will lead to the improvement of their nutritional value, especially as molasses can be stored at normal room temperature without a noticeable change in the quality attributes in addition to the apricot as a source of antioxidants, natural colors because of their importance food and health and protect the body from infection with many serious diseases.

Key words: Sweet fennel, Yeast, Amino acid, Chitosan, Growth, Yield, Chemical content.

Introduction

The date palm (*Phoenix dactylifera L.*) is an important food crop in the region of the Middle East. The total world production is about 4646 thousand tons in 1997 (FAO, 1997). The Middle East production is about 4497 thousand tons while, the Arab countries produce about 3089 thousand tons, equivalent to about 66% of the total world production.

The main date producing countries in the world are Iran, Egypt, Iraq, Saudi Arabia, Pakistan, Algeria, United Arab Emirate, Sudan, Oman, Tunisia, Morocco, Libya and Yemen. Egypt is one of the largest date producers. The annual production of date in Egypt, is estimated at about 710.000 tons (FAO, 1997), which qualify it to rank the first among the Arab date producing countries.

Date fruits are considered to be a very important food, and were known for a long time to have established itself within the human nutrition, especially in the Oases of Arabian Peninsula. Several investigators (Salem and Hegazi, 1971; Abd El-Hafiz *et al.*, 1980; Yousif *et al.*, 1982) reported that dates have relatively large quantities of sugars mainly reducing sugars, while protein and fat are present in relatively small amounts. Dates have moderate amounts of thiamine, riboflavin, folic acid and small quantities of biotin and ascorbic acid. The literatures showed that the dates could be considered a good source of iron, potassium, copper, sulphur and manganese and a fair source of calcium, chlorine and magnesium. Dates also cover part of human need of fibers.

Apricot (*Prunus armeniaca L.*) belongs to Rosaceae family. It plays an important role in maintenance of human health, because the fruit contains carotene and lycopene pigments that protect the heart and eyes, as well as disease fighting effects of fiber that prevent disease fighting effects of fiber that prevent digestive condition called diverticulosis and having antipyretic, antiseptic, emetic, and ophthalmic properties. It was found that apricot is fragile fruit having short storage life (3-5 days) at ambient conditions, 2-4 weeks at cold storage depending on cultivar. The short storage life of this fruit is due to short time period from commercial ripening to

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the degradation process characteristic like senescence (Egea *et al.*, 2007; Agar and Polate, 1995). Apricot fruits enriched different antioxidant compounds such as phenolics, vitamins and carotenoids. Phenolic compounds demonstrated higher antioxidant activity than vitamins and carotenoids (Re *et al.*, 1999). They are able to scavenge reactive oxygen species due to their electron donating properties. The levels of phenolic compounds are different in apricot varieties (Macheix *et al.*, 1990). Antioxidant content is an important parameter with respect to increasingly fruit and vegetable quality. There for, there are great interests to evaluate changes in antioxidant status during postharvest storage of horticultural crops (Fernando *et al.*, 2004). Postharvest storage can also affect phenolic compounds levels and antioxidant capacity in fruits (Holcroft and Kader, 1999).

This investigation was carried out to evaluate the quality parameters of soft date cultivars: Samanny, Hayany and Amhat during frozen storage. The stage of maturity in the beginning of this study was Rutab. The utilization of second quality dry dates Melkaby and Shamia cultivars to date syrups (dibis) was also studied. Samples of either soft dates or date syrups (dibis) were analyzed for quality parameters such as proximate composition, mineral elements, physical and organoleptic characteristics as well as microbiological aspects. The effects of storage on quality parameters of soft dates and dibis treatments were assessed as well.

Materials and Methods

Materials:

Source of Samples:

The present study was carried out on soft as well as dry dates "Rutab" and "Tamer" namely Siwi and Melkaby cultivars. The soft date's samples were obtained from the local market at Giza, Egypt on November 2010, While the dry samples were obtained from the local market at Aswan, Egypt on March, 2010. Apricot fruits (*Prunus armeniaca*) variety Amar were picked at the ripe stage from Amar village, Quliobia Governorate, Egypt, during season of 2010.

Preparation of soft Date Samples:-

Date fruits of Siwi and Melkaby cultivars were cleaned from extraneous material and defective fruits then packaged in polyethylene bags each weight about 1/2kg and finally, stored in deep freezer at -20°C for six months.

Preparation of date syrup:

The flesh of date samples were boiled in sufficient amount of water for 20 min. and blending. The slurry was filtered through a cloth with a hand press. The residual pulp was rewashed with hot water (80-85°C) for 10min. and filtered again twice, to make up the water/pulp ratio as 2, 2.5 and 3.0/1. The collected raw date juice was then centrifuged at 7,000 rpm for 30 min. The clear extract was concentrated under vacuum using rotary evaporator apparatus at 70°C to obtain one fourth or third of the total extract volume. The produced date syrup was packed in sealed glass bottles and stored at room temperature (20-30°C).

Processing:

Apricot nectar: ripe apricot fruits were washed with running water, cut into halves and the kernels were removed. The nectar was mechanically extracted by using Moulinex blender (Blender Mixer, type: 741). The juice was strained by a stainless steel strainer to remove stone cells, to avoid coarse pulp particles and to have only fine particles of almost colloidal consistency.

Table 1: Blends apricot nectar and date syrup (T.S.S18%).

Blends	Ingredients %		
	Date syrup Melkapy	Date syrup Siew	Sugar
No. (1) 100 ml apricot nectar (control).	-	-	17.7
No.(2) 100ml apricot nectar	25	-	75
No.(3) 100ml apricot nectar	50	-	50
No.(4) 100ml apricot nectar	75	-	25
No.(5) 100ml apricot nectar	100	-	0
No.(6) 100ml apricot nectar	-	25	75
No.(7) 100ml apricot nectar	-	50	50
No.(8) 100ml apricot nectar	-	75	25
No.(9) 100ml apricot nectar	-	100	0

Treatment:

Pasteurization samples on the degree of 85 ° C for 20 minutes followed by cooling to 5°C and stored at 5°C.

Methods of analysis:-

Moisture, Total solids, Total acidity, Total sugars and ash were determined according to AOAC (1990). Minerals content (Ca, K, Mg, Na, Fe, Mn and Zn) were determined in ash solution using Varin AA-475 Series, Atomic absorption spectrophotometer. pH was measured using pH meter HANNA 213. The viscosity was determined using a viscometer L model DV-111).

Determination of carotenoid:-

Carotenoid in apricot were determined colorimetric and calculated as described by Rangana (1979).

Vitamin A Value:-

Calculation was performed based on the vitamin A activity in food is thus currently expressed as retinol equivalents (RE) (Food and Nutrition Board, 1989). $RE = 0.167 \times \mu\text{g } \beta\text{-carotene}$.

Vitamin C Value:-

Ascorbic acid (vitamin C) was determined according to AOAC (1990).

Color index was determined by the method of Meydov *et al.* (1977).

Total phenolics content (TPC):-

The total phenolics were determined by the Folin- Cicalteau method as described by Singleton *et al.* (1999), with minor modifications, based on colorimetric oxidation/reduction reaction of phenols. Polyphenols extraction was carried out by adding 10 ml methanol (85%) to 1g fine grind of apricot tissue. 250 μl of sterile distilled water was added to 250 μl of extract, and then 2.5 ml of diluted Folin- Cicalteau reagent (10%) and 2 ml of 7.5% sodium carbonate were added. The samples were shaken for 1.5 to 2 hours. The absorbance of samples was measured at 765 nm by a PG Instruments ltd- T80+ UV/VIS spectrophotometer. Gallic acid was used for calibration curve. Results were expressed as mg gallic acid (GAE)/ 100 g FW.

Sensory evaluation:-

Sensory evaluation was carried out by a well trained panelist of 12 testers. The 12 member internal panel evaluated the different apricot nectar and date syrup blends for color, appearance, taste, flavor, mouthfeel (smoothness, consistency, spreadability) and overall acceptability. Mineral water was used by the panelists to rinse the mouth between samples according to Onweluzo *et al.* (1999).

Statistical Analysis:-

Data for the sensory evaluation of all nectar preparations were subjected to the analysis of variance followed by multiple comparisons using [Least significant difference, (L.S.D.)] analysis, according to Gomez and Gomez (1984). L.S.D. was calculated at 0.05 levels as significance.

Results and Discussion**Chemical composition of apricot nectar and date syrup blends:-****Blend No.1 (100ml apricot nectar(17.7g sugar)control):-**

The data tabulated in table (2) showed that blend no. (1) Contained 1.02% ash, 18% total soluble solids, 2.29% total titratable acidity, 3.59 pH value and 17.90% total sugars. While the table (3) showed that fresh blend No (1) contained 233.30 $\mu\text{g}/100\text{g}$ total carotenoids (as β - carotene), 9.6361 mg/100g ascorbic acid and 386.55 mg/100g phenolic compounds (as catechol).Data in table (4) showed that, the minerals content were: 51.50, 359.979, 485.595, 0.567, 80.026, 73.763 and 9.028 mg/100g for magnesium, sodium, potassium, manganese, iron, calcium, and zinc, respectively on fresh weight basis.

The high content of total carotenoids (as β - carotene) and ascorbic acid of this blend may be due to its content of apricot and date which had more or less high levels of these components. These results agree with those found by Salem and Hegazi,(1971); Abd El-Hafiz *et al.*, (1980); Yousif *et al.*, (1982); Egea *et al.*, (2007) and Agar & Polate, (1995.)

On the other hand this blend had high contents of different minerals [Mg, Na, K, Mn, Fe, Ca, and Zn]. This may be due to its content of apricot and date, which both of them are rich in one or more of those minerals. These results go in parallel with those found by FAO, (1997).

Blend No.2 (100ml apricot nectar(25% date syrup Melkaby +75% sugar):-

From the data in table (2) it could be noticed that fresh blend no. (2) Contained 0.97% ash, 18% total soluble solids, 2.83% total titratable acidity, 3.54 pH value and 17.60% total sugars .It could be further observed, from the results in the table (3) that this blend contained 40.96 µg/100g total carotenoids (as β-carotene), 25.2785 mg/100g ascorbic acid and 233.30 mg/100g phenolic compounds (as catechol).

In this concept, results in table (4) showed that the fresh blend contained 35.583 mg magnesium, 314.735 mg sodium, 429.829 mg potassium, 0.508 mg manganese, 48.74 mg iron, 50.134 mg calcium and 5.034 mg zinc /100g. The high amounts of total carotenoids (as β- carotene), vitamin C, phenolic compounds, sodium, potassium and iron this blend may be due to its content of high percent of apricot and date, rich in one or more of these components. These findings agree with those Salem and Hegazi, (1971); Abd El-Hafiz *et al.*, (1980); Yousif *et al.*, (1982); Egea *et al.*, (2007) ; Agar & Polate, (1995) and FAO, (1997).

Blend No.3 (100ml apricot nectar (50% date syrup Melkaby +50% sugar):-

Results in table (2) showed that fresh blend no. (3) Contained 0.91% ash, 18% total soluble solids, 2.88% total titratable acidity, 3.50 pH value and 17.60% total sugars.

While the data in table (3) and table (4) showed that the fresh blend contained 32.45 µg/100g total carotenoids (as β- carotene), 27.5462 mg/100g ascorbic acid, 221.94 mg/100g (phenolic compounds as catechol), 32.735 mg magnesium, 280.831 mg sodium, 370.406 mg potassium, 0.432 mg manganese, 44.108 mg iron, 41.613 mg calcium and 3.586 mg zinc /100g /100g Such high quantity of total carotenoids, ascorbic acid, phenolic compounds and potassium in this blend may be due to its content of apricot and date which both of them are rich in one or more of these components .These findings agree with those reported by Salem and Hegazi, (1971); Abd El-Hafiz *et al.*, (1980); Yousif *et al.*, (1982); Egea *et al.*, (2007); Agar & Polate, (1995) and FAO, (1997).

Blend No.4 (100ml apricot nectar(75% date syrup Melkaby +25% sugar):-

The chemical compositions of fresh blend no. (4) were given in table (2), results showed that it contained 0.90% ash, 18% total soluble solids, 2.88% total titratable acidity, 3.51 pH value and 17.50% total sugars. Data in table (3) showed that this fresh blend contained 21.05 µg/100g total carotenoids (as β- carotene), 23.2269 mg/100g ascorbic acid and 200.78 mg/100g phenolic compounds (as catechol).

On the other hand, results in table (4) showed that fresh blend no. (4) Contained 32.863, 287.968, 397.124, 0.477, 45.865, 42.921 and 3.67 mg/100g for magnesium, sodium, potassium, manganese, iron, calcium, and zinc, respectively. The high amounts of ascorbic acid, sodium, phenolic compounds and potassium in this blend may be due to its content of high percent of apricot and date which are rich in one or more of these components .These results coincide with those reported by Salem and Hegazi, (1971); Abd El-Hafiz *et al.*, (1980); Yousif *et al.*, (1982); Egea *et al.*, (2007); Agar & Polate, (1995) and FAO, (1997).

Blend No.5 (100ml apricot nectar (100% date syrup Melkaby +0% sugar):-

In this concept, results in table (2) showed that fresh blend no. (5) Contained 0.77% ash, 18% total soluble solids, 3.42% total titratable acidity, 3.50 pH value and 17.45% total sugars. While the data in table (3) and table (4) showed that fresh blend no. (5) Contained 20.98 µg/100g total carotenoids (as β- carotene), 29.5523 mg/100g ascorbic acid, 231.15 mg/100g phenolic compounds (as catechol), 29.489mg magnesium, 237.743mg sodium, 425.228mg potassium, 0.320mg manganese, 49.78mg iron, 36.822mg calcium and 2.581mg zinc /100g. It could be noticed that this blend contained a considerable amount of ascorbic acid, sodium, potassium and phenolic compounds this may be due to its content of apricot and date which are rich in one or more of these components. These results were in accordance with those reported by Salem and Hegazi, (1971); Abd El-Hafiz *et al.*, (1980); Yousif *et al.*, (1982); Egea *et al.*, (2007); Agar & Polate, (1995) and FAO, (1997).

Blend No.6 (100ml apricot nectar (25% date syrup Siew +75% sugar):-

Results in table (2) showed that fresh blend no. (6) Contained 0.91% ash, 18% total soluble solids, 3.27% total titratable acidity, 3.48 pH value and 17.50% total sugars. Also, the data in table (3) and table (4) showed that this fresh blend contained 22.36 µg/100g (total carotenoids as β- carotene), 32.6252 mg/100g ascorbic acid,

299. mg/100g phenolic compounds (as catechol), 30.271mg magnesium, 248.759mg sodium, 460.594mg potassium, 0.375mg manganese, 72.722mg iron, 45.141mg calcium and 3.426mg zinc /100g.

On the other hand, results in table (3) and table (4) showed that this fresh blend no.(6), had high content of (ascorbic acid, phenolic compounds, sodium, potassium and iron which may be due to its content of apricot and date which are rich in one or more of these components. These findings and conclusions agree with those reported by Salem and Hegazi, (1971); Abd El-Hafiz *et al.*, (1980); Yousif *et al.*, (1982); Egea *et al.*, (2007); Agar & Polate, (1995) and FAO,(1997).

Blend No.7 (100ml apricot nectar (50% date syrup Siew +50% sugar):-

The data in table (2) showed that fresh juice blend no. (7) Contained 0.95% ash, 18% total soluble solids, 3.13% total titratable acidity, 3.46 pH value and 17.40% total sugars. Also, the data in table (3) and table (4) showed that this fresh blend No.(7) contained 32.37 µg/100g total carotenoids (as β- carotene), 89.9406 mg/100g ascorbic acid and 327.65 mg/100g phenolic compounds (as catechol). Also this fresh blend contained 41.989, 292.919, 483.313, 0.393, 85.624, 46.107 and 4.744 mg/100g for magnesium, sodium, potassium, manganese, iron, calcium, and zinc, respectively.

Results in table (3) and table (4) showed that this blend contained high amounts of ascorbic acid, phenolic compounds, sodium, iron and potassium this may be due to its content of apricot and date which both of them are rich in one or more of these components. These results were close to those found by Salem and Hegazi, (1971); Abd El-Hafiz *et al.*, (1980); Yousif *et al.*, (1982); Egea *et al.*, (2007); Agar & Polate, 1995 and FAO, (1997).

Table 2. Ash, T.S.S, T.Acidity, pH and T.Sugars of apricot nectar and date syrup.

Constituents Blends	Ash %	Total soluble solids%	Total titratable acidity%	pH-value	Total sugars %
	F.W.B	F.W.B	F.W.B	F.W.B	F.W.B
No.1(100ml apricot nectar (17.7 g sugar) control	1.02	18	2.29	3.59	17.90
No.2(100ml apricot nectar (25% date syrup Melkaby +75% sugar)	0.97	18	2.83	3.54	17.60
No.3(100ml apricot nectar (50% date syrup Melkaby +50% sugar)	0.91	18	2.85	3.50	17.60
No.4(100ml apricot nectar (75% date syrup Melkaby +25% sugar)	0.90	18	2.88	3.51	17.50
No. 5(100ml apricot nectar (100% date syrup Melkaby +0% Sugar)	0.77	18	3.42	3.50	17.45
No.6 (100ml apricot nectar(25% date syrup Siew +75% sugar)	0.91	18	3.27	3.48	17.5
No. 7(100ml apricot nectar(50% date syrup Siew +50% sugar)	0.95	18	3.13	3.46	17.4
No. 8(100ml apricot nectar(75% date syrup Siew +25% sugar)	1.07	18	3.12	3.47	17.4
No. 9 (100ml apricot nectar (100% date syrup Siew +0% Sugar)	0.66	18	3.39	3.45	17.5

Moisture of apricot nectar(82.55%), date syrup Melkaby(25.38%) and date syrup Siew (25.47%). F.W.B: Fresh weight basis.

Table 3. Total carotenoids, Ascorbic acid and total phenolics contents of apricot nectar and date syrup.

Constituents Blends	Total carotenoids as β - carotene (µg/100g)	Vitamin C (mg/100g)	*Phenolic compounds (mg / 100 g)
	F.W.B	F.W.B	F.W.B
No.1(100ml apricot nectar (17.7 g sugar) control	233.30	9.6361	386.55
No.2(100ml apricot nectar (25% date syrup Melkaby +75% sugar)	40.96	25.2785	233.30
No.3(100ml apricot nectar (50% date syrup Melkaby +50% sugar)	32.45	27.5462	221.94
No.4(100ml apricot nectar (75% date syrup Melkaby +25% sugar)	21.05	23.2269	200.78
No. 5 (100ml apricot nectar (100% date syrup Melkaby +0% Sugar)	20.98	29.5523	231.15
No.6 (100ml apricot nectar (25% date syrup Siew +75% sugar)	22.36	32.6252	299.59
No. 7(100 apricot nectar (50% date syrup Siew +50% sugar)	32.37	89.9406	327.65
No. 8 (100ml apricot nectar (75% date syrup Siew +25% sugar)	32.98	31.1759	356.00
No. 9(100ml apricot nectar (100% date syrup Siew +0% Sugar)	16.018	13.5046	310.26

** Total phenolic compounds were measured as catechol. F.W.B: Fresh weight bas*

Blend No.8 (100ml apricot nectar (75% date syrup Siew +25% sugar) :-

The chemical composition of fresh blend no.(8) were given in table (2), results showed that it had 1.07% ash, 18% total soluble solids, 3.12% total titratable acidity, 3.47 pH value and 17.40% total sugars.

Also, data in table (3) and table (4) showed that the fresh blend contained 32.98 µg/100g total carotenoids (as β-carotene), 31.1759 mg/100g ascorbic acid, and 356.00 mg/100 g phenolic compounds (as catechol). As for minerals the fresh blend no. (8) Contained 67.992mg magnesium, 684.841mg sodium, 507.793mg potassium, 0.920mg manganese, 98.367mg iron, 48.083mg calcium and 6.41 lmg zinc /100g.

The high amount of ascorbic acid, phenolic compounds, sodium, iron and potassium in this blend may be due to its content of high percent of persimmon and carrots rich in one or more of these components. These

results coincide with those reported by Salem and Hegazi,(1971);Abd El-Hafiz *et al.*, (1980);Yousif *et al.*,(1982); Egea *et al.*, 2007; Agar & Polate, 1995 and FAO,(1997).

Table 4. Minerals content of apricot nectar and date syrup.

Const.	Mg (mg/10g)	Na (mg/100g)	K (mg/100g)	Mn (mg/100g)	Fe (mg/100g)	Ca (mg/100g)	Zn (mg/100g)
	F.W.B	F.W.B	F.W.B	F.W.B	F.W.B	F.W.B	F.W.B
Blends							
No. (1)	51.050	359.979	485.595	0.567	80.026	73.763	9.028
No. (2)	35.583	314.735	429.829	0.508	48.74	50.134	5.034
No. (3)	32.735	280.831	370.406	0.432	44.108	41.613	3.586
No. (4)	32.863	287.968	397.124	0.477	45.865	42.921	3.67
No. (5)	29.489	237.743	425.228	0.320	49.78	36.822	2.581
No. (6)	30.271	248.759	460.594	0.375	72.722	45.141	3.426
No. (7)	41.989	292.919	483.313	0.393	85.624	46.107	4.744
No. (8)	67.992	684.841	507.793	0.920	98.367	48.083	6.411
No. (9)	23.419	43.01	423.844	0.301	53.041	33.183	2.655

F.W.B: Fresh weight basis.

Blend No.9 (100ml apricot nectar (100% date syrup Siew + 0% sugar):-

Results in table (2) showed that fresh blend no. (9) Was 0.66% ash, 18% total soluble solids, 3.39% total titratable acidity, 3.45 pH value and 17.50% total Sugars.

On the other hand, results in table (3) and table (4) showed that this fresh blend No. (9) Contained 16.018 µg / 100 g total carotenoids (as β- carotene), 13.5046 mg / 100g ascorbic acid and 310.26 mg / 100 g phenolic compounds (as catechol). It was also observed that this fresh blend contained 23.419, 43.01, 423.844, 0.301, 53.041, 33.183 and 2.655 mg/100g for magnesium, sodium, potassium, manganese, iron, calcium, and zinc, respectively.

It could be noticed that blend No. (8) Had considerable amounts of phenolic compounds, potassium, iron and zinc this may be due to that it is formed of high percent of apricot and date which are rich in one or more of these components. These results were in accordance with those reported by Salem and Hegazi, (1971);Abd El-Hafiz *et al.*, (1980);Yousif *et al.*,(1982); Egea *et al.*, (2007); Agar & Polate, (1995) and FAO,(1997).

It can be concluded from the previous data of different blends that blend No. 8 (100ml apricot nectar(75% date syrup Siew +25% sugar) was the best blend for its high level in most levels studied components, total carotenoids (as β- carotene),vitamin C, phenolic compounds (as catechol), sodium, iron, potassium and zinc.The second blend was blend No.7 (100ml apricot nectar(50% date syrup Siew +50% sugar), which contained sufficient amount of total carotenoids (as β- carotene),vitamin C, phenolic compounds (as catechol), sodium, iron, potassium and zinc.While the third one was blend No. 6 (100ml apricot nectar (25% date syrup Siew +75% sugar) and the fourth was blend No.2 (100ml apricot nectar(25% date syrup Melkaby +75% sugar).

Estimates Rheological properties of apricot nectar and date syrup blends.

Rheological properties of apricot nectar and date syrup blends was measured using brickfield Remember DV III ultra , spindle No. HA-21 the results observed that the apparent viscosity doesn't given a good trend as by the addition of different concentrations of d.s (25, 50, 75%). The same trend was observed for (9) blends.

Sensory evaluation of the fresh blends:

Sensory evaluation of the formulated fresh blends is considered one of the main important tests affecting their acceptability of the prepared fresh nectars. The organoleptic characteristics of all formulas were tested by well trained panelists of 12 testers.

Data in table (6) illustrated the values of appearance, texture, color, odor, taste, and overall acceptability of the formulated blends. Formula No.6 (100ml apricot nectar(25% date syrup Siew +75% sugar); formula No.2 (100ml apricot nectar(25% date syrup Melkaby +75% sugar); formula No.3 (100ml apricot nectar(50% date syrup Melkaby +50% sugar) and formula No.7(100ml apricot nectar(50% date syrup Siew +50% sugar) showed the highest scores of appearance : 8.60 ; 8.50; 7.75 and 7.55 respectively.

Formula No. 2 (100ml apricot nectar(25% date syrup Melkaby +75% sugar) showed the highest scores of texture (8.50) followed by formula No.3 (100ml apricot nectar(50% date syrup Melkaby +50% sugar) 8.00; formula No.5 (100ml apricot nectar(100% date syrup Melkaby +0% sugar) 7.75 and formula No.7 (100ml apricot nectar(50% date syrup Siew +50% sugar) 7.70.

Table 5. Estimates Rheological properties of apricot nectar and date syrup.

Constituents	Viscosity	Shear stress	Share rate
Blends			
No.1(100ml apricot nectar (17.7 g sugar) control)	600 cp	57.2	9.3
No.2(100ml apricot nectar (25% date syrup Melkaby +75% sugar)	370 cp	36.6	9.3
No.3(100ml apricot nectar (50% date syrup Melkaby +50% sugar)	680 cp	49.3	9.3
No.4(100ml apricot nectar (75% date syrup Melkaby +25% sugar)	470 cp	40.9	9.3
No. 5 (100ml apricot nectar (100% date syrup Melkaby +.% Sugar)	560 cp	57.7	9.3
No.6 (100ml apricot nectar (25% date syrup Siew +75% sugar)	190 cp	29.8	9.3
No. 7(100 apricot nectar (50% date syrup Siew +50% sugar)	310 cp	28.8	9.3
No. 8 (100ml apricot nectar (75% date syrup Siew +25% sugar)	320 cp	36.3	9.3
No. 9 (100ml apricot nectar (100% date syrup Siew +0% Sugar)	480 cp	36.3	9.3

While formula No. (6); formula No.7; formula No.2 and formula No.3 (100ml apricot nectar(50% date syrup Melkaby +50% sugar) showed the highest scores for color being 8.60; 8.50;8.50 and 8.00, respectively.

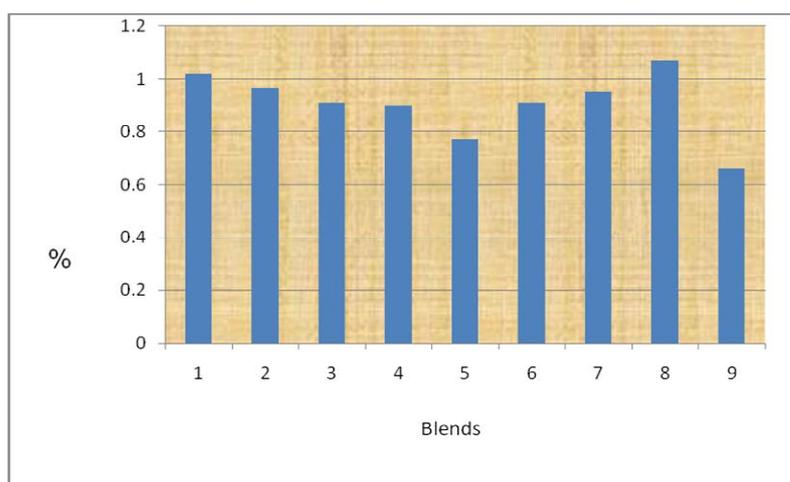
Formula No. (6) Showed the highest scores of odor (8.60) followed by formula No. (7) 8.20; formula No. (8) 8.20 and formula No. (2) 8.00.

Finally, formula No.(6) showed the highest scores for taste (8.70) followed by formula No.(2) 8.50; formula No.(7) 8.40 and formula No.(8) 8.40.From the results in Table (5) it could be concluded that formula No.(2), formula No.(6), formula No.(7)and formula No.(8) showed the highest overall acceptability while the other fresh blends were more or less highly enough accepted.

Table 6. Sensory evaluation of apricot nectar and date syrup.

Characteristics	Appearance (10)	Texture (10)	Color (10)	Odor (10)	Taste (10)	Overall acceptability (50)
Blends						
No.1(100 apricot nectar (17.7 g sugar) control)	9.03 ^a	8.50 ^a	9.03 ^a	8.50 ^a	8.50 ^b	43.56 ^a
No.2(100 apricot nectar (25% date syrup Melkaby +75% sugar)	8.50 ^b	8.50 ^a	8.50 ^b	8.03 ^c	8.50 ^b	42.03 ^b
No.3(100 apricot nectar (50% date syrup Melkaby +50% sugar)	7.75 ^c	8.03 ^b	8.03 ^c	8.03 ^c	8.03 ^c	39.87 ^c
No.4(100 apricot nectar (75% date syrup Melkaby +25% sugar)	7.50 ^d	8.03 ^b	6.50 ^{cd}	7.50 ^d	7.75 ^d	37.28 ^e
No. 5 (100 apricot nectar (100% date syrup Melkaby +0% Sugar)	7.50 ^d	7.75 ^c	6.03 ^f	7.50 ^d	7.50 ^e	36.28 ^f
No.6 (100 apricot nectar (25% date syrup Siew +75% sugar)	8.60 ^b	7.50 ^d	8.60 ^b	8.60 ^a	8.70 ^a	42.00 ^b
No. 7(100 apricot nectar (50% date syrup Siew +50% sugar)	7.55 ^d	7.70 ^c	8.50 ^b	8.20 ^b	8.40 ^b	40.35 ^c
No. 8 (100 apricot nectar (75% date syrup Siew +25% sugar)	7.45 ^d	7.50 ^d	6.60 ^d	8.20 ^b	8.40 ^b	38.15 ^d
No. 9 (100 apricot nectar (100% date syrup Siew +0% Sugar)	7.45 ^d	7.50 ^d	6.40 ^e	7.50 ^d	7.50 ^e	36.35 ^f
LS.D. (P≤0.05)	0.155	0.137	0.129	0.149	0.144	0.695

*All values are means of three replicates ±SD. Values in the same column with different letters (A, B, C, D, E and F) are significantly different (P ≤ 0.05)

**Fig. 1:** Ash content of apricot nectar and date syrup.

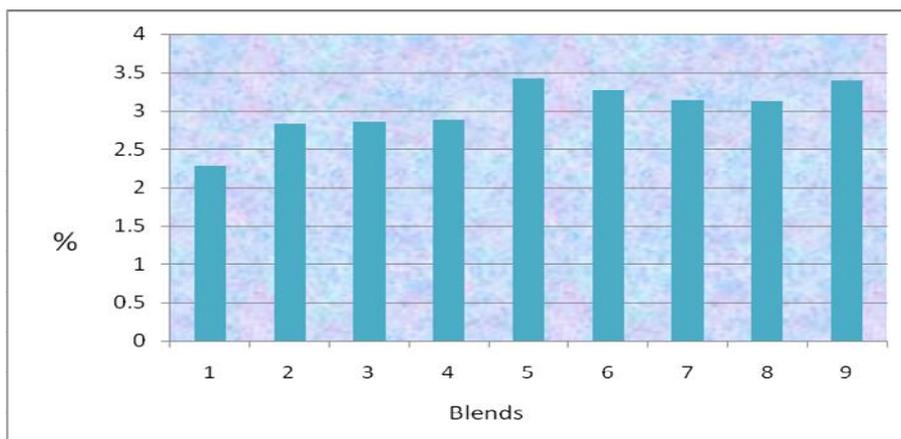


Fig. 2: T. Acidity content of apricot nectar and date syrup.

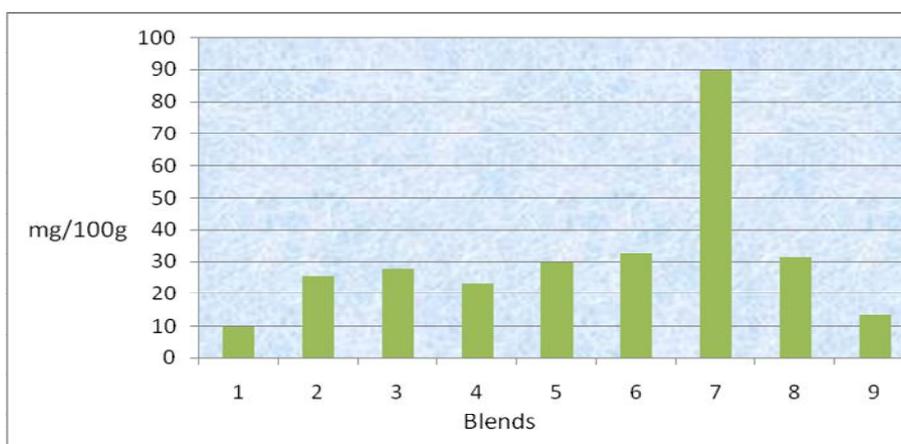


Fig. 3: Ascorbic acid content of apricot nectar and date syrup.

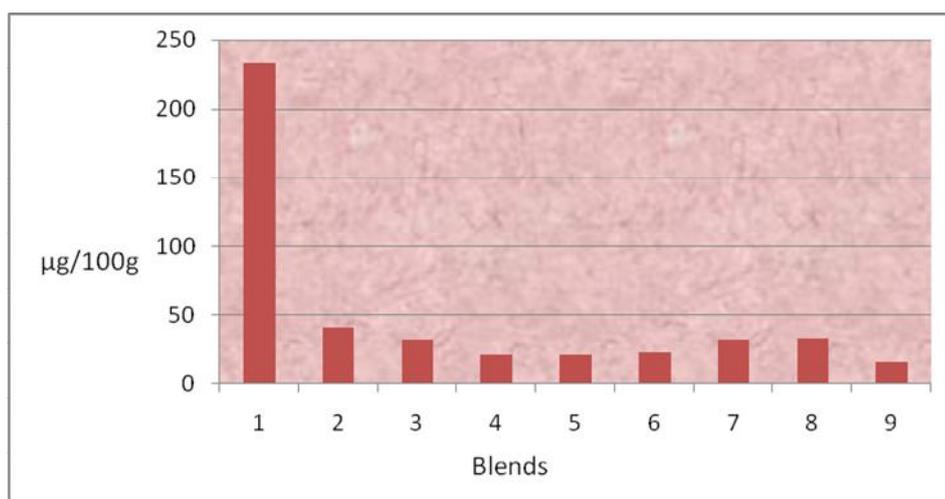


Fig. 4: Total carotenoids as β -carotene ($\mu\text{g}/100\text{g}$) content of apricot nectar and date syrup.

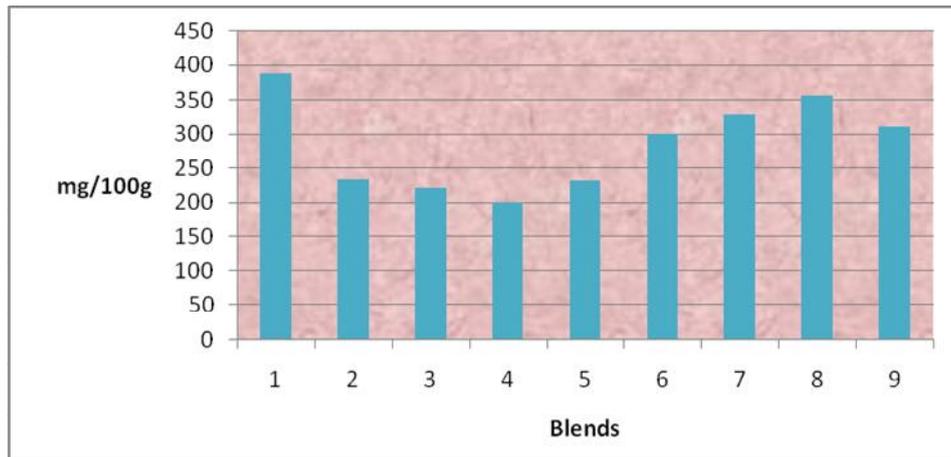


Fig. 5: Total phenolics (mg/100g) content of apricot nectar and date syrup.

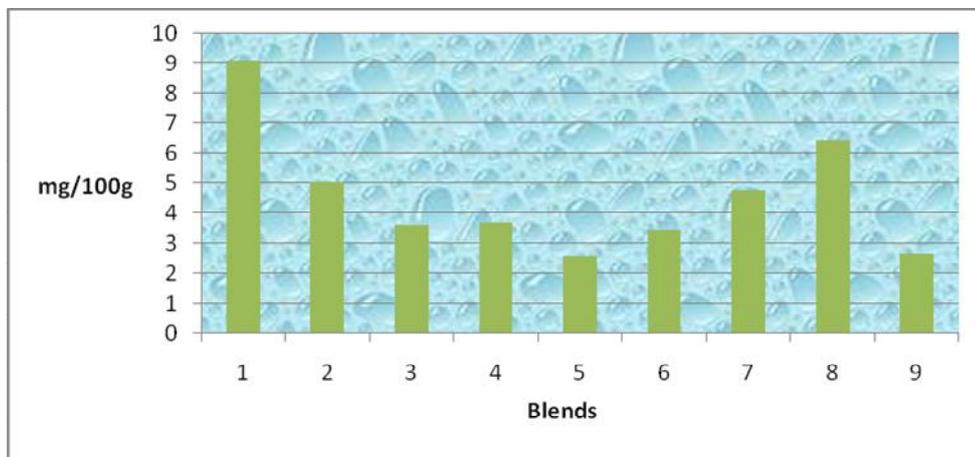


Fig. 6: Zinc (mg/100g) content of apricot nectar and date syrup.

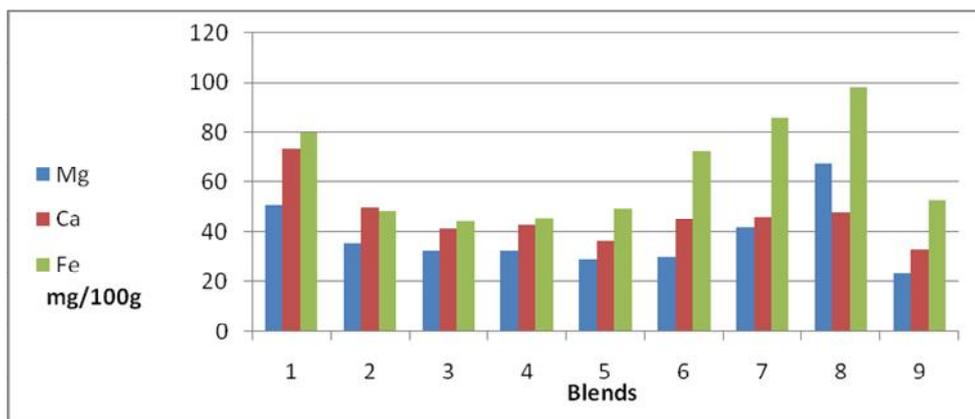


Fig. 7: Mg, Ca and Fe (mg/100g) contents of apricot nectar and date syrup.

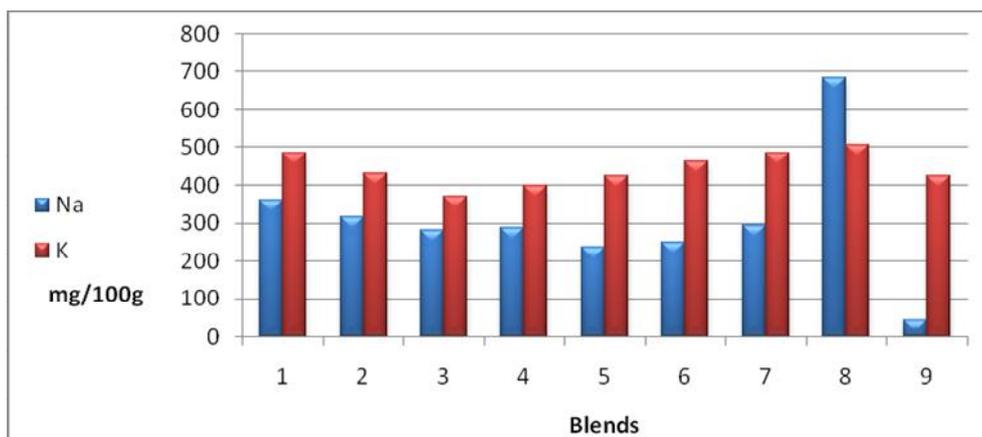


Fig. 8: Na and K (mg/100g) contents of apricot nectar and date syrup.

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