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## Evaluation of some non-Traditional Juices Quality

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### Abstract:

The current investigation examined the physicochemical properties (pH, total soluble solids, titratable acidity, viscosity, ascorbic acid, reducing sugar and total sugar), microbiological aspects (total bacterial, *E. coli*, *Staphylococcus aureus*, *Salmonella sp* and molds & yeasts) of some juices quality produced from *Aloe vera* plant 10%, doum (*Hyphaenethebaica*) 5% fruits and mixture of them, and during cold storage for 2 and 4 weeks at 5 °C. The obtained results showed that the highest pH value recorded with *Aloe vera* juice, while the lowest one recorded for doum juice. The values were 7.15 and 6.90, respectively. Also, the highest viscosity (CP) value recorded for *Aloe vera* juice, while lowest one recorded for doum juice. The highest ascorbic acid % recorded with *Aloe vera* juice, on the other hand, the lowest amount of ascorbic acid recorded for doum juice. The volumes were 16.80 % and 1.12 %, respectively. The obtained results indicated that doum juice is the highest reducing sugar, while lowest one recorded for *Aloe vera* juice. The values were 19.30 % and 8.20 %. Also, Doum juice is the highest total sugar %, while, the lowest one recorded for *Aloe vera* juice. The values were 49.11 and 13.50 %, respectively. During cold storage at 5 °C for 2 and 4 weeks, total acidity %, pH, total and reducing sugars % slightly increase. While, a decrease in the total soluble solids, viscosity and ascorbic acid content was observed. The microbiological results indicated that fresh *Aloe vera* juice, doum juice and mixture of them cfu/g did not detect any *Salmonella sp* and molds & yeasts. Total

bacterial of *Aloevera* juice, doum juice and mixture from them were  $4.2 \times 10^1$ ,  $3.0 \times 10^2$  and  $2.0 \times 10^1$  cfu/g, respectively. During cold storage at 5 °C for 2 and 4 weeks that there was marginal increase in total bacterial, *E. coli* and *Staphylococcus aureus*. All tested juices had high antimicrobial activity against tested pathogenic microorganisms.

**Keywords:** *Aloe vera*, Doum, Physicochemical, Microbiological aspects.

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### **Introduction:**

The botanical name of *Aloe vera* is *Aloe barbadensis* miller. It belongs to *Asphodelaceae*(Liliaceae) family the same family that garlic and onions(Tyler, 1993). The genus *Aloe* contains over 400 different species with *Aloe barbadensis* miller, is considered to be the most biologically active (Rajasekaran, et al., 2005;Bozzi, et al., 2007; Moghaddasi and Verma, 2011).The *Aloe vera* plant is 96% percent water with the other 4% percent containing about 75 chemical,these 75 chemicals consist of anesthetics that reduce swelling and itching, antibacterial components that reduce bacteria and other chemicals that improve blood circulation and regeneration of skin cells (Atherton, 1997 andAtherton,1998). *Aloe vera* contains over 200 potentially active constituents: Vitamins(A, C,E and B12), folic acid, and choline,antioxidant neutralizes free radicals. Enzymes(alases, alkaline phosphatase, amylase, bradykinase,carboxypeptidase, catalase, cellulase, lipase, and peroxidase) helps to reduce excessive inflammation when applied to the skin topically, while others help in the breakdown of sugars and fats, minerals(calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc). They are essential for the proper functioning of various enzyme systems in different metabolic pathways and few are antioxidants (Atherton,1997 andAtherton,1998 ). Sugars it provides monosaccharaides (glucose and fructose) and polysaccharides: (glucomannans,polymannose). These are derived from the mucilage layer of the plant and are known as mucopolysaccharides. The most prominent monosaccharide is mannose-6-phosphate, and the most common polysaccharides are called glucomannans [beta-(1,4)-acetylated mannan]. Acemannan, a prominent glucomannan has also been found. Recently, a glycoprotein with antiallergic properties, called alprogen and novel anti-inflammatory

compound, C-glucosylchromone, has been isolated from *Aloe vera* gel (**Hutteret al., 1996 and Roet al.,2000**),lignin, saponins, salicylic acids, amino acids(*Aloe vera* gel provides 20 of the 22 necessary of human) , provides 12 anthraquinones, which are phenolic compounds traditionally known as laxatives. Aloin and emodin act as analgesics, anti-bacterial and anti-viral(**Ishii et al.,1994**). Fatty acids,it provides 4 plant steroids, cholesterol, campesterol,  $\beta$ -sisosterol and lupeol. All these have anti-inflammatory action and lupeol also possesses antiseptic and analgesic properties, and fatty acids no wonder it's used for such a wide range of remedies. The medicinal qualities of *Aloe vera* are much diversified and adoptogenic, such as would healing effect, reduces blood sugar in diabetes, soothes burns, eases intestinal problem, reduces arthritic swelling, ulcer curative object, stimulates immunes response against cancer.*Aloe vera* juice also has antibacterial properties against Gram-positive bacteria (**Anonymous 2008; Alemdar and Agaoglu 2009**) reported that antiviral and antifungal properties of *Aloe vera* has a bitter taste which can be unpleasant in raw state and its palatability could be enhanced with addition of some other fruit juices.

Doum palm (*Hyphaenethebaica* L.) is a type of palm tree with edible oval fruit. It is native to the Nile valley in Egypt. It was considered sacred by the Ancient Egyptians and the seed was found in many pharaohs' tombs. The fruit is sold by street vendors, and is popular among children, gnawing its sweet yet sour hard fibrous flesh beneath the shiny hard crust. The fruits are oval, shiny, and red to orange in color, a traditional drink has been prepared from the fruit by infusing the dried ground fruit pulp in hot water. This drink is widely consumed as a health tonic and has been valued in the region, for its many anecdotal medicinal properties (**Martin, 1999**). The fruit can be pounded to form powder cut off in slices. The powder form is mixed with water to make juice or mixed with flour and sugar to make mateda drink (**Adel-Rahaman et al., 2014**).And often dried then added to food as a flavouring agent (**Aremu and Fadele2011**).In Turkana, Kenya the powder is also used to make mild alcoholic drink. In new study used wheat and DoumFruit Composite Cakes (**Ahmed et al.,2010**). Mainly vcildren are using doum fruits as asnck and is popular among children (**Adel –Rahaman et al., 2014**). The chemical composition of the fruit pulp contains 4.91% proteins ,

5.26% fat ,4.5% ash and 85.33%total carbohydrate, fatt acids in particular the nutritionally essential linoleic acid (**Eisset al ., 2008;Aremu andFadele2011**). And contains 74.0% soluble sugars, 22.0% of it starchy substances and 37.0% sucrose. Also doum contains potassium (**Abdel Muti,1991**).Moreover, it contains quantities of calcium, niacin, phosphorus, with traces of riboflavin and thiamin (**Adam,2011**).Doum was reported to lower the blood pressure, when its biological activity was evaluated in rat feeding experiments (**Bettyet al., 2006**). Scientific evidences are provided that the consumption of fruit and vegetable can exert positive effects upon human health and the aging process. Evidence points to those foodstuffs as being rich in antioxidant phytochemicals, in particular, the flavonoids, coumarins, hydroxycinamates and lignin components which act to prevent or reduce oxidative stress by scavenging free radicals (**Sohalet al., 2002; Kamiset al., 2003andJeonget al., 2009**). Flavonoids and hydroxycinnamates are known to exhibit various beneficial pharmacological properties, such as vasoprotective, anti - carcinogenic, anti - viral, anti - ischemic, anti - inflammatory and anti - proliferative activity in cell studies (**Dosumuet al., 2006; Nwosuet al., 2008and Mohamed, 2009**).

### **Material and methods**

#### **Materials:**

Aloe-vera plant was obtained from orchard randomly in Sirs El-Lyan, Menoufia Governorate in 2015. Homogenous leaves were selected according to size, ripeness, color, and freshness.

Doum was purchased from Agricultural Seeds and Spices, Medicinal plants Company (Abdel Rahman Mohammed Harraz, Cairo, Egypt) in 2015, as a crushed powder obtained from dried fruit mesocarp devoid of seeds.

Mixer grinder, stainless steel knife, glass bottles, filter papers, buchner funnel, sucrose and water

#### **Methods:**

Juice preparation, leaves of *Aloe vera* with washed thoroughly with tap water, further, leaves were cut vertically into two half and gel was separated using stainless steel knife without the green fibers and the

mixture was well mixed for two minutes with sucrose 10g and water 100 ml by using mixer grinder to produce mix juice concentration 10%.

Five grams of doum fruit powder were put into a glass bottle, containing 100 ml boiling water and sucrose 10g, with continuous stirring for 10 min mean concentration 5%. The fruit extract was filtered by whatman number 1 filter papers, using a Buchner funnel and water suction.

Juice has been retained in glass bottles (200ml capacity), pasteurization (In water bath at 80°C for 20 min), cooling to room temperature and kept at refrigerated storage temperature (5°C).

#### **Physicochemical Analysis:**

##### **pH measurement:**

The pH value was measured using a pH meter of a glass electrode. The pH meter was allowed to stabilize for one minute and then the pH of the samples was directly reported according to the official method of analysis (A.O.A.C.2005).

##### **Total Acidity:**

Titrateable acidity was determined according to the official method (A.O.A.C.2005).

##### **Total Soluble Solids (TSS):**

The total soluble solids (TSS) were determined at room temperature using hand refractometer with degree °Brix scale 0 – 50 according to (A.O.A.C.2005) standard methods.

##### **Viscosity:**

The viscosity of each sample (50 ml) was measured according to the method of **Quinn and Beuchat (1975)** using Brookfield viscometer, spindle no. 4, speed 30 rpm at room temperature. The viscosity was expressed in centipoises (cps).

##### **Ascorbic acid (Vitamin C):**

Vitamin C was determined by using 2, 6-dichloro-phenol-indophenol dye according to the official method (A.O.A.C.2005).

#### **Total and reducing sugars:**

Total and reducing sugars were determined according to Lane and Enontitrometric methods (A.O.A.C.2005).

#### **3.4. Microbiological methods:**

##### **Preparation of juice samples for microbiological investigation:**

Total aerobic bacterial count determined on nutrient agar media according to the method described by (Oxide Manual, 1979), *Staphylococcus aureus* determined on paired parker agar base media (ICMSF, 1996), while molds and yeast, enumerated in potato dextrose agar (ICMSF, 1996), coliform bacterial (Oxoid) enumerated on endo agar media (WHO, 1988) and *Salmonella sp.* & *Shigella* SS agar modified Oxoid according to (Bryan, 1991).

#### **Results and Discussion**

Data presented in Table (1) showed the physicochemical properties of fresh *Aloe - vera* juice, doum juice and mixture juice of *Aloe vera* 10% + doum 5%. It is clear that the highest pH value recorded with *Aloe vera* juice, while the lowest one recorded with doum juice. The mean values were 7.15 and 6.90, respectively. From the above it is clear that *Aloe - vera* juice and doum juice falls under the category of neutral food. The obtained results remained in close agreements with the results of (Anon, 1962).

In case of TSS, it is clear that the highest TSS value recorded with doum juice, while lowest one recorded with *aloe vera* juice. The mean values were 12.60°Brix and 10.58°Brix, respectively. These results are in harmony with the finding of (Abaker, 2010). The obtained data in Table (1) also indicated that doum juice is the highest titratable acidity (%) value, on the other hand, the lowest amount of titratable acidity (%) value recorded with *aloe vera* juice. The mean values were 0.56 % and 0.28%, respectively. These results were similar to the results of (Bozziet al., 2007 and Abaker, 2010). Data also indicated that the highest viscosity (CP) value recorded with *Aloe vera* juice, while lowest one recorded with doum juice. The mean values were 16.25 CP and 0.35CP, respectively. The obtained results remained in close agreements with the results of Abdalla et al., (2010) they found that the viscosity CP of the drinks compared to doum juice, using filtration

apparently reduced the viscosity. Recently, doum juice is contain very low of viscosity value. It could be predicted that *Aloe vera* juice remains major contributor of viscosity content of final beverage in mixture of *Aloe vera* 10% + doum 5% juice. It is obvious that the highest ascorbic acid % recorded with *Aloe vera* juice, on the other hand, the lowest amount of ascorbic acid % value recorded with doum juice. The mean values were 16.80 % and 1.12 %, respectively. These results are in harmony with the finding of **Mohamad (2011)**. It could be predicted that *Aloe vera* juice remains major contributor of ascorbic acid % content of final beverage in *Aloe vera* 10% + doum 5% juice. The results indicated that doum juice is the highest reducing sugar (%) value, while lowest one recorded with *Aloe vera* juice. The mean values were 19.30 % and 8.20 %, respectively. Also, the obtained data indicated that doum juice is the highest total sugar (%) value, on the other hand, the lowest amount of total sugar (%) value recorded with *Aloe vera* juice. The mean values were 49.11 % and 13.50 %, respectively. The obtained results remained in close agreements with the results of **Abdel Moneim, (2010)**. It could be predicted that doum juice remains major contributor of reducing sugar (%) and total sugar (%) value content of final beverage in mixture (*Aloe vera* 10% + doum 5%) juice.

Data presented in Table (2) show the physicochemical properties of *Aloe - vera* juice, doum juice and mixture of *Aloe vera* (10%) + doum (5%) juice during cold storage at 5 °C for 2 and 4 weeks. The obtained results indicated that there was marginal decrease in the total soluble solids (TSS °Brix) values of *Aloe - vera* juice, doum juice and mixture from them during cold storage. The mean values were (10.24 : 10.02 °Brix), (12.38 : 12.12 °Brix) and (11.45 : 11.10 °Brix), respectively. These changes may be due to conversion of non-soluble pectin into soluble phase. This observation is in agreement with that reported by **Pereira et al., (2008)**. Acidity is an important parameter in food quality attributes because it reveals the spoilage and the fermentation of food and it would be of great importance since the ratio of total soluble solids to acidity will affect flavor. The obtained data indicated that total acidity % and pH slight increase. It could be observed in all types of juices after cold storage period which may be due to the enzymatic de-esterification and degradation of pectin and the release of carboxyl groups from the pectin molecules. Similar results

were reported earlier by **(Singhet *al.*, 2000)**. For consumers, viscosity is an important property of nectars for all juice, it is the most important physical property, so it was important to study the cold storage effect on the viscosity of all types of juices. From data recorded in Table 1, it is clear that the supplementation with *Aloe vera* juice increase the viscosity values in *Aloe vera* 10% + doum 5% juice. It was clear that the percentage of viscosity is slightly decreased during cold storage and the decrease was gradually. The data show that volumes of *Aloe vera* juice, doum juice and *Aloe vera* 10% + doum 5% juice were 15.10 : 13.80 CP, 0.34 : 0.26 CP and 9.00 : 8.50 CP, respectively. That can be explained by the structural breakdown of the blend due to the hydrodynamic forces generated and the increased alignment of the constituent molecules e.g. sugar and protein **(Rao, 1999a; Rao, 1999b; Arslan *et al.*, 2005 and Keshaniet *al.*, 2012)**. Ascorbic acid content is the most important quality characteristic of nectars because it reflects the nutritional and technological characteristics of nectars. Results showed that decrease of ascorbic acid content, during cold storage period. The data show that volumes of *Aloe - vera* juice, doum juice and *Aloe - vera* 10% + doum 5% juice were 15.70: 13.60 %, 1.00: 0.84% and 10.80: 8.70 %, respectively. It ascorbic acid decrease in fruit processing depends on several factors like pH, oxygen availability and also the presence of catalysts. In other words, ascorbic acid degradation could be possible due to light and enzymatic activity to which product is exposed. The oxygen, which is present in the head space of the packed product, might have dissolved in the juice concentrate, can cause ascorbic acid degradation. The other factor for the degradation of ascorbic acid is the influence of temperature exerted at the time of processing and also the storage temperature of product. These results are in harmony with **(Ewaidah, 1992)**. The obtained data indicated that total and reducing sugars increased gradually during cold storage period of juices products, The data show that volumes of reducing sugars in *Aloe vera* juice, doum juice and mixture from them were 8.63 : 9.50 %, 19.65 : 20.30 % and 13.10 : 13.90 %, respectively. On the other hand, the data show that volumes of total sugars in *Aloe vera* juice, doum juice and *Aloe vera* 10% + doum 5% juice were 13.85 : 14.90 %, 50.21 : 49.40 % and 30.14 : 35.10 %, respectively. These results agree with those



obtained by (El-Anany, 1990). Who reported that the total and reducing sugar increased due to the inversion of sucrose into glucose and fructose. **Gulf Standards(2000)** mentioned that the recommended microbiological standards for any fruit juice; all numbers are as per ml of juice consumed, the maximum bacterial load anticipated from total viable count, Coliform, Fecal coliform and *Staphylococci*. The mean volumes were  $5.0 \times 10^3$ , 10, 0 and 100 cfu/g, respectively. On the other hand, the maximum bacterial load permitted from Total viable count, Coliform, Fecal coliform and *Staphylococci*. The mean volumes were  $1.0 \times 10^4$ , 100, 0 and  $1.0 \times 10^3$  cfu/g, respectively.

Data presented in Table (3) showed the microbiological aspects of fresh *Aloe vera* juice, Doum juice and mixture from them (cfu/g). The obtained results indicated that the highest total bacterial count recorded with doum juice, while lowest one recorded with *Aloe vera* 10% + doum 5% juice. The mean volumes were  $3.0 \times 10^2$  and  $2.0 \times 10^1$  cfu/g, respectively. It is obvious that the highest *E. coli* count recorded with doum juice, On the other hand the lowest one recorded with *Aloe vera* 10% + doum 5% juice. The mean volumes were  $0.65 \times 10^1$  and  $0.60 \times 10^1$  cfu/g, respectively. It is clear to notice that the highest *Staphylococcus aureus* count recorded with *Aloe vera* juice, while the lowest one recorded with doum juice. The mean volumes were  $0.75 \times 10^1$  and  $0.4 \times 10^1$  cfu/g, respectively. The obtained data indicated that fresh *Aloe vera* juice, doum juice and *Aloe - vera* + doum juice cfu/g did not detect any Mold & Yeast. Also, *Salmonella sp* did not detect in all tested juice studies. The data obtained in the present study revealed strong anti-bactericidal activity of *Aloe vera* juice. This activity may be attributed to a number of pharmacologically active compounds including tannins; alkaloids, flavonoids, as well as saponins have a direct antimicrobial activity. These results are in harmony with (Shafiet al., 2000 and Dabalet al., 2007). From the above it is clear that all of the fruit juices in our study were found to be favorable for consumption because all of them in agree with the recommended microbiological standards for any fruit juice (**Gulf Standards, 2000**). Hence these samples were considered to be safe.

Data given in Table (4) show the microbiological aspects of *Aloe - vera* juice, doum juice and mixture from them (cfu/g) during cold storage at 5 °C for 2 and 4 weeks. The obtained results indicated that

there was marginal increase in the total bacterial count of *Aloe vera* juice, doum juice and mixture from them during cold storage at 5 °C. The mean volumes were  $4.5 \times 10^1$ : $2.5 \times 10^2$ cfu/g,  $3.7 \times 10^2$ cfu/g and  $2.3 \times 10^1$ : $4.2 \times 10^2$ cfu/g, respectively. It is obvious that there was increase in the *E. coli* count of *Aloe vera* juice, doum juice and mixture of *Aloe vera* 10% + doum 5% juice during cold storage at 5 °C. The mean volumes were  $0.67 \times 10^1$ : $2.40 \times 10^1$ cfu/g,  $0.70 \times 10^1$  :  $1.40 \times 10^1$ cfu/g and  $0.65 \times 10^1$ : $2.60 \times 10^2$ cfu/g, respectively. The obtained results indicated that there was increase in recorded the *Staphylococcus aureus* count with *Aloevera* juice, doum juice and mixture from them during cold storage at 5 °C. The mean volumes were  $0.95 \times 10^1$  :  $1.60 \times 10^1$ cfu/g,  $0.47 \times 10^1$  :  $1.20 \times 10^1$ cfu/g and  $0.80 \times 10^1$ :  $1.50 \times 10^2$ cfu/g, respectively. The obtained data given that there was increase in recorded the Mold & Yeast count with *Aloe vera* juice, doum juice and mixture from them during cold storage. The mean values were  $0.25 \times 10^1$ : $0.75 \times 10^1$ cfu/g,  $0.15 \times 10^1$  : $0.45 \times 10^1$ cfu/g and ND: $0.50 \times 10^1$ cfu/g, respectively. On the other hand, *Salmonella sp* did not detected in all tested juice. Changes in pH may promote the growth of pathogens (FDA, 2001). From the above it is clear that all of the fruit juices in our study were found to be favorable for consumption because all of them in agree with the recommended microbiological standards for any fruit juice, (Gulf Standards, 2000). Hence these samples were considered to be safe.

**Table (1): Physicochemical properties of fresh *Aloe - vera* juice, doum juice and mixture from them ratio 10% : 5%**

Physicochemical properties							
Juice types (0) time	PH	TSS °Brix	Titratable acidity (%)	Viscosity (CP)	Ascorbic acid content (%)	Reducing sugar (%)	Total sugar (%)
<i>Aloe - vera</i> juice	7.15	10.58	0.28	16.25	16.0	8.20	13.50
Doum juice	6.90	12.60	0.56	0.35	1.12	19.30	49.11
<i>Aloe vera</i> 10% + doum 5% juice	7.03	11.75	0.34	9.10	11.40	12.75	29.65

TSS = Total soluble solids (CP) = centipoises

**Table (2): Physicochemical properties of *Aloevera* juice, doum juice and mixture of *Aloe vera* 10% + doum 5% juice during cold storage at 5 °C for 2 and 4 weeks**

Physicochemical properties							
Juice Storage period (Week)	PH	TSS °Brix	Titratable acidity (%)	Viscosity (CP)	Ascorbic acid (%)	Reducing Sugar(%)	Total sugar (%)
<i>Aloe vera</i> juice (2)	7.40	10.24	0.35	15.10	15.70	8.63	13.85
<i>Aloe - vera</i> juice (4)	7.70	10.02	0.39	13.80	13.60	9.50	14.90
Doum juice (2)	7.30	12.38	0.68	0.34	1.00	19.65	50.21
Doum juice (4)	7.60	12.12	0.75	0.26	0.84	20.30	49.40
<i>Aloe vera</i> 10% + doum 5% juice (2)	7.32	11.45	0.38	9.00	10.80	13.10	30.14
<i>Aloe vera</i> 10% + doum 5% juice (4)	7.73	11.10	0.44	8.50	8.70	13.90	35.10

**Table (3): Microbiological aspects of fresh *Aloe - vera* juice, doum juice and mixture from them (cfu/g)**

Juice types (0) time			
Tested microorganism	<i>Aloe vera</i> juice (cfu/g)	Doum juice (cfu/g)	<i>Aloe vera</i> 10% + doum 5% juice (cfu/g)
Total bacterial count	4.2 x 10 <sup>1</sup>	3.0 x 10 <sup>2</sup>	2.0 x 10 <sup>1</sup>
<i>E. coli</i>	0.61 x 10 <sup>1</sup>	0.65 x 10 <sup>1</sup>	0.60 x 10 <sup>1</sup>
<i>Staphylococcus aureus</i>	0.75 x 10 <sup>1</sup>	0.4 x 10 <sup>1</sup>	0.67 x 10 <sup>1</sup>
<i>Salmonella sp</i>	ND	ND	ND
Mold & Yeast	ND	ND	ND

ND = not detected cfu = coloni form units

**Table (4): Microbiological aspects of *Aloevera* juice and mixture of *Aloevera* 10%+douw5% juice during cold storage at 5 °C for 2 and 4 weeks (cfu/g)**

Juice Storage Period at 5 °C (Week)						
Tested microorganism	<i>Aloe vera</i> juice (2) (cfu/g)	<i>Aloe vera</i> juice (4) (cfu/g)	Douw juice (2)(cfu/g)	Douw juice (4) (cfu/g)	<i>Aloe vera</i> 10% + douw 5% juice(2)(cfu/g)	<i>Aloe vera</i> 10% + douw 5% juice (4)(cfu/g)
<b>Total bacteria count</b>	4.5 x 10 <sup>1</sup>	2.5 x 10 <sup>2</sup>	3.7 x 10 <sup>2</sup>	3.7 x 10 <sup>2</sup>	2.3 x 10 <sup>1</sup>	4.8 x 10 <sup>2</sup>
<i>E. coli</i>	0.67 x 10 <sup>1</sup>	2.40 x 10 <sup>1</sup>	0.70x10 <sup>1</sup>	1.40 x 10 <sup>1</sup>	0.65 x 10 <sup>1</sup>	2.60 x 10 <sup>1</sup>
<i>Staphylococcus aureus</i>	0.95 x 10 <sup>1</sup>	1.60 x 10 <sup>1</sup>	0.47x10 <sup>1</sup>	1.20 x 10 <sup>1</sup>	0.80 x 10 <sup>1</sup>	1.50 x 10 <sup>1</sup>
<i>Salmonella sp</i>	ND	ND	ND	ND	ND	ND
<b>Mold &amp; Yeast</b>	0.25x 10 <sup>1</sup>	0.75 x 10 <sup>1</sup>	0.15 x 10 <sup>1</sup>	0.45 x 10 <sup>1</sup>	ND	0.50 x 10 <sup>1</sup>

ND = not detected.

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## تقييم جودة بعض العصائر غير التقليدية

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### الملخص العربي

يهدف البحث إلى تقييم جودة بعض العصائر لنبات الصبار بنسبة ١٠% وثمار الدوم بنسبة ٥% كلا على حده ومخلوطين معاً على الخواص الطبيعية للعصير (درجة الحموضة، المواد الصلبة الذائبة، اللزوجة، حمض الأسكوربيك، السكريات المختزلة والسكريات الكلية)، والجودة الميكروبيولوجية (العد الكلي للبكتيريا، عدد بكتريا ايشيريشيا كولاي، أستافيلوكوكاس أورياس، سالمونيلا والفطريات والخمائر). وأيضاً تقييم جودة العصائر أثناء التخزين المبرد لمدة ٢ و ٤ أسابيع على درجة ٥ درجة مئوية. وكانت النتائج المتحصل عليها أن أعلى قيمة لدرجة الحموضة سجلت مع عصير الصبار، في حين سجلت أقل قيمة مع عصير الدوم. وكانت القيم ٧.١٥ و ٦.٩٠ على التوالي. وأشارت البيانات التي تم الحصول عليها أيضاً أن أعلى قيمة للزوجة (CP) سجلت مع عصير الصبار، بينما أقل قيم مع عصير الدوم. حيث كانت القيم ١٦.٢٥ و ٠.٣٥ CP، على التوالي. أعلى قيمة سجلت لحمض الاسكوربيك % مع الصبار، من ناحية أخرى، فإن أقل قيمة مع عصير الدوم. حيث كانت القيم ١٦.٨٠% و ١.١٢% على التوالي. وأشارت النتائج أن عصير الدوم سجل أعلى قيمة للسكريات المختزلة، بينما سجلت أدنى قيمة مع عصير الصبار. وكانت القيم ١٩.٣٠ و ٨.٢٠%، كما أشارت النتائج أن عصير الدوم سجل أعلى قيمة للسكريات الكلية (%).، من ناحية أخرى، فإن أقل قيمة سجلت للسكريات الكلية (%). مع عصير الصبار. وكانت القيم ٤٩.١١ و ١٣.٥٠% على التوالي. أثناء التخزين المبرد على ٥ درجة مئوية لمدة ٢ و ٤ أسابيع. كانت درجة الحموضة، السكريات الكلية والسكريات المختزلة زادت بنسبة طفيفة، بينما كان هناك انخفاض بسيط في نسبة المواد الصلبة الذائبة، اللزوجة ومحتوى حمض الاسكوربيك. وأشارت نتائج التحليل الميكروبي أنه لم يتم الكشف فيهم عن أي من سالمونيلا والفطريات والخمائر. في جميع أنواع العصائر المختبرة. بينما أشارت النتائج المتحصل عليها أن قيم العدد الكلي للبكتريا عصير الصبار و عصير الدوم ومخلوطين معاً كانت ٤.٢ x ١٠، ٣.٠ x ١٠ و ٢.٠ x ١٠ مستعمرة / جرام، على التوالي. مما سبق يتضح أن المخلوط من الصبار ١٠% و عصير الدوم ٥% حقق انخفاض كبير وملحوظ في العدد الكلي للبكتريا وأيضاً مع عدد بكتريا ايشيريشيا كولاي وأستافيلوكوكاس أورياس. وبالتالي فإن مخلوطين أدى إلى تحسين جودة المنتج النهائي جعله الأكثر قبولاً بشكل عام. مما سبق يتضح أن مخلوط عصير الصبار و الدوم له تأثير فعال ضد معظم الميكروبات المختبرة.

**الكلمات المفتاحية:** الصبار، الدوم، عصير، الخواص الطبيعية، الميكروبيولوجية، دراسات التخزين.