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PRODUCTION OF NEW DRINKS AND NATURAL SYRUP FROM UNTRADITIONAL SOURCES

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ABSTRACT

The present work was carried out to investigate producing new drinks and natural syrups from strawberry and blood orange juice mixtures whereas color of strawberry and blood orange juice are similar due to anthocyanin had been found in their juices and the nutrition value of each juices is high.

This research aims to utilization of blood orange juice manufacturing to increase the cultivated area and the production especially in new lands.

Treatments comprised four different blended drinks and syrups representing (100:0), (75:25), (50:50) and (25:75) (w:w) from strawberry and blood orange juices respectively.

Results showed that the value of total solids, total soluble solids, total acidity, total sugars and carotenoids were higher in blood orange juice compared to that in strawberry juice. Meanwhile, the anthocyanin and viscosity were higher in strawberry juice than that in blood orange juice.

Results concerning the chemical and physical properties of new drinks produced from blended strawberry and blood orange juices show that slight increase in total solids, total soluble solids, total sugars and carotenoids due to their high contents in fresh blood orange juice . Viscosity of drinks produced by adding sodium alginate (0.2%) recorded high viscosity than pectin. While drinks produced without any stabilizers recorded lowest values. Results indicated that no considerable changes of total solids, total soluble solids, total sugars of syrup produced with strawberry juice only or with blended with blood orange juice. While the syrups prepared with strawberry juice and with 25% and 50% blood orange juice recorded slight increase of ascorbic acid, anthocyanin and viscosity than that of 75% blood orange juice.

Organoleptic evaluation showed that drinks prepared from blended strawberry and blood orange juices at the ratio (75:25), (50:50) respectively and by adding pectin as stabilizer agent recorded high score than other treatments. Organoleptic evaluation of new strawberry and blood orange natural syrups indicated that syrups prepared from strawberry and blood orange juice at the ratio (50:50) recorded higher scored of all studied properties followed by the syrups prepared with (75:25) strawberry and blood orange juice respectively. Accordingly, it can be recommended that the new natural drinks could be successfully produced from blended strawberry and blood orange juice at the ratio (75:25), (50:50) respectively and by adding pectin (0.2%) as stabilizer. Also new strawberry and blood orange natural syrups could be successfully produced using blended of strawberry and blood orange juice at the ratio (50:50).

INTRODUCTION

The total world production of strawberry and orange were 3123.000 and 61094.000 metric tons respectively during 2001. Egypt is considered the first country for orange production and the second country for strawberry

Table (1): Constituents of new drinks from strawberry and bloody orange juices mixtures:

Treatments / Constituents	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Strawberry juice	80 ml	80 ml	80 ml	80 ml	60 ml	60 ml	60 ml	60 ml	40 ml	40 ml	40 ml	40 ml	20 ml	20 ml	20 ml	20 ml
Bloody orange juice	-	-	-	-	20 ml	20 ml	20 ml	20 ml	40 ml	40 ml	40 ml	40 ml	60 ml	60 ml	60 ml	60 ml
Sugar solution (16°Brix)	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml	120 ml
Citric acid	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm	4.0 gm
Pectin	-	0.4 gm	-	-	-	0.4 gm	-	-	-	0.4 gm	-	-	-	0.4 gm	-	-
Sodium Alginate	-	-	0.4 gm	*H	-	-	0.4 gm	*H	-	-	0.4 gm	*H	-	-	0.4 gm	*H
Sodium benzoate	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm

*H : Homogenization

Table (2): Constituents of new syrups from strawberry and bloody orange juices mixtures:

Treatments / Constituents	A	B	C	D
Strawberry juice	100%	75%	50%	25%
Bloody orange juice	-	25%	50%	75%
Sugar	59.5°Brix	59.5°Brix	59.5°Brix	59.5°Brix
Citric acid	3 gm/100 gm sugar	3 gm/100 gm sugar	3 gm/100 gm sugar	3 gm/100 gm sugar
Sodium benzoate	0.2 gm	0.2 gm	0.2 gm	0.2 gm

Table (3): Chemical and some physical properties of fresh strawberry and blood orange juices.

Properties	Strawberry juice	Blood orange juice
Moisture %	90.21	87.65
Total solids %	9.79	12.35
Total soluble solids%	9.20	12.10
Total acidity %	1.05	1.27
Total sugars%	6.31	9.63
Reducing sugars%	3.89	5.18
Non reducing sugars%	2.42	4.45
Ascorbic acid mg/100 gm	59.73	58.69
Carotenoids mg / 100 gm	1.51	1.97
Anthocyanin mg/100 gm	4.15	2.24
Viscosity (centipoise)	10.96	6.13

2-Chemical and physical properties of new drinks produced from blended strawberry and blood orange juices:

Results in Table (4) show the chemical and physical properties of new drinks produced from blended strawberry and blood orange juices. From this Table it could be noticed that drinks prepared with blended blood orange juice with strawberry juice caused slight increase in total solids, total soluble solids, total sugars and carotenoids because these contents in fresh blood orange juice was higher than fresh strawberry juice. The data in the same Table show slight increase of anthocyanin in beverages prepared with strawberry juice only these results are inagreement with Speers (1987). The same Table show the viscosity of drinks produced by adding sodium alginate (0.2%) recorded high viscosity than pectin. While drinks produced without any stabilizers were recorded lowest values. These results could be explained by the opinion of Soliman (1999) who found that natural beverages prepared from citrus peels concentrates by adding sodium alginate as a stabilizer recorded high values of viscosity than carboxymethyl celulose and pectin .

3-Chemical and physical properties of new syrups produced from strawberry and blood orange juices:

Results in Table (5) show the chemical and physical properties of new syrups produced from strawberry and blood orange juices. It could be indicated that no considerable changes of total solids, total soluble solids, total sugars of syrups produced with strawberry juice only or with blended with blood orange juice. While the syrups prepared with strawberry juice and with 25% and 50% blood orange juice recorded slight increase of ascorbic acid, anthocyanin and viscosity than that of 75% blood orange juice.

4-Organoleptic evaluation of strawberry and blood orange mixture drinks:

The organoleptic evaluation of strawberry and blood orange drinks is presented in Table (6). The results showed that drinks prepared from strawberry and blood orange juices at the ratio (75:25), (50:50) respectively and by adding pectin as stabilizer flowed by sodium alginate recorded high score than other treatments. Otherwise, the drinks treated with homogenization recorded lower scores because their was no stabilizer added.

Table (4): Chemical and some physical properties of new drinks produced from strawberry and bloody orange juices:

Properties	*Treatments															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Moisture %	84.91	85.07	84.85	84.61	84.94	84.72	84.52	84.07	84.63	84.77	84.20	84.01	85.19	84.89	84.56	84.30
Total solids %	15.09	14.93	15.15	15.39	15.06	15.28	15.48	15.93	15.37	15.23	15.80	15.99	14.81	15.11	15.44	15.70
Total soluble solids%	14.20	14.50	14.60	14.80	14.20	14.60	14.90	15.00	14.20	14.65	15.00	15.10	14.00	14.30	14.50	14.90
Total acidity %	0.62	0.66	0.60	0.64	0.54	0.59	0.68	0.55	0.61	0.63	0.65	0.69	0.76	0.74	0.71	0.76
Total sugars%	13.50	13.74	13.82	14.03	13.52	13.83	14.16	14.23	13.56	13.91	14.28	14.37	13.32	13.59	13.76	14.20
Reducing sugars%	1.60	1.62	1.65	1.68	1.73	1.80	1.83	1.85	1.79	1.86	1.90	1.89	1.91	1.95	1.97	1.93
Non reducing sugars%	11.90	12.12	12.17	12.35	11.79	12.03	12.33	12.38	11.77	12.05	12.38	12.48	11.41	11.64	11.79	12.27
Ascorbic acid mg/100 gm	24.03	24.10	23.90	22.49	23.41	23.67	23.80	21.06	23.50	22.98	22.87	20.07	23.10	22.96	22.83	20.01
Carotenoids mg / 100 gm	0.60	0.58	0.64	0.59	0.62	0.68	0.64	0.69	0.71	0.73	0.78	0.76	0.74	0.78	0.80	0.82
Anthocyanin mg/100 gm	1.64	1.58	1.61	1.53	1.45	1.41	1.38	1.36	1.25	1.23	1.29	1.27	1.15	1.21	1.18	1.24
Viscosity (centipoise)	4.01	6.93	10.28	3.82	3.94	6.86	9.96	3.79	3.85	6.61	9.72	3.69	3.74	6.49	9.17	3.48

* These treatments are shown in Table (1).

Table (5): Chemical and some physical properties of new syrups produced from strawberry and bloody orange juices:

Properties	*Treatments			
	A	B	C	D
Moisture %	35.38	34.29	35.34	35.11
Total solids %	64.62	65.71	64.66	64.89
Total soluble solids%	59.50	60.00	59.50	59.40
Total acidity %	3.53	4.34	2.77	2.94
Total sugars%	54.89	55.17	55.09	54.97
Reducing sugars%	5.52	5.61	5.43	5.38
Non reducing sugars%	49.37	49.56	49.66	49.59
Ascorbic acid mg/100 gm	35.38	32.21	31.91	28.93
Carotenoids mg / 100 gm	0.75	0.81	0.88	0.92
Anthocyanin mg/100 gm	2.07	1.87	1.60	1.39
Viscosity (centipoise)	72.50	75.10	70.00	66.40

* These treatments are shown in Table (2)

Table (6): Organoleptic evaluation of strawberry and bloody orange mixture drinks:

Properties	Maximum scores	*Treatments															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Color	10	9.10	8.93	6.00	5.66	9.16	9.33	9.00	6.33	9.33	8.83	8.50	7.50	9.00	9.00	6.00	5.66
Flavor	10	8.87	8.83	9.43	8.50	8.93	9.06	9.03	8.45	8.50	9.10	8.83	8.53	8.83	9.06	9.03	7.50
Appearance	10	9.00	9.00	5.33	5.00	9.13	9.06	8.93	6.00	9.00	9.06	8.83	8.33	9.00	8.66	5.33	5.00
Overall acceptability	10	8.90	8.92	6.92	6.38	9.07	9.15	8.98	6.92	8.94	8.99	8.72	8.12	8.94	8.90	6.78	6.38
Total	40	35.87	35.68	27.68	25.54	36.29	36.60	35.94	27.70	35.77	35.98	34.88	32.48	35.77	35.62	27.14	24.54

* These treatments are shown in Table (1).

Table (7): Organoleptic evaluation of strawberry and bloody orange natural syrup.

Properties	Maximum scores	*Treatments			
		A	B	C	D
Color	10	9.00	9.33	9.53	8.66
Flavor	10	8.50	9.16	9.18	8.50
Appearance	10	9.00	9.23	9.46	9.06
Overall acceptability	10	9.00	9.13	9.33	8.76
Total	40	35.50	36.85	37.50	34.98

* These treatments are shown in Table (2)

5-Organoleptic evaluation of new strawberry and blood orange natural syrups:

The data in Table (7) indicated that syrups prepared from strawberry and blood orange juice at the ratio (50:50) recorded higher scored of all studied properties followed by the syrups prepared with (75:25) strawberry and blood orange juice respectively.

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إنتاج مشروبات جديدة وشراب طبيعي من مصادر غير تقليدية

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استهدف هذا البحث دراسة إنتاج مشروبات جديدة وشراب طبيعي من مخاليط عصائر الفراولة والبرتقال أبو دمه وذلك للاستفادة من عصير البرتقال أبو دمه تكنولوجيا فى مجال التصنيع الغذائي حيث أنه لا يستغل حاليا فى إنتاج المشروبات والعصائر بسبب لونه الأحمر. وقد أمكن الاستفادة منه بعمل مخاليط مع عصير الفراولة نظرا لتشابه اللون وارتفاع القيمة الغذائية لكل منهما.

وقد أجريت ٤ معاملات للمقارنة بنسب خلط لكل من المشروبات والشراب (١٠٠ : ٠) ، (٧٥ : ٢٥)، (٥٠ : ٥٠) و (٢٥ : ٧٥) (وزن/وزن) من عصير الفراولة والبرتقال أبو دمه على الترتيب. وقد أوضحت النتائج ارتفاع قيم المواد الصلبة الكلية والمواد الصلبة الذائبة الكلية والحموضة الكلية والسكريات الكلية والكاروتينات فى عصير البرتقال أبو دمه عن عصير الفراولة. بينما تبين ارتفاع نسبة صبغة الانثوسيانين واللزوجة فى عصير الفراولة عن عصير البرتقال أبو دمه. كما أوضحت نتائج تحليل الصفات الكيماوية والطبيعية للمشروبات المنتجة من مخاليط عصائر الفراولة والبرتقال أبو دمه ارتفاع ضئيل فى نسب المواد الصلبة الكلية والمواد الصلبة الذائبة الكلية والسكريات الكلية والكاروتينات بسبب ارتفاع نسبها فى عصير البرتقال أبو دمه عن عصير الفراولة. كما تبين أن قيم اللزوجة فى المشروبات المصنعة والمضاف لها ألجينات صوديوم بنسبة ٢ر ٠% أعلى من تلك المضاف لها بكتين بنفس النسبة بينما سجلت المشروبات غير المضاف لها مثبتات أقل قيم فى اللزوجة.

وقد وجد أنه لا يوجد اختلاف واضح في نسب المواد الصلبة الكلية والمواد الصلبة الذائبة الكلية والسكريات الكلية فى الشراب المركز المصنع من عصير فراولة فقط أو المضاف له عصير برتقال أبو دمه. بينما وجد ارتفاع بسيط فى نسب حامض الاسكوربيك والانثوسيانين وقيم اللزوجة فى الشراب المصنع من عصير الفراولة بنسبة ١٠٠% أو المضاف له عصير برتقال بدمه بنسبة ٢٥ ثم ٥٠% عن الشراب المصنع باضافة ٧٥% من عصير البرتقال بدمه.

وقد أوضحت نتائج التقييم الحسى أن المشروبات الطبيعية المحضرة باستعمال مخاليط من عصير النراولة والبرتقال أبو دمه بنسب (٧٥ : ٢٥) و (٥٠ : ٥٠) على الترتيب مع إضافة البكتين كمادة مثبتة كانت هي الأفضل من حيث القابلية العامة عن المعاملات الأخرى.

كما أوضحت نتائج التقييم الحسي للشراب الطبيعى المركز المصنع من مخاليط عصير الفراولة والبرتقال أبو دمه أن الشراب المصنع باستخدام نسبة (٥٠ : ٥٠) من كلا العصيرين هو الأفضل من حيث القابلية العامة يليه المنتج باستخدام نسبة (٧٥ : ٢٥) من عصير الفراولة والبرتقال أبو دمه على الترتيب.

بناء عليه يوصى بإنتاج مشروبات طبيعية جديدة من مخاليط عصير الفراولة والبرتقال أبو دمه بنسبة (٧٥ : ٢٥) ، (٥٠ : ٥٠) على الترتيب مع إضافة البكتين بنسبة ٢ر ٠% كمادة مثبتة.

كما يمكن بنجاح إنتاج شراب طبيعي باستخدام مخلوط عصير الفراولة والبرتقال أبو دمه بنسبة (٥٠ : ٥٠).