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PHYSICO-CHEMICAL CHARACTERISTICS OF SOME FRUIT JUICE BLENDS AND THEIR ORGANOLEPTIC EVALUATIONS.

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ABSTRACT

This study was conducted to study the physico-chemical characteristics of some juices and the possibility of producing fortified and enhanced blended juices . Physico-evaluation showed that pumpkin juice contains 7.30 % T.S.S, 0.730 browning index, 1.83 centipoise/s for viscosity and 1.782 turbidity. Mango juice gave a higher score of viscosity being 3.22 centipoise/s,color value, turbidity and T.S.S% orange juice gave high score of pH 3.80. Concerning chemical analysis the data indicated that pumpkin juice contains high amount of total carotenoids 3.1 mg/100g,while mango juice contains of 4.31mg/100g carotenoids and 10.47 % total sugars. Orange juice contains 42.5mg/100g ascorbic acid and 1.35 % total acidity. Sensory attributes ascertained that pumpkin/mango/orange at the ratio1:1:1,pumpkin/mango/cantaloupe 1:1:1, pumpkin/orange 2:1 gave a best sensory attributes, and confirmed the physico-chemical analysis of pumpkin/mango/orange juice at the ratio 1:1:1which are characterized by higher content of T.S.S%, total acidity, ascorbic acid, total , reducing and non reducing sugars. Finally the mixed juice have the potential to be better and healthier diet.

INTRODUCTION

Mixed juices and their derivatives such as, the nectars prepared therefore are considered as the important untraditional product. Now it is largely distributed in the world wide markets due to pleasant mouthful feel, taste, color and aroma perception, as technological and sensorial advantages. Moreover it would lead to health promotion as therapeutically beverage and also to gain excessive economical benefits based on a lot of consumption.

New technologies, production practices and food manufacturing processes are being developed to meet the society excessive needs . Food companies are developing new foods (including functional foods) with better nutritional properties. Juice mixtures containing fruits and vegetables have the potential to contain a better and healthier diet, *Rodrigo etal; (2003)*

In order to obtain the best product with a consistent flavor, juice from several cultivars may be needed in blends, to provide the best balance between acidity, sweetness, aroma and astringency. *Chang etal; (1994)*

In Egypt the annual production of pumpkin and orange fruits represents 3.30% and 2.8% of the world production and 52.34% and 42.23% of the Africa production respectively *(FAO, 2007)*.

The Egyptian production of mango and cantaloupe fruits was 1.38% and 2.05% of the total world production and 5.15% and 5.93 of Africa production respectively *(FAO, 2004)*.

Pumpkin fruits are considered one of the important sources of carotenoids (Pro. Vitamin A) , ascorbic acid, fibers and minerals. Carotenoids in pumpkin include beta-carotene, lutein and luteoxanthin. *Hidaka, etal; (1987) , Gordon etal (1985) , Vucetic etal; (1989) , Tee and Lin (1991) , Woodall etal; (1997) , Lingle etal; (1993).*

Pumpkin (cucurbita maxima) fruit is an important food in many Asian countries. This fruit was used to fortify of several food products such as (milk products, Asian noodles , ice cream, children foods and wheat flour by replacing 15% pumpkin powder to increase its carotenoids content). *Jirapa, etal; (2001), Chi-Ho-lee etal; (2002).*

Pumpkin fruits contain 87.8 % moisture, 5.62mg/100g total acidity, 70.21 mg/100gm ascorbic acid, 14.86g/100g total sugars, 6.74g/100g, reducing sugars 8.12g/100g, non reducing sugars, 6.02% total soluble solids, 240mg/100g potassium , 14.2 mg/100g magnesium, 0.4 mg/100g iron, 0.13 mg/100g copper and total solids were 12.08% *Lingle etal; (1993) , Sheashea, (2005), Nagib, etal; (2005).*

Pumpkin fruits contain beta-carotene which not only serves as valuable source of vitamin-A, but also as a potent antioxidant. Also contain scavenging free radicals and quenching singlet oxygen by this latter property. Beta-carotene is understood to reduce the risk of development of certain types of cancer, *Tee and Lin (1991), Bafidu, etal; (1995) , Jirapa, etal; (2001)*

The Baladi mango juice contained 11.4 to 13.6 % total soluble solids, 0.89 to 1.48 % total acidity (as a citric acid), 8.79 to 10.72% total sugars, 4.3 to 7.8%reducing sugars, 2.5 to 4.6 % non reducing sugars, 46.2 to 69.8 mg/100g ascorbic a cid, 0.194 to 0.269 mg/100g carotenoids, 24.2 to 31.9 mg/100g amino nitrogen and 56.9-48.7 mg/100g pectic substances *Askar, (1981) , Mohammed, (1990), Massri , (1996) , Abd El-Hady, (2001) , Nagib, etal; (2005)*

Baladi mango juice is considered as an important sources of carotenoids. ascorbic acid and minerals Abd *El-Hady, (2001), Mekky (1999) , Jagtiani etal; (1988) and Falade, etal; (2004).*

Orange juice is considered as an excellent source of vitamin C and a good source of folic acid and potassium also orange juice was a good source of antioxidant (ascorbic acid tocopherols and another phenol antioxidants)*Joe, etal; (2001), Abd El-Aal, (2003) , Sherbiny, etal; (1980), kefford (1970) , Vinson, etal; (2001) and Khater (2003).*

Orange juices contain 12.13% total soluble solids, 88.90% moisture, 9.18% total sugars,4.78% reducing sugars, 4.40% non reducing sugars, 3.68 pH value, 1.29 mg/100g total acidity (as citric acid) and 56.3%. ascorbic a cid content respectively ,*Abd El-Aal, (2003) , El-Hamzy (1988) , Akinyele, etal; (1990) and Niam, etal; (1997).*

Cantaloupe fruit contains, 9.50% total soluble solids, 89.50% moisture, 0.15 mg/100g total acidity (as citric acid) , 5.60 pH value, 7.50% total sugars, 4.63% reducing sugar, 2.87% non reducing sugars , 24.00 mg/100g ascorbic acid content and 0.67mg/100g total carotenoids content on fresh weight basis respectively, *Mekky, (1999). Abou –Zaid, (1995) Bafidu, etal; (1995),Ghaleb, (1994) , Chadha, etal; (1993) and Glenneer, etal; (2004)*

Cantaloupe fruits phenol antioxidants, ascorbic acid and minerals *Vinson, etal; (2001) , Chadha, etal; (2002) , Bafidu, etal; (1995)*

The aim of this work was undertaken to study the possibility of producing fortified and enhanced some of vegetables juices of (pumpkin and cantaloupe fruits) and or some of fruit juices such as (mangoes and oranges) by mixing them at varying participating ratios based on sensorial and chemical analysis.

MATERIALS AND METHODS

Materials

Pumpkin fruits (Cucurbita Maxima) characterized by bright to orange color were purchased from Gharbia local market, Egypt.

Mango fruits (Mangifira indica-Variety Baladi) were purchased from local market in Gharbia Governorate, Egypt.

Orange fruits (Citrus Seninsis. Variety Baladi) were purchased from local market in Giza Governorate, Egypt.

Cantaloupe fruits (Cucumis . Melo . L .Variety Nand) were purchased from local market in Gharbia governorate, Egypt.

All fruits used in this study were at the ripe stage of maturity.

Extraction of fruit juice:

Ripe fruits were washed under tap water then manually peeled. Orange fruits were cut into small pieces ,mixed well then, filtered using cheese cloth.

Preparation of blended juices:

Pumpkin, mango, orange and cantaloupe juices were mixed at the ratios of 1:1 , 2:1 and 3:1 from pumpkin : mango juices , pumpkin : orange juices and pumpkin : cantaloupe juices at the ratios of 1:1:1 , 2:1:1 and 3:1:1 from pumpkin : mango : orange juices, Pumpkin : orange : cantaloupe and pumpkin : mango : cantaloupe.

All blends were sensory estimated for taste, color, aroma and overall acceptability.

After testing the organoleptic parameters, five mixed juices based on having the optimum scores were prepared as follows: Pumpkin: mango juices and pumpkin: orange juices at the ratio of (2:1) and Pumpkin: mango :orange juices , pumpkin: orange: cantaloupe juices and pumpkin: mango : cantaloupe juices at the ratio of 1:1:1 , 3:1:1 and 1:1:1.

Analytical methods:

Determination of total soluble solids ,Ash ,pH value and total acidity:- are determined according to the method of *A.O.A.C (1990)*

Carotenoids measurement:

Carotenoids were determined according to the method of *Wettestein, etal; (1957)* as follow:ten milliliters of juice were mixed with thirty milliliters of 85% acetone solution. The color formed was measured at 440 nm , 644 nm and 662 using jenway b40 5uv/vis spectrophotometer. Acetone (85%) was used as a blank for each wavelength. The amounts of carotenoids were calculated according to the following equation:-

Chlorophyll. a =(9.784 x E 662)-(0.99 x E644)=mg/ml
Chlorophyll. b =(21.426 x E 644)-(4.b5 x E 662) =mg/ml
Carotenoids = (4.495 x E 440) -0.268(chl. a- chl. b) mg/ml

$$\text{Carotenoids mg/100g} = \frac{\text{mg/L x extraction volume x 100}}{\text{Sample weight x 100}}$$

E= Absorbance at the indicated wavelength.
Ascorbic acid determination:-
Ascorbic acid was measured using 2,6 dichlorophenol indophenol according to the method of *A.O.A.C (1995)*

Browning index measurements:-

Juices and nectars were centrifuged at 2000 rpm for 5 min.The supernatant was decanted and diluted with an equal volume of 95% ethanol and centrifuged again .The supernatant was filtrate through whatman No.1 paper .The browning index of the filtrated was measured at 420 nm using spectrophotometer (Jen way b 40 5 uv/vis) using ethanol as blank according to, *Klim and Nagy (1988)*

determination of turbidity:-

Turbidity was measured in the separated serum at 660 nm using uv/vis spectrophotometer (Jen way) as described by ,*Asker and Treptow, (1993)*

Color measurement:

Color of nectars was measured using Hunter Lab instrument at the Horticultural research institute, Agricultural research center, Egypt. Model D 65 color and color difference meter (C1E LAB 10/D 65). Results were expressed as load per gram, where L* value (indicates of lightness), a* value indicates of (redness to lightness) and the b* value indicates (Yellowness to blueness) as described by *Hunter, (1959)*

Determination of viscosity :

Viscosity of Juices and nectars were determined by digital Brookfield (DV.E) viscometer at rotation speed 30 rpm using spindle No.1 at 25° C as described by *Yen and Lin, (1996)*
and expressed as Centipoise/ second.

Determination of total, reducing and non reducing sugars: as described by *Smith etal ; (1956).*

Determination of Minerals contains: *By using Atomic Absorption Spectrometry (Solar A .A .Series Spectrometer Thermo Elemantal).*

Sensory evaluation :

Different extracted Juices and nectars were evaluated organoliptically as reported by *Chan and Cavaletto, (1982).* The sample were Judged through ten members (ten panelists) of the staff located at the Horticultural Research Department Food Technol,Res ,Institute,Agricultural ,Research ,Center, Egypt. The panelists were requested for taste, color, aroma and overall acceptability, using ten point hedonic scale ranging between 1 to 10, where 9-10 equals very good 6-8 as good, 3-5 as poor and from0 to 2 were considered as refused sample .

Statistical analysis:
The data of sensory evaluation were statistically analyzed using program SPSS 10 version using one way ANOVA procedure *(SPSS, 1990).*

RESULTS AND DISCUSSION

Effect of participating ratios of mixed juices on organoleptic parameters:

In order to investigate the synergistic behavior of the mixing process of the tasted juices as well as the nectars prepared there from to give a balance in their physico-chemical analysis were carried out in this study. Sensory analysis of food products is of primary importance, since it reflects the consumers preference for a respective food product and can also play a vital role in the marketing operation. *Mohamed, (2003).*

Eighteen mixing process between pumpkin, mango, orange and cantaloupe juices, at varying participating ratios were conducted and judged in their organoleptic parameters such as color, taste, aroma and overall acceptability. (Table 1).

After perception, the judgment members preferred some of participating ratios of mixed juices and five formulas have been chosen as the best mixing process to prepare the various nectars in the recent work (Table 2).

Pumpkin : mango: orange juice at the ratio of 1:1:1 had the highest scores in their parameters of color, taste, aroma and overall acceptability, which were recorded 9.66 $\pm$ 0.28, 8.50 $\pm$ 0.57 ,8.66$\pm$ 0.57 and 89.44 receptively. The formula of pumpkin : mango : cantaloupe at the ratio of 1:1:1.attained the second grade of mixed formula followed by the pumpkin: mango at the ratio of 2:1, pumpkin: orange : cantaloupe at the ratio of 3:1:1 and the pumpkin : orange at the ratio of 2:1 came at the final grade

Data in table (1) show that the pumpkin: cantaloupe juice at different ratios had the lowest score in their organoleptic parameters, though they have not been chosen in this study.

Pumpkin is rich in fibers, color and is very cheap besides its existence overall the year. Sheashea, (2005). Several authors vitalized the pumpkin fruits in various mixing processing such as mixed juice. *Chin Prahast, etal; (2002)*, sheets. *Sheashea, (2005)* Noodles. *Chi-Ho-lee, etal; (2002).*

The data of statistical analysis of organoleptic evaluation of perceptive various juice blends declared significant differences between the five chosen mixed juices and other tested blends in their organoleptic parameters attributes such as color, taste, aroma and overall acceptability (Table 1).

Table (1) Organoleptic evaluation of various fresh mixed juices at different ratios

NO	Parameters / mixed juices	Mixing ratio	Color(10) Mean±S.D	Taste(10) Mean± S.D	Aroma(10) Mean±S.D	Overall Acceptablity %
1	P :M	1:1	a 9.50±0.50	abcd 7.50±0.50	bcd 7.50±0.50	81.66
2	P :M	2:1	a 9.66±0.28	ab 7.83±0.76	bcd 7.50±0.50	83.33
3	P :M	3:1	a 9.33±0.57	def 6.50±0.50	ef 6.33±0.57	73.88
4	P :O	1:1	b.c 7.00±0.00	efgh 6.00±0.00	ef 6.33±0.57	64.44
5	P :O	2:1	b.c 7.16±0.28	efg 6.33±0.57	def 6.66±0.57	67.22
6.	P :O	3:1	cd 6.66±0.57	ghi 5.33±0.57	def 5.83±0.28	59.44
7	P :C	1:1	d 5.83±0.28	hij 5.00±0.00	gh 5.00±0.00	52.77
8	P :C	2:1	cd 6.66±0.57	J 4.16±0.28	h 4.33±0.57	50.55
9	P :C	3:1	cd 6.16±0.76	ij 4.33±0.57	gh 5.00±0.00	51.66
10	P :M:O	1:1:1	a 9.66±o.28	a 8.50±0.50	a 8.66±0.57	89.44
11	P :M:O	2:1:1	a 9.33±0.57	abc 7.66±0.57	bc 7.66±0.57	78.88
12	P :M:O	3:1:1	a 9.33±0.57	bcde 6.83±0.76	def 6.66±0.57	76.11
13	P :O:C	1:1:1	cd 6.33±0.57	egh 5.66±0.57	ef 6.33±0.57	61.11
14	P :O:C	2:1:1	cd 6.83±0.76	efgh 6.00±1.00	ef 6.16±0.76	63.33
15	P :O:C	3:1:1	b 7.83±0.28	egh 6.66±0.57	ef 6.00±0.00	68.33
16	P :M:C	1:1:1	a 9.33±0.57	ab 7.83±0.76	ab 8.00±0.00	83.88
17	P :M:C	2:1:1	a 9.33±0.57	bcde 6.83±0.28	cde 6.83±0.76	76.66
18	P :M:C	3:1:1	a 9.00±1.0	efg 6.33±0.57	ef 6.16±0.28	71.66

P=Pumpkin M=Mango O=Orange C=Cantaloupe

Table (2): Optimum participating ratios of different mixed juices.

Sample	Mixing fresh juices	Mixing ratio
1	Pumpkin : mango : orange	1:1:1
2	Pumpkin : mango : cantaloupe	1:1:1
3	Pumpkin : mango	2:1
4	Pumpkin : orange : cantaloupe	3:1:1
5	Pumpkin : orange	2:1

Phiseco-chemical constituents of natural and mixed juices and the mixed:

Phiseco-chemical constituents of fresh juices

Phiseco-chemical constituents of fresh pumpkin , mango , orange and cantaloupe juice are shown in table (3). Pumpkin juice contains 7.3% total soluble solids , 3.85 pH value, 0.7% total acidity,6.37% total sugars and 3.1mg /100g total carotenoids respectively.

Respectively.

Small amount of reducing sugars and ascorbic acid were detected. These results are in agreement with those of *lingle,etal,(1993)* and *Nagib,etal;(2005).*

Pumpkin fruits are considered one of the important source of carotenoids as pro-vitamin-A .*Hidakat,etal;(1987).*Concerning color value, from Fig.(1) it can be seen that the parameters of a* value which indicates redness to greenness and b*value which indicates yellowness to blueness were detected as high values, recorded 9.97 and 31.12 respectively. This means that the pumpkin juice contains high amount of carotenoids being confirmed previously . Also Table (3) shows that pumpkin juice and orange juice contained moderate viscosity which were 1.83 and 1.71 centipoise respectively.

Color value determined using hunter lab reflects that the orange juice contained a small amount of carotenoids led to decreasing of a* value than the pump lain one, which was 3.81Fig (1) .

Concentrating mango pulp table (3) illustrates that mango pulp had a high percent of total soluble solids, total carotenoids and total sugars. They were 12.50 % 4.31 mg /100g , 10.74% respectively also Fig (1) showed that a* and b* value 9.79 and 31.21 As higher color value of mango pulp as a result of higher amount of total carotenoids so, *Safia (1997)* reported that the deep yellow color of carrot drinks is due to the high concentration of carotenoids in carrots. The obtained results coincide with those of *Naresh Kumer(1997),Mekky(1999) and Youssef, etal;(2004).*

Table (3) also shows that the baladi orange juice contains high percent of total soluble solids, acidity, ascorbic acid, total sugars which recorded 11 %,1.35% , 42.5mg/100g and 10.22% respectively. Reducing sugars and non reducing sugars were found in somewhat equilibrium quantities.

From the obtained results, it can be concluded that the orange juice is considered one of the important sources of vitamin-C which considered one of the main vital role in human health promotion and these results are in accordance with *Sinclair(1961), keffored(1970) and El-Hamzy(1988).*

Orange juice is considered an excellent source of vitamin-C, folic acid, potassium and tochopherols as antioxidant photochemical *Joe,etal,(2001).*

As shown in table (3) cantaloupe juice had 8.15% of total soluble solids,5.5mg/100g ascorbic acid 0.291 mg/100g total carotenoids and 0.75 of a* value and 14.20 of b* color value respectively.

Some of these results such as total soluble solids, acidity , pH value and total carotenoids are in accordance with these of *Janice,etal.(1986) and Mekky (1999).*As the amount of ascorbic acid in this study was very low than

the literates cited ,This may be due to the variation between cultivars and the horticultural practices as well as the extraction process.
Wroisted(2002) reported that the ascorbic acid degraded rapidly during processing.

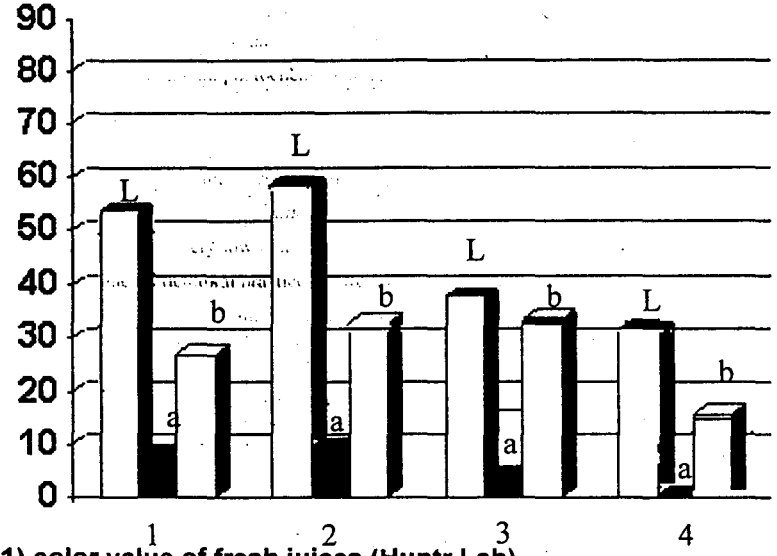

Fig (1) color value of fresh juices (Huntr Lab)
L* value = indicates degree of lightness
a* value = indicates degree of redness to lightness
b* value = indicates yellowness to blueness
1- Pumpkin 2- Mango 3- Orange 4- Cantaloupe

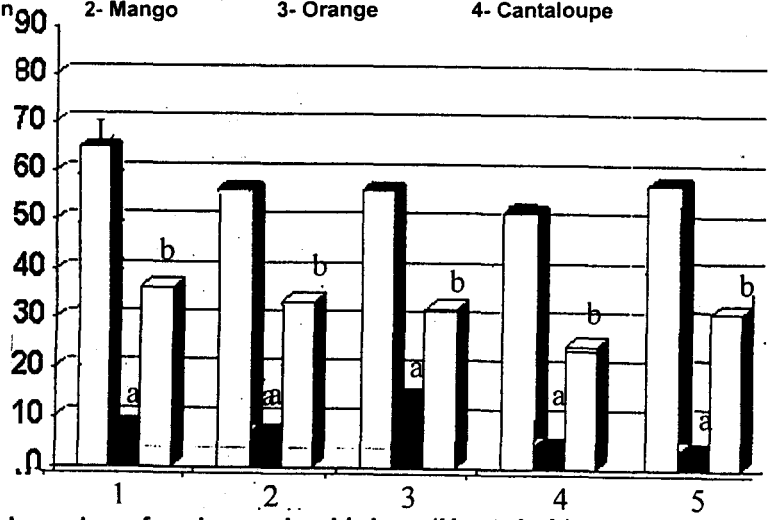

Fig (2) color value of various mixed juices (Huntr Lab)
L* value = indicates degree of lightness a* value = indicates degree of redness to lightness
b* value = indicates yellowness to blueness 1- Pumpkin/Mango/Orange
2- Pumpkin/Mango/Cantaloupe 3- Pumpkin/Mango
4- Pumpkin /Orange/Cantaloupe 5-Pumbkin/Orange

Table 3 : Some physico-chemicals constituents of Pumpkin, mango, orange and cantaloupe.

Fresh juice / Parameters		Pumpkin Juice	Mango Pulp	Orange Juice	Cantaloupe juice
Total soluble solids ° %		7.30	12.50	11.00	8.16
pH value		5.86	3.85	3.80	6.00
Color Value	L*	52.70	59.84	37.23	30.10
	a*	6.68	9.79	3.81	0.75
	b*	28.47	31.12	32.70	14.20
Viscosity centipoise / s		1.83	3.22	1.71	1.25
Turbidity at 660 nm		1.782	1.935	0.973	0.091
Browning index at 420 nm		0.730	0.691	0.327	0.135
Total acidity as citric acid (%)		0.7	0.9	1.35	0.23
Ascorbic acid mg/100g		12.5	15.6	42.5	5.5
Carotenoids mg/ 100g		3.1	4.31	0.468	0.291
Total sugars %		6.37	10.74	10.22	7.20
Reducing sugars %		2.13	3.68	4.78	4.46
Non reducing sugars		4.02	6.70	5.16	2.60

L* value = indicates degree of lightness
a* value = indicates degree of redness to lightness
b* value = indicates yellowness to blueness

Physico-chemical constituents of mixed juices

Regarding the mixing process, table(4) shows that pumpkin juice is the major juice participated in all formulas based on several benefits, which fortified by mango, orange and in the last cantaloupe juice.

Physico-chemical constituents of mixed formulas showed that the formula consisted of pumpkin/mango/orange at the ratio of 1:1:1 contained total soluble solids of 10.70 %, 1.25% total acidity, 23.30 mg/100g ascorbic acid, 2.61 mg/100g total carotenoids, 9.20 % total sugars 2.79 centipoise viscosity and 7.59 of a* color value and 35.68 of b* color value respectively. Table (4) **Abd El-Aal (2003and Khater 2003).**

In the mixture of pumpkin/mango/cantaloupe physico-chemical constitutes was , 9.50 % total soluble solids, 0.8 % total acidity, 11.18 mg/100g ascorbic acid,2.56 mg/100g total carotenoids 8.35 % total sugars , 1.97centipoise of viscosity respectively table (4) also Fig (2) shows that pumpkin/mango/cantaloupe as mixed juice recorded 5.18 of a* value and 33.96 of b* color value.

The formula of pumpkin/mango attained the third grade at the ratio of 2:1, followed by the formula of pumpkin/orange/cantaloupe at ratio of 3:1:1 and in the formula of pumpkin/orange at the ratio of 2:1 table (4).

The previous data listed in Table (1) dealing with the organolptic evaluation of the mixed juices confirmed the findings.Table (4) states the best formula as physico-chemical characteristics.

From the previous results, it could be noticed that the various mixed juices tabulated from 1 to 5 formula table (2), complete and fortify the various constituents found in different juices to mention.

The final mixed juice has a high qualities such as physically, chemically and organoliptically properties considered as vital constituents of human health promotion (physically and also manually), when consumed naturally

Table (4) : Some physico-chemicals composition of various mixed juices.

Samples / Parameters		Pumpkin mango Orange 1:1:1	Pumpkin Mango Cantaloupe 1:1:1	Pumpkin Mango 2:1	Pumpkin Orange Cantaloupe 3:1:1	Pumpkin Orange 2:1
Total soluble solids ° %		10.70	9.50	9	10	8
PH value		3.50	4.15	4.33	4.69	3.90
Color value	L*	60.65	55.03	54.32	50.81	57.97
	a*	7.59	5.18	12.43	3.67	3.62
	b*	35.68	33.96	30.95	24.93	30.17
Viscosity centipoise / s		2.79	1.97	2.84	1.61	1.80
Turbidity at 660 nm		2.013	0.740	1.995	1.271	1.887
Browning index 420 nm		0.583	0.594	0.687	0.356	0.490
Total acidity		1.25	0.8	0.88	1.06	1.20
Ascorbic acid mg/100g		23.30	11.18	13.90	17.17	22.80
Carotenoids mg/ 100g		2.611	2.562	3.398	2.441	2.197
Total sugars %		9.20	8.35	8.12	8.50	7
Reducing sugars %		4.00	2.62	3.01	3.00	2.40
Non reducing sugars		4.94	5.44	4.85	5.22	4.37

L* value = indicates degree of lightness
a* value = indicates degree of redness to lightness
b* value = indicates yellowness to blueness

Minerals and Ash contains in fresh and their blended juices:

Table(5)show that minerals contains in pumpkin ,mango, orange and cantaloupe juices. Owing to minerals contents, Pumpkin juices consists of 246.3mg/100g Potassium,10.9mg/100g Calcium,1.5mg/100g Sodium,17.1 mg/100g Magnesium,35.42mg/100g Phosphor,0.73mg/100g Iron and 0.5 mg/100g Zinc respectively. High level of Potassium content (172mg/100g) was found in mango juice Sodium, Calcium, Magnesium ,Phosphor ,Iron and Zinc were found in Mango fruits at the concentrate of 5.4,30,16.4,12.8,0.83 and 0.1mg/100g,respectively.Concerning Orange juice mineralscontains,7.2 mg/100g Sodium, 201.4 mg/100g Potassium,47.8mg/100g Calcium,8.7mg/100g Magnessium,13.9 mg/100g Phosphor,0.13mg/g Iron and ,0.13mg/100gZinc respectively. Also Cantaloupe juices were consistsof,9.4mg/100gSodium,220.5mg/100gPotassium,19.2mg/100g Calssium,9.1mg/100g Magnessum,11.6mg/100g Phosphor ,0.42mg/100g Iron and 0.12mg/100g Zinc (table 26). Concerning ash contains of this juices are lasted in table (5)as follow 0.25% in pumpkin juice ,1.5% in mango juice,0.3% in orange juice and 0.2% cantaloupe juice ,respectively .Those results are in agreement with those of *Vucetic,etal; (1989), Mekky (1999) , Sheashea, (2005),and Nagib,etal;(2005)*

Table (5): Some minerals contains in pumpkin, mango, orange and cantaloupe juices.

Samples / Minerals	Pumpkin juice	Mango juice	Orange juice	Cantaloupe juice
Ash%	0.25	1.5	0.3	0.2
Calcium mg/100g	10.9	30	47.8	19.2
Potassium mg/100g	246.3	172.8	201.4	220.5
Phosphor mg/100g	35.42	12.8	13.9	11.6
Sodium mg/100g	1.5	5.4	7.2	9.4
Magnesium mg/100g	17.1	16.4	8.7	9.1
Iron mg/100g	0.73	0.83	0.13	0.42
Zinc mg/100g	0.5	0.1	0.13	0.12

Minerals contains and ash of different blending juices are listed in table (6).The blending juice whish content pumpkin, mango and orange juices consists of Calcium,Potassium,Phosphorus ,Sodium, Magnesium ,Iron ,and Zinc as follow,(28.6,224.7,12.54,2.1,10.7,0.4 and 0.2 mg/100g),but the blending juice whish content pumpkin ,mango and cantaloupe juice contains a high amount of potassium ,sodium and magnesium (244.3, 2.8 and 11.8mg/100g).Also the blending juice whish content pumpkin and orange juice contains 23.4mg/100g phosphor respectively .This data showed that blending process make a balances of minerals contains in blending juices. Table (6) the ash content in blending juices pumpkin-mango-orange, pumpkin -mango-cantaloupe,pumpkin-mango,pumpkin-orange-cantaloupe and pumpkin-orange juices were0.6,0.4,0.5,0.2,and0.23% respectively.

Table (6) : Some minerals contains in different mixed juices(mg/100g).

Samples / Minerals	Pumpkin Mango Orange 1:1:1	Pumpkin Mango Cantaloupe 1:1:1	Pumpkin Mango 2:1	Pumpkin Orange Cantaloupe 3:1:1	Pumpkin Orange 2:1
Ash%	0.6	0.4	0.5	0.2	0.23
Calcium	28.6	20.1	16.8	16.5	23.4
Potassium	224.7	244.3	189.2	204.1	189.3
Phosphor	21.54	21.3	23.21	21.08	23.4
Sodium	2.1	2.8	1.3	2.5	1.9
Magnesium	10.7	11.8	10.9	11.2	10.4
Iron	0.4	0.61	0.7	1.1	0.48
Zinc	0.2	0.17	0.3	0.14	0.21

Vital Vitamins Optimum vitamin and mineral intake is crucial to immunity strength with many vitamins functioning not only as nutrients but also as powerful antioxidants . Recent research indicates that minerals may play a significant role against a variety of degenerative diseases and processes. They may also prevent and reduce injury from environmental pollutants and enhance the ability to work and learn. They can also protect the body from the effects of toxic minerals. Clearly, nutrients function interactively both in the body and in their impact on blood pressure regulation. Whenever the consumption of a single nutrient is significantly altered, an entirely new dietary pattern is created. Nutrients occur in clusters in the diet

and may therefore act synergistically to alter physiologic variables such as blood pressure, *Reusser,etal;(1994)* .

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الخواص الفيزيائية والكيميائية لبعض مخاليط عصائر الفاكهة وخواصها الحسية

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هذه الدراسة أجريت بغرض دراسة الخواص الطبيعية والكيماوية لبعض العصائر وإمكانية إنتاج مخاليط مدعمة ومحسنة من خلال الخلط بينها. أثبتت التحليلات الفيزيائية احتواء عصير القرع العسلي على ٧,٣٠ بريكس مواد صلبة ذائبة, ٠,٧٣٠ index browning و ١,٧٨٢ Turbidity و ١,٨٣ سينتى بواز / ثانية لزوجة وأعطى عصير المانجو أعلى درجة فى اللزوجة واللون و Turbidity والمواد الصلبة الذائبة وأعطى البرتقال أقلpH . أما بالنسبة للتركيب الكيماوي أثبتت النتائج أن عصير القرع العسلي يحتوى على ٣,١ مليجرام /١٠٠ جرام كاروتينات ويحتوى المانجو على ٤,٣١ مليجرام/١٠٠ جرام كاروتينات و ١٠,٧٤ % سكر كلى ويحتوى البرتقال على ٤٢,٥ مليجرام/١٠٠جرام حمض اسكوربيك و ١,٣٥ حموضة كلية وقد أوضحت الاختبارات الحسية أن مخاليط العصائر المحتوية على عصير القرع العسلي والمانجو والبرتقال بنسبة ١:١:١ و القرع العسلي والمانجو والكانتالوب بنسبة ١:١:١ و القرع العسلي والمانجو بنسبة ١:٢ أعطت هذه المخاليط أعلى درجات فى التقييم الحسي وأكدت التحاليل الكيميائية والفيزيائية أن مخلوط العصائر المحتوى على القرع العسلي والمانجو والبرتقال أعطى أعلى محتوى من المواد الصلبة والحموضة وحمض الاسكوربيك والسكريات الكلية والمختزلة والغير مختزلة . وفى النهاية أثبتت الدراسة أن عملية خلط العصائر أعطت أفضل محتوى من المغذيات والأفضل من الناحية الصحية