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CHEMICAL, MICROBIOLOGICAL AND ACCEPTABILITY PROPERTIES OF SOME DAIRY BASED BEVERAGES

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ABSTRACT

As consumer demand for traditional carbonated drinks falls, the market for beverages with perceived health-promoting properties is growing rapidly. Formulating a nutritional, nutraceutical or functional beverage with satisfactory sensory quality and shelf-life can be challenging. The characteristics of beverage made from carrot, kiwi, or date and milk were studied. The beverage was done by blinding 20% pasteurized cow's milk with carrot, kiwi and date (10%, 20%.30% and 40%) of each. The impact of combining these foods into new products, and characterizing their physico-chemical properties has not been investigated before. The functional -milk beverages were analyzed chemically, organoleptically and microbiologically. The results of the study showed that the fore-mentioned beverages were a good source for protein, minerals and vitamins which increased with increasing the concentration of the extract. The minimum protein content value was 1.23g/100g beverage for 10% kiwi–milk beverage and maximum value 3.75g/100g beverage for 40% date-milk beverage. The lowest total solids value was 13.1g/100g beverage for 10% carrot-milk beverage and highest value was 24.5g/100g beverage for 40% date-milk beverage. The minimum fat content value was 0.379g/100g beverage for 10% date–milk beverage and maximum value 2.45g/100g beverage for 40% carrot-milk beverage. The lowest total solids value was 13.1g/100g beverage for 10% carrot-milk beverage and highest value was 24.5g/100g beverage for 40% date-milk beverage. These beverages are considered as a proper source of natural antioxidant as well as improving the nutritive value. The beverages contained a safe level of total standard plate count (SPC) after 2 months storage at ambient

temperature**.** No E-coli, yeast and molds and coliform were observed in all formulas during storage. The kiwi-milk beverage with 30% kiwi extract and 20% milk got the highest score of acceptance and sensory evaluation**.**

Key words: carrot, kiwi, dates, milk and functional beverage

INTRODUCTION

All beverages contribute to hydration. But some also provide important nutrients. During the last two decades people began to be more aware of the close relationship between diet and health. This awareness dictated great interest in seeking elegant methods for improving food industry. Beverages such as milk and certain extracts are a convenient way to get a healthy body. In efforts to offer variety and competition in the market, new researches are currently in progress on the use of different types of extract and milk in beverage industry (Schieber *et al*., 2002). Combination of carrot, kiwi or dates and milk produce a nutritionally balanced food.

Carrot (Dascus carota L.) is one of the more commonly used vegetables of human nutrition. It is rich in beta carotene, ascorbic acid, and tocopherol and classified as vitaminized food (Hashimoto and Nagayama, 2004). The intake of carrot as potent antioxidants, appear to be associated with better health. It is not only preventing vitamin A deficiency but also cancer and other diet related human diseases. It has greater cytotoxic effect against cancer cell and reducing the enzymes that promote the conversation of precarcinogens to carcinogens. It may also enhance the immune system, protect against stroke, high blood pressure, Osteoporosis, cataracts, arthritis, heart disease, bronchial asthma and urinary tract infections (Beom *et al*., 1998; Sun *et al*., 2001; Seo and Yu, 2003)

The Kiwi fruit plant belongs to the family Actinidia. The flavor can be described as a cross between strawberries, bananas and pineapple and the fruit can be eaten raw or cooked. Kiwi fruit is high in antioxidant vitamin C and a good source of fiber, vitamin E and potassium. It also contains folate, copper, vitamin E and lutein.(Zekai, 2010) the kiwifruit gained great popularity as the “darling” of the new eating craze and is available worldwide and is commercially grown in several countries.

Dates (*Phoenix dactylifera L.*) are well known as an important desert crop in the regions of middle and eastern countries (Mohammed et al., 1983). Date fruits are highly nutritious foods since it contain many vitamins and minerals **(**Al-Hooti et al., 2002). Dates are known to be rich in carbohydrates (80%) but quit low in protein (2-3%). Dates are an excellent source of simple sugars and its fiber content reaches about (8%). The date is considered as a nutritious fruit as research has indicated the clear contribution of dates to human when consumed with other food constituents. Mature date fruits are also processed into products such as date bars and date syrup **(**El-Sharnouby *et.al,* 2009). Date syrup is a product obtained from matured dates (tamar) and being used as such or in the preparation of some traditional and industrial foods such as ice cream, confectionery, beverages, alcohol and vinegar (Habibi-Najafi and Alei, 2006).

The high content in dietary fiber helps improving diseases such as diabetes, by controlling sugar levels, and colon cancer, since fiber binds to toxic compounds in the colon and helps us expel them. Fiber has also been proven to reduce cholesterol levels, improving the conditions of patients with cardiovascular diseases and lowering the probability of heart attacks. (Sommerburg, 1998).

Milk is an excellent source of protein (2.9-5%) and fat (2.5-6%) but is deficient in iron, copper and vitamin C (De, 1980). Blending of milk with the above extracts would produce a nutritionally rich food and add to the demand of the product. As little works have been cited on the combination of these milk beverages, this study has carried out to evaluate carrot, kiwi or dates - milk blending for preparation of ready to serve beverage and to study their sensory, chemical, microbiological and consumer acceptability.

MATERIALS AND METHODS

Milk samples

Fresh cow's milk was obtained from the Animal Production Research Institute, Agriculture Research Center, Ministry of Agriculture, Cairo. The milk pasteurized and used for all the experiments.

Carboxy methyl cellulose (CMC) 0.025%

It was used as a stabilizer and was purchased from the Egyptian Company for Milk Products and Additives

Carrot, kiwi and dates were purchased from the local market

Carrot preparation

Carrot extract was prepared as prescribed by Salwa et al.,(2004). Carrot roots were washed thoroughly in cold water using a stiff vegetable brush to remove the dirt and adhering chemicals and scraped lightly. Carrots did not peel, because valuable vitamins and minerals lie close to the surface. Both ends were removed, and cut longitudinally into halves. These halves were steam blanched for five minutes to inactivate pectinase and peroxidase enzymes, in addition to tenderization the carrot tissues. The extract was obtained by blending in blender with sieves. The obtained extract was heated to 85°C for 5 min., hot filled into clean glass bottles, sealed and stored in refrigerator till further use.

Kiwi preparation

Kiwi fruit was washed after the fruit skin was removed manually and then the pulp was obtained from the crushed fruit. The extract was also obtained by blending in blender with sieves Zekai tarakci, (2010). The obtained extract was filled into clean glass bottles, sealed and stored into refrigerator till further use .

Dates preparation

Date extract was prepared by boiling dates and water in equal amounts, to dissolve and dilute the soluble solids of the date, after which the non-soluble solids are separated out and extracting by squeezing through cloth. (Godara and Pareek, 1985 and Pareek and Rajendra, 1985).

The composition of carrot ,kiwi and dates is shown in Table (1).

Table 1:Chemical composition of food extracts used in Some dairy based beverages preparation(100g)

Parameter \ Food		Carrot	Kiwi	Dates
Moisture		91.80±1.53	83.8±3.6	45.9±6.4
Total solids(g)		7.85±0.95	15.3±1.2	52.8±3.5
Proteins(g)		1±0.08	1.0±0.6	1.2±0.8
Carbohydrates(g)		37.60±1.40	9.3±1.5	36.6±2.5
Fats(g)		0.2±0.05	0.6±0.2	0.9±0.2
Fibers(g)		3±0.6	3.9±1.2	3.2±0.4
Minerals	Sodium(mg)	2.4±0.8	4±1	4.3±0.5
	Potassium(mg)	240±30	295±35	298±25
	Calcium(mg)	33±2	40±4	34±5
	Phosphorus(mg)	35±4	30±2	350±35
	Iron(mg)	0.66±0.5	0.8±0.1	6.0±1
	Zinc(mg)	0.487±0.045	0.14±0.04	0.9±0.1
Vitamins	Vitamin c(mg)	7±1	120±25	30±4
	B-carotene(µg)	12500±500	370±46	115±12
	Riboflavin(mg)	0.74±0.15	0.025±0.004	0.05±1.3
	Niacin(mg)	1.2±0.8	0.34±0.08	4.5±1.1

Beverage preparation

The beverage was prepared according to Giridhari lal, 1967, in which a definite volume of milk (20%) blended with different concentrations of selected extracts (10, 20, 30, and 40%) of each to prepare the beverage. The stabilizer and sugar were added to maintain the total soluble solid at 18 Bomea. Table 2 shows the basic material which mixed together at different proportions and blended for 5 min. to make a homogenous mixture. Combination of extract and milk is possible provided precautions are taken against curdling and whey separation by pH adjustment with addition of a stabilizer (Yousif, et al., 1978). All formulated beverages were divided into two portions the first was filled in 250 ml sterilized glass bottles, crown corked and heat treated for 30 min at 90°c.The second portion was filled in 250 ml sterilized glass bottles, crown corked without heat treatment then stored at refrigerator temp (5°C till analysis).

Table 2: Milk beverage formulations

Compositions (%)	Carrot				Kiwi				Dates			
	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4
extract(W/W)	10	20	30	40	10	20	30	40	10	20	30	40
Milk (V/W)	20	20	20	20	20	20	20	20	20	20	20	20
Sugar (W/W)	13.5	12.6	11.7	10.8	13.5	12.6	11.7	10.8	13.5	12.6	11.7	10.8
Water (V/W)	56.5	47.4	38.3	29.2	56.5	47.4	38.3	29.2	56.5	47.4	38.3	29.2

F: Formula

Chemical analysis:

The obtained extract and beverage samples were examined in triplicate for total solid, fat, protein, carbohydrates, fibers, ash, minerals (sodium, potassium, calcium, phosphorus , iron and zinc) and vitamins (ascorbic acid B-carotene) according to AOAC (1995). Beverages pH was measured by using an Orion Research pH-meter.

Microbiological analysis:

Microbiological status of the beverages was evaluated by measuring the standard plate count (SPC), E-coli yeast and molds and coliforms by the methods recommended by the American Public Health Association (1992). The colonies were expressed as count per ml of beverage.

Sensory evaluation:

The beverage samples were sensory evaluated by an expert sensory panel of 14 using 1-9 point Hedonic scale for color, flavor, acidity, consistency, sweetness and overall acceptability. (Kroll, 1990) Sufficient samples were provided to each subject for sensory evaluation.

Statistical analysis:

Data were expressed as mean ± SD and analyzed by Student t and Chi square tests. Using Stat view 512+ software (1986).Significant effects were declared at $P<0.05$

RESULTS AND DISCUSSION

As consumer demand for traditional carbonated drinks falls, the market for beverages with perceived health-promoting properties is growing rapidly. Dairy beverages constitute more than 60% of total beverage consumption and consider a rich source of vitamins,

minerals and bioactive proteins. (Susan, (2008), Didier, (2008). Enriched milk-based beverages are a fast-growing segment of the functional food market.

Fruits and vegetables have been thought to be beneficial in various diseases. The beneficial effects of fruits and vegetables may be explained by the antioxidants and other components contained therein.

Carrots are well known as the universal vegetable for juicing. Carrot extract has been well known as being a miracle extract, or "the king of extracts". Carrot extract is very high in beta-carotene, and is a cancer-fighting agent. Carrots also carry other vitamins such as B, C, D, and K, and minerals like calcium, phosphorous, potassium, sodium, and traces of protein. Table 1 shows some of the chemical compositions of the fresh carrot extract which is more or less similar to that recorded by Hashimoto and Nagayama (2004) and Salwa et al., (2004)

Kiwi fruits are rich in many Vitamins, flavonoids and minerals. In particular, they contain a high amount of Vitamin C (more than oranges), as much potassium as bananas and a good amount of beta-carotene. Table 1 shows some of the chemical compositions of kiwi fruit which is similar to that mentioned by Der kleine, (1991).

The chemical composition of dates was related to textural properties and mouth feel at various stages of maturity. The sugar content of ripe dates is about 80%; the remainder consists of protein, fat and mineral products including copper, sulphur, iron, magnesium and fluoric acid. Dates are high in fiber and an excellent source of potassium. (Wrigley, 1995) Table 1 shows some of the chemical compositions of the date palm extract which is similar to that recorded by Walid et al., (2003)

Results in Table 3 show the chemical composition of freshly prepared beverages based upon carrot, kiwifruit and dates. The protein content was varied significantly ($p<0.05$) between the three types of beverages according to their concentrations. The highest content was observed in formula 4 of the date – milk beverage (3.75g/100g beverage)and the lowest was obtained in formula 1 of kiwi – milk beverage (1.23g/100g beverage). The fat content was also varied significantly ($p<0.05$) between the three types of beverages according to their concentrations. The highest level was observed in formula 4 of the carrot-milk beverage and the lowest one was obtained in formula 1

of date-milk beverage. The fibers and total solids contents were highly significant ($p<0.001$) different in between groups according to their concentrations the highest level was obtained in formula 4 of the date-milk beverage (24.5 g/100g beverage) and the lowest level was observed in formula 1 of the carrot-milk beverage.(13.1g/100g beverage). The vitamin C and B-carotene were highly significant ($p<0.001$) between the groups with highest levels in formula 4 of carrot-milk beverage. The minerals were significantly different ($p<0.05$) between groups according to the element in relation to the concentration.

Table3: Chemical analysis of different formulas of beverages

Parameter g/100 ml beverage		Carrot- milk Beverage				Kiwi-milk Beverage				Date-milk Beverage			
		F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4
Total solids/g		13.1±1.2	13.6±1.4	13.9±1.5	14.3± 1.8	18.3± 1.3	18.7± 1.9	19.2± 1.8	19.5± 1.6	22.1± 2.2	22.9 ±2.4	23.4± 2.5	24.5± 2.8
Protein/g		1.35±0.3	1.48±0.6	1.63±0.7	1.78± 0.4	1.23± 0.2	1.36± 0.8	1.43± 0.3	1.61± 0.2	2.23± 0.8	2.45 ±0.7	3.10± 1.2	3.75± 1.1
Fats/g		0.53 ±0.2	0.57 ±0.1	0.59 ±0.3	0.63 ±0.2	0.73 ±0.5	0.76 ±0.4	0.83 ±0.3	0.8 8 ±0.4	0.77± 0.1	0.88 ±0.3	0,94 ±0.2	0.95± 0.1
Fibers/g		2.29±0.8	2.43±0.3	2.59±0.9	2.6 5± 0.7	2.71± 0.6	2.7 2± 0.2	2.83 ± 0.8	2.87± 0.4	2.45± 1.1	2.69 ±1.5	2.83± 1.3	2.88± 1.9
Vitamins and minerals /100 ml beverage	Vitamin C/mg	23.77± 1.5	23.85± 1.8	23.91± 1.3	23.98± 1.8	15.87± 1.7	15.93± 1.9	16.03± 1.4	16.20 ±1.1	0.43± 0.02	0.49 ±0.0 4	0.53± 0.05	0.58± 0.08
	B-Carotene/µg	1434±25	1453± 28	1468±31	1492± 35	1321± 23	1366± 26	1383.0 ±31	1388 ±36	110±1 5	125± 18	140± 21	155± 22
	Sodium/mg	48.0±4.4	56.0±2.6	66.3±3.5	70.2± 4.3	50.1± 6.3	53..5± 5.9	58.5±3 .8	61.8± 6.3	60.4± 3.5	60.8 ±4.0	61.3± 5.2	61.9± 5.0
	Potassium/mg	311.2± 12.4	325.2± 10.5	365.5± 15.8	378.5± 16.3	488.2± 14.4	495.1± 18.2	515.3± 17.4	585.8 ±19.5	508.1 ±22.3	591. 2±24 .4	601.6 ±28.1	681.8 ±28.8
	Calcium/mg	54.4±4.5	64.8±6.2	75.3±8.8	87.9± 5.5	86.4± 4.2	88.2± 3.8	95.2± 5.3	99.3± 4.9	55.7± 2.3	63.1 ±2.5	68.0± 3.0	71.0± 3.2
	Phosphorus/mg	58.2±6.6	61.5±5.8	65.2±4.9	69.5± 4.2	62.4± .8.4	64.9± 5.3	66.2± 4.9	73.8± 5.6	98.3± 4.2	102. ±4.8	109.± 5.2	118.± 5.1
	Iron/mg	1.411± 0.08	1.11± 0.04	1.30± 0.06	0.511± 0.05	0.812± 0.04	0.825± 0.03	0.837± 0.09	0.85± 0.04	1.13± 0.03	1.15 ±0.0 6	1.18± 0.01	1.21± 0.06
	Zinc/mg	1.14± 0.05	1.16± 0.08	1.17± 0.05	1.23± 0.06	1.03± 0.7	1.05± 0.08	1.08± 0.06	1.09± 0.02	0.14± 0.04	0.16 ±0.0 7	0.17± 0.02	0.19± 0.05

The various sensory properties of milk –based beverage were shown in Table (4), where in carrot-milk beverage there was a great variation between the different formulations. The carrot flavor increased with increasing carrot concentration and as a result sensory panel judges preferred the flavor of formula 4, while the other parameters gave the best result to the formula 3. More carrot concentration, the viscosity was more and the less flow behavior. Same finding was observed by Hohn and Kunsch (2003). According to the panel judgment, the formula 3 gave the best result, followed the formula 2, then formula 4, while the formula 1 gave the lowest score. Therefore, there was a significant difference ($p<0.05$) between formula 3 and formula 1, while it was non-significant ($p>0.05$) with the other formulas. Same findings were found with kiwi-milk beverage, while in date-milk beverage the highest score was found in formula 2 with non-significant differences ($p>0.05$) between its formulas. The highest customer and overall acceptance was found in formula 3 of kiwi-milk beverage**.**

Table 4: sensory evaluation of different types of beverages

Beverage		Color	Sweetness	Flavor	Consistency	Acidity	0verall acceptability
Carrot –Milk	F1	6.00±0.34	5.95±0.05	6.23±0.43	6.01±0.02	6.36±0.45	6.12±0.22
	F2	7.15±0.05	7.01±0.14	7.00±0.23	7.24±0.34	6.87±0.75	7.10±0.24
	F3	7.14±0.52	7.25±0.44	7.02±0.64	7.45±0.50	7.20±0.02	7.73±0.43
	F4	7.00±0.03	7.12±0.11	7.75±0.25	6.56±0.55	6.75±0.43	6.65±0.45
Kiwi – Milk	F1	6.35±0.44	6.36±0.45	6.68±0.48	6.25±0.42	6.43±0.40	6.39±0.46
	F2	7.34±0.47	7.27±0.37	7.57±0.40	7.39±0.44	7.42±0.48	7.22±0.42
	F3	7.43±0.49	7.48±0.53	7.63±0.38	7.66±0.21	6.98±0.80	7.85±0.73
	F4	7.25±0.44	7.28±0.38	7.82±0.72	6.81±0.46	6.87±0.75	7.03±0.21
Date – Milk	F1	6.18±0.28	5.72±0.17	6.18±0.28	6.07±0.22	6.31±0.42	6.19±0.29
	F2	7.55±0.60	7.43±0.48	7.50±0.52	7.60±0.37	7.09±0.07	7.79±0.2
	F3	7.25±0.44	6.98±0.80	7.48±0.58	7.33±0.46	6.91±0.77	7.15±0.26
	F4	7.10±0.24	7.00±0.03	7.61±0.37	6.69±0.43	6.79±0.45	6.93±0.51

The data presented in Table 5 shows the microbiological analysis of milk-based beverage. It revealed that there were no significant differences ($p>0.05$) among all formulations during 60

days storage. As a result of high hygienic conditions and heat treatment during manufacturing ,the beverages contained a safe level of total standard plate count (SPC) after 2 months storage at ambient temperature. No E-coli, yeast and molds and coliform were observed in all formulas during storage. Similar findings were reported by Laxminarayana et al. (1997).

Table 5: Microbiological studies for heat treated beverages

Beverage		Standard plate count (cfu/ml)			E – Coli (cfu/ml)			Yeast & moulds count			Coliform count		
		Fresh	30 days	60 days	Fresh	30 days	60 days	Fresh	30 days	60 days	Fresh	30 days	60 days
Carrot – Milk	F1	13000	14500	15500	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F2	15000	16500	17000	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F3	14500	16000	18000	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F4	13000	14500	16500	ND	ND	ND	ND	ND	ND	ND	ND	ND
Kiwi – Milk	F1	13750	14975	16200	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F2	14300	15400	16500	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F3	14670	15985	17300	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F4	13200	15100	17000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Date – Milk	F1	12700	13550	14400	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F2	13500	14500	15500	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F3	14300	15300	16300	ND	ND	ND	ND	ND	ND	ND	ND	ND
	F4	12100	13300	14500	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND: Not detected

The data presented in table 6 shows the microbiological analysis of milk-based beverage without heat treatment. It revealed that there were significant differences among all formulation during 14 days storage when compared with the heat treated beverage of the same concentration. of E-coli, yeast and moulds and coliform were observed in some formulas during storage. Similar findings also were reported by laximnarayana et al.(1997), which reveal the significant of heat treatment for these quality of beverages.

The results of the present investigation are of practical value. The use of fore-mentioned milk-based beverages was advantageous due to its antibacterial and anticancer properties. In addition, it's safe for public health and used as vitaminized food supplement. The developed products were evaluated and proved to be of good quality with adequate shelf lives.

Table 6: Microbiological studies for non-heat treated beverages

Beverage		Standard plate count (cfu/ml)			E – Coli (cfu/ml)			Yeast & moulds count			Coliform count		
		Fresh	7 days	14 days	Fresh	7 days	14 days	Fresh	7 days	14 days	Fresh	7 days	14 days
Carrot – Milk	F1	28000	15400	11710	ND	13	18	ND	ND	ND	ND	ND	ND
	F2	23000	17300	19200	ND	17	19	ND	ND	ND	ND	ND	ND
	F3	15300	18100	19400	ND	19	17	ND	ND	ND	ND	ND	ND
	F4	21000	15500	17700	ND	20	16	ND	ND	ND	ND	ND	ND
Kiwi – Milk	F1	14600	19200	17400	ND	21	10	ND	ND	ND	ND	ND	ND
	F2	15100	16100	17700	ND	22	9	ND	ND	ND	ND	ND	ND
	F3	15180	16700	17900	ND	4	8	ND	ND	ND	ND	ND	ND
	F4	18500	12330	18600	ND	8	13	ND	ND	ND	ND	ND	ND
Date – Milk	F1	13400	13550	15800	ND	2	11	ND	ND	ND	ND	ND	ND
	F2	14200	16000	16400	ND	9	8	ND	ND	ND	ND	ND	ND
	F3	15400	17200	17100	ND	7	6	ND	ND	ND	ND	ND	ND
	F4	12800	15900	16700	ND	6	3	ND	ND	ND	ND	ND	ND

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الخواص الكيماوية و الميكروبيلوجية ودرجة القبول لبعض المشروبات اللبنية

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تم في هذه البحث دراسة خواص مشروب اللبن بالجزروالكيوى والبلح .والذى تم تحضيره بخلط اللبن البقرى المبستر بنسبة 20% مع تركيزات مختلفة من عصير الجزروالكيوى والبلح والتي شملت النسب 10% و20% و30% و40% على التوالي وبدراسة الخواص الحسيه والميكروبي ولوجيه والتحليل الكيميائي لهذا الخليط أثبتت النتائج أن اللبن المخلوط مع عصير الكيوى بنسبة 30 % حصل على أفضل الخواص .ومن حيث التحليل الكيميائي كانت هناك اختلافات متباينة في كافة المعاملات من حيث نوع العصير والتركيز وان كانت في مجملها ذات فائدة عظمه في إمداد الجسم باحتياجاته من العناصر الغذائية والمقاومة للعديد من الأمراض أما من حيث التحليل الميكروبيولجى فلقد كان في الحدود المسموح بها ولم يحتوى الخليط على أي من على الميكروبات الممرضة. ولقد خلصت الدراسة إلى أن هذه المشروبات ذات فوائد جمة فيما يتعلق بالصحة العامة و يعتبر مصدر غنى بالفيتامينات المدعمة للغذاء. ومن الممكن استخدامه بأمان حتى لو تم حفظه في درجه الحرارة العادية ولمدة 60 يوما.