

Development Healthy Drink Use of Orange Juice, Carrot Juice, *Aloe vera* Juice, Holy Basil Dry Leaves Powder

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Abstract

The phytochemical and physiochemical properties of orange juice enriched with carrot juice aloe Vera juice and whole besil dry leaves powder in this study the physic chemical and properties phytochemical properties of 70% orange juice 15% carrot juice 10% aloe vera juice 5% basil dry leaves extract powder were studies is healthy drink with high content of vitamin C zero fat due to which our drinks considered as healthy drink for obesis person for the taste of drink added honey / sugar .Thus the useful of all phytochemical test indicate that the drink has good potential for weight reducing in obesis person healthy life cycle.

Keywords: *Healthy, Drink, bioremediation*

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INTRODUCTION

Fresh orange juice is a great source of beneficial nutrients such as minerals, vitamins, flavonoids and nutrients. These all nutrients play a significant role in maintaining healthy body. Consumption of vitamin C is essential to protect the body cells from free radicals. A satisfactory amount of this crucial vitamin can be provided to the body by taking orange juice [1, 2]. The presence of manganese, potassium, iron, chlorine, zinc, folic acid, sodium, phosphorus and pectin makes it more valuable. And most importantly the calories in orange juice are zero Orange juice is actually the liquid extract of the fruit of orange tree is known as orange juice. The orange juice is made when the fresh orange is squeezed and dried and passed through the process of dehydration. Orange juice is also formed when the juice is concentrated and then water is added to the concentrate [3–5]. There are many benefits of orange juice and one of its major benefits is the high concentration of vitamin C in it. There are different varieties of orange juices available in the market. One of the most popular varieties is blood orange [6, 7]. The slang O.J. is commonly used in American English language, which means orange juice. The juice obtained from the mature oranges and their hybrids was named as the official beverage of Fluids [8, 9].

Aloe vera (*Aloe barbadensis*). The botanical name of *Aloe vera* is *Aloe barbadensis* Miller.

It belongs to Asphodelaceae (Liliaceae) family, and is a shrubby or arbores cent, perennial, xerophytic, succulent, pea-green color plant [10, 11]. It grows mainly in the dry regions of Africa, Asia, Europe and America. In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu *Aloe vera* is a stemless plant with rosettes of very thick fleshy leaves [12–14]. The *Aloe vera* flowers are yellow or red clusters which are formed on long stem saintly the gel which is found in the central parts of the *Aloe vera* leaves is used. When collecting the gel care should be taken to remove the green coloured gel close to the skin, because this contains the bitter substance aloin. The process of harvesting *Aloe vera* gel is called filleting [15]. To obtain the best quality this filleting should be done by hand. When the leaves of the *Aloe vera* are cut, li quid exudes from the wounds. This aloin rich liquid is dried and harvested, to obtain curacao aloe Curacao aloes, which is the aloin rich, acts as laxative and is used against constipation and as a bitter tonic. The clear gel made from *Aloe vera* is used in cosmetics and the food industry for its health promoting properties [16–18]. *Aloe vera* is moistens the skin. *Aloe vera* is used to treat infections and burns and is said to improve the immune system and to lower cholesterol *Aloe vera* has a long history of popular and traditional use. It is used in traditional Indian medicine for constipation, colic, skin diseases, worm infestation, and infections). It is also used

in Trinidad and Tobago for hypertension) and among Mexican Americans for the treatment of type 2 diabetes mellitus. In Chinese medicine, it is often recommended in the treatment of fungal diseases [19–21]. They can be used directly or in extracted forms for the management of various ailments due to presence of various phytochemicals for the prevention and treatment of various health ailments, plants and isolated phytochemicals have been used from time immemorial [22-23]. A large number of phyto drugs prescribed worldwide are derived directly or indirectly from natural sources. The plant has triangular, fleshy leaves with serrated edges, yellow tubular flowers and fruits that contain numerous seeds. Each leaf is composed of three layers:

- (1) An inner clear gel that contains 99% water and rest is made of glucomannans, amino acids, lipids, sterols and vitamins.
- (2) The middle layer of latex which is the bitter yellow sap and contains anthraquinones and glycosides.
- (3) The outer thick layer of 15–20 cells called as rind which has protective function and synthesizes carbohydrates and proteins. Inside the rind is vascular bund.

Vitamins: It contains vitamins A (beta-carotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline. Antioxidant neutralizes free radicals [24-26].

Sugars: It provides monosaccharides (glucose and fructose) and polysaccharides: (glucomannans/polymannose). These are derived from the mucilage layer of the plant and are known as mucopolysaccharides [27]. 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 anti-allergic properties, called alprogen and novel anti-inflammatory compound, C-glucosyl chromone, has been isolated from *Aloe vera* gel.

REVIEW OF LITERATURE

R. Deliza et al. (2004) described the use of high hydrostatic pressure in food processing because

of its ability to inactivate food borne microorganisms and enzymes, at low temperature, without the need for chemical preservatives. Pressure-treated foods have sensory properties similar to fresh products, which is a major advantage in juice processing as it matches consumer demand for healthy, nutritious and “natural” products. However, an important issue arises when we consider the acceptance of such products by the consumer [28, 29]. This paper discusses the use of pressure processing in fruit juice production from a consumer perspective, focusing on the Brazilian consumer perception and attitude, with respect to information presented on the fruit juice label about the technology. The results have shown that when the technology advantages were presented on pineapple juice labels, participants understood the benefits, and expressed a higher product intention to purchase [30].

Andrew S Potter et al. (2011) described High prevalence of obesity and cardiovascular disease is attributable to sedentary lifestyle and eating diets high in fat and refined carbohydrate while eating diets low in fruit and vegetables. Epidemiological studies have confirmed a strong association between eating diets rich in fruits and vegetables and cardiovascular health [31, 32]. The aim of this pilot study was to determine whether drinking fresh carrot juice influences antioxidant status and cardiovascular risk.

Karangwa Eric et al. (2012) described Carrot (*Daucus carota*) is an important root vegetable cultivated worldwide. The carrot juice is an appreciable source of carotene and acceptable for its vitamin and mineral contents [33]. In recent years, a steady increase of carrot juice consumption has been reported in many countries. Orange (*Citrus sinensis*) on the other hand is widely grown worldwide and serving as one of the most abundant sources of vitamin C, fresh flavor and as a natural source of antioxidants which are beneficial to human health. The juice industries still considering only fruits as raw material for juice production, nowadays, the juice produced from vegetables presented more importance in human nutrition. And, juice blending is considered as one of the methods used to improve the nutritional quality

and sensory characteristics of the juice product [34, 35].

Awsi Jan, Er. Dorcus Masih et al. (2012) described Juice carrot (*Droscus carota*), and orange (*Citrus sinensis*) were optimised to a blended beverage which was stored for 21 days in pet bottles (400 ml capacity) at refrigerated temperature. Physic-chemical and sensory analysis was evaluated. Marginal changes in pH, total soluble solids, acidity, vitamin C and beta-carotene were observed. The beta carotene content of juice was found (1583 μg) to be increased with increasing the proportion of carrot juice. Estimation of vitamin C content of sample (19.50 mg) showed high improvement in nutritional value of pineapple juice incorporated with carrot and orange juice. The acidity increased (0.97–1.83) and pH of the juice decreased progressively during the storage period. This may be due to the excessive fermentation and presence of lactic acid reducing microorganism. The mean overall acceptability scores of more than 8 for juice samples up to 30% orange juice incorporation indicated the commercial scope for manufacturing good and nutritious pineapple juice blended with carrot and orange juice, which will also be helpful in providing dietary requirement of beta carotene to the consumer. Heat pasteurisation (900C for 25 sec) was more effective for inactivating the microbial flora [36–38]. However the shelf life of juice was established within 21 days. The product is recommended children, youth and elderly persons to be used within 21 days.

A Kaleem et al. (2015) described Vitamin C in commercial and fresh orange juice samples were investigated. The commercially available juices included packed and powdered orange juices. Different brands of commercial liquid and powdered orange juices were included in this study. The seasonal variation of vitamin-C in fresh oranges was also explored. Fresh cultivar of oranges including Ambersweet, Tangarin and Mandrin were selected for vitamin-C content. Furthermore the effect of storage, packing material lined and unlined with different fabrics and preservatives on the stability of vitamin-C in orange juice samples were investigated. Redox titration was used for measurement of vitamin-C content in all

samples. Maximum vitamin-C content was observed in end of the season fresh juice samples. Some of the commercially available orange juices (within expiry date) showed highest vitamin-C content, while mostly showed loss of vitamin-C during preservation process.

Varsha et al. (2015) described Fruit juices are well recognized for their nutritive value, mineral and vitamin content. They are nutritious beverages and can play a significant part in a healthy diet because they offer good taste and variety of nutrients found naturally in fruit. But nowadays chance of contamination of fruit juice get increases due to many condition. Most of the reported fruit juice borne outbreaks has been associated with bacterial contamination, particularly members of the Enterobacteriaceae. Of these, Salmonella and Escherichia coli in sprouted seeds and fruit juices are of particular concern. Outbreaks linked to protozoa, e.g. Cryptosporidium, Cyclospora, Giardia etc. have been associated more with fruits than with vegetables.

Afreen et al. (2016) described RTS beverages with different combination are nowadays very popular among people because Afreen of their taste and nutritional characteristics. An experiment was conducted to prepare RTS beverage by blending carrot and sour orange. Carrot juice and sour orange juice were mixed in different combinations (in v/v) as 100:0, 60:40, 50:50 and 40:60 and sugar, citric acid, distilled water and Sodium metabisulphite were mixed considering the recommendations of Sri Lanka standards for RTS beverages. Best combination was selected based on the sensory evaluation and the selected combination was evaluated for its physico-chemical and sensory qualities. Carrot juice 50 % and Sour orange juice 50 % showed 0.48% titrable acidity, 13.2% total sugar, 4.8 mg/100ml ascorbic acid, 14°Brix TSS, 2.86 pH and acceptable sensory qualities without any significant lose in the quality attributes at the end of 10 weeks storage at 5–10°C.

REVIEW OF ALOE VERA

Oliver Grundmann et al. (2012) *Aloe vera*, described commonly known as Barbados or Curaçao Aloe, is an herbal medicine with a long

tradition of use by a variety of cultures. The succulent plant grows in arid and subtropical climates and is best known for 2 distinct preparations: the clear mucilaginous gel that is widely used for the treatment of minor burns, especially sunburns, and the thick sap of the leaves that turns yellow-brown and has strong laxative effects that caution its use.

REVIEW OF HOLY BASIL

Marc Maurice Cohen et al. (2014) described the predominant cause of global morbidity and mortality is lifestyle-related chronic diseases, many of which can be addressed through Ayurveda with its focus on healthy lifestyle practices and regular consumption of adaptogenic herbs. Of all the herbs used within Ayurveda, tulsi (*Ocimum sanctum* Linn) is preeminent, and scientific research is now confirming its beneficial effects.

BENEFITS OF CARROT

Protects Eye Health

Three crucial nutrients—beta carotene, lutein and zeaxanthin—within **carrots** considerably boost eye health. For example, without beta carotene (a form of vitamin A), various forms of eye disorders can occur—including macular degeneration and even blindness. Lutein and zeaxanthin, meanwhile, both work to reduce the risk of age-related vision loss. Just **one cup** of chopped carrots provides 400% of your vitamin A needs! Carrots contain vitamin A in the form of beta carotene. Vitamin A is one of the most crucial nutrients necessary for protecting eye health and vision, especially as someone ages. Vitamin A deficiency can lead first to night blindness, then permanent blindness. Vitamin A deficiency is actually the number one cause of preventable blindness world-wide. Carrots can also reduce your risk of cataracts and macular-degeneration, a common cause of age-related vision loss. Eating carrots carrot juice regularly will help you maintain healthy eyes and vision throughout your life. If consuming carrots in raw form does not appeal to you, bear in mind that drinking carrot juice carries over the same eye health benefits.

- *High Source of Antioxidants (Especially Beta Carotene)*
- *Decreases Risk for Heart Disease and Stroke*
- *Helps Protect Against Cancer*

BENEFIT OF ORANGES

Healing Phytonutrients

Daily Value of Vitamin C

We all know that we can't function well without at least some vitamin C in our diets. It does everything from promoting strong and healthy bones and clear skin to strengthening your immune system to fight off infections and viruses. You could always take a supplement, but why do that when a delicious glass

- Consuming Citrus Lowers Risk of Certain Diseases
- Lower Cholesterol
- Prevents Ulcers
- Healthy Carbohydrates

BENEFIT OF ALOE VERA

Alkalinity: A body with an acidic pH is a breeding ground for disease. It's an atmosphere where illness thrives. Help keep your body balanced by eating and drinking alkaline foods and beverages such as *Aloe vera* juice. Other smart alkaline food choices include:

- leafy greens
- root vegetables
- citrus
- nuts and seeds
- apple cider vinegar
- coconut vinegar

Hydration: The aloe plant is very water-dense, so it's an ideal way to prevent or treat dehydration. Staying hydrated helps your body detox by providing a way for you to purge and flush out impurities. The juice also packs a hefty punch of nutrients that optimize your body's organ output. This is crucial, because your kidneys and liver are largely responsible for the task of detoxifying your blood and producing urine. For this reason, you need to keep them healthy. Recovery from heavy exercise also requires rehydration through the intake of extra fluids. Your body requires more fluids in order to flush and rid itself of the lactic acid buildup from exercising. Try *Aloe vera* juice instead of coconut water after your next hard work out.

Liver function: When it comes to detoxing, healthy liver function is key. *Aloe vera* juice is an excellent way to keep your liver healthy. That's because the liver functions best when the

body is adequately nourished and hydrated. *Aloe vera* juice is ideal for the liver because it's hydrating and rich in phytonutrients.

For constipation: Drinking *Aloe vera* juice helps increase the water content in your intestines. Research has shown the relationship between increasing the intestinal water content and the stimulation of peristalsis, which helps you pass stool normally. If you're constipated or have problems with frequent constipation, try incorporating *Aloe vera* juice into your daily routine. *Aloe* also helps normalize the healthy bacteria in your gut, keeping your healthy intestinal flora balanced.

For clear skin: Hydrating *Aloe vera* juice may help reduce the frequency and appearance of acne. It may also help reduce skin conditions like psoriasis and dermatitis. *Aloe vera* is a rich source of antioxidants and vitamins that may help protect your skin. The important compounds in *Aloe vera* have also been shown to neutralize the effects of ultraviolet (UV) radiation, repair your skin from existing UV damage, and help prevent fine lines and wrinkles.

Nutritious boost: *Aloe vera* juice is jam-packed with nutrients. Drinking it is an excellent way to make sure you don't become deficient. It contains important vitamins and minerals like vitamins B, C, E, and folic acid. It also contains small amounts of: calcium, copper, chromium, sodium, selenium, magnesium, potassium, manganese, zinc. *Aloe vera* is one of the only plant sources of vitamin B-12, too. This is excellent news for vegetarians and vegans. Keeping your food and drink intake nutrient-rich is key in combating most preventable diseases.

BENEFIT OF HOLY BASIL DAY LEAF POWDER

- Fever and Common Cold
- Cough and Respiratory Problems
- Healing Properties

Benefits of Carrots

Improved Vision: Western culture's understanding of carrots being 'good for the eyes' is one of the few we got right. Carrots are rich in beta-carotene, which is converted into

vitamin A in the liver. Vitamin A is transformed in the retina, to rhodopsin, a purple pigment necessary for night vision. Beta-carotene has also been shown to protect against macular degeneration and senile cataracts. A study found that people who eat the most beta-carotene had 40 percent lower risk of macular degeneration than those who consumed little.

Cancer Prevention: Studies have shown carrots reduce the risk of lung cancer, breast cancer and colon cancer. Researchers have just discovered falcarinol and falcarindiol which they feel cause the anticancer properties.

Falcarinol is a natural pesticide produced by the carrot that protects its roots from fungal diseases. Carrots are one of the only common sources of this compound. A study showed 1/3 lower cancer risk by carrot eating mice.

Anti-aging: The high levels beta-carotene act as an antioxidant to cell damage done to the body through regular metabolism. It help slows down the aging of cells.

Health Glowing Skin (from the inside): Vitamin A and antioxidants protects the skin from sun damage. Deficiencies of vitamin A cause dryness to the skin, hair and nails. Vitamin prevents premature wrinkling, acne, dry skin, pigmentation, blemishes, uneven skin tone.

A Powerful Antiseptic: Known by herbalists to prevent infection. They can be used on cuts shredded raw or boiled and mashed.

Beautiful Skin (from the outside): Carrots are used as an inexpensive and very convenient facial mask. Just mix grated carrot with a bit of honey. See full recipe at carrot face mask.

Prevent Heart Disease: Studies show that diets high in carotenoids are associated with a lower risk of heart disease. Carrots have not only beta-carotene but also alpha-carotene and lutein. The regular consumption of carrots also reduces cholesterol levels because the soluble fibers in carrots bind with bile acids.

Cleanse the Body: Vitamin A assists the liver in flushing out the toxins from the body. It reduces

the bile and fat in the liver. The fibres present in carrots help clean out the colon and hasten waste movement.

Healthy Teeth and Gums: It's all in the crunch! Carrots clean your teeth and mouth. They scrape off plaque and food particles just like toothbrushes or tooth paste. Carrots stimulate gums and trigger a lot of saliva, which being alkaline, balances out the acid forming, cavity forming bacteria. The minerals in carrots prevent tooth damage.

Prevent Stroke: From all the above benefits it is no surprise that a Harvard University study, people who ate more than six carrots a week are less likely to suffer a stroke than those who ate only one carrot a month or more.

MATERIALS AND METHODS

This chapter includes the description of materials used, experimental procedures, instruments and techniques followed during the course of experimentation.

Experimental Outline

The physicochemical test like pH moisture fiber sugar ash fat vitamin C and titrable acidity has been done and now the phytochemical analysis is yet to be done and this orange juice is fortified with other healthy juice like carrot juice Aloe vera so to create a new product and also a healthy drink which in feline can be incorporated with good bacteria to make it probiotic drink that gives addition to the benefit to the drink.

To Determine the pH of the Orange Juice in table 1.

- *Material Used:* Orange juice, pH solutions, pH meter, buffer.
- *Reagents Used:* Phenolphthalein indicator iodine solution
- Instruments required for proposed research work
- Thermometer, hot air oven, Vernier calliper, measuring cylinder.

Expected Outcome of Proposed Research Work

A drink which provides extra benefits to human health.

Methods

To Determine of pH

Fifty (50 ml) of the juice was transferred into a beaker and the pH was determined after the meter was calibrated using standard buffer solutions of pH 4.0 and 7.0. Sufficient time was allowed for equilibration before readings were taken.

To Determine the Total Soluble Solid Content

Material used: 10 ml orange juice, Measuring cylinder, Centrifuge tube, Refractometer.

Method: The hand held sugar refractometer was used. The prism of the refractometer was cleaned and a drop of the juice was placed on the prism and closed. The total sugar content (°Brix) was read off the scale of the refractometer when held close to the eye

To Determine the Titratable Acidity

Material used: orange juice (sample), buffer, NaOH, Indicator.

Method: 10ml of orange juice was boiled with 20 ml of water for one hour. The volume was made up by adding boiling water so as to compensate for the loss of evaporating vapours. 10 ml of the cooled filtrate was then titrated with 0.1 N NaOH using phenolphthalein as the indicator.

Material Used: Orange juice, Indicator, Flask.

Method: Pour 10 ml of the vitamin C indicator into a clear glass cup. Using a clean Dropper, add a drop of one of the orange juice samples to the indicator in the flask. Gently swirl the liquids to mix. Continue to add orange juice, drop by drop, until the indicator changes from blue to colorless. Note: Be sure to swirl after each drop is added. This is the process of titration. Observe and count the number of drops of orange juice you needed to add to the indicator to cause it to lose all of its color. Repeat the above steps for each orange juice sample being tested. It is important to well rinse the droppers between tests and to use clean flasks for each trial to avoid any contamination. To minimize our measurement errors, we tested each juice three times and calculated the average number of drops required to change the indicator. Note: The color of the vitamin C indicator was a royal blue.

Measurement of Phyto Chemical Analysis

Sterols: This test is known as Liermann Burchard Test.

- Take 2 ml sample extract and dissolve in 2ml acetic acid solution.
- Heat the solution to boiling.
- After boiling cool the solvent and add 1ml of conc. sulfuric acid alongside of the test tube.
- A brown ring formation at the junction and the turning of the upper layer to dark green color confirms presence of Sterols.

Flavonoids: Test known as Lead Acetate Test.

- Take 2 ml of samples in the test tube and add 1ml of distilled water to make a test solution.
- Add few drops of 10% lead acetate (dissolve 10g of lead acetate in 1000ml distilled water).
- Presence of yellow precipitate confirms Flavonoids.

Saponins: Test known as Foam test.

- Take 2g of sample in a test tube and add 5ml of distilled water
- Shake well for 5mins.
- Formation of stable foam confirms presences of Saponins.

Carbohydrates

- Take 2 mg of sample powder and add 1ml of distill water, mix well
- Add 1 ml Fehling solution (both 1 and 2).
- Shake and heat on water bath for 10 mins.
- Presence of red precipitate confirms carbohydrates.

Tannins

- Take 50 mg of sample in a test tube and add 5ml distill water
- Mix well and add 3ml of 10% lead acetate
- A bubbly white precipitate confirms presence of Tannins.

The powered plant parts as well as the extracts were subjected to preliminary phytochemical screening following the methodology:

1. *Test for alkaloids:* 2 ml filtrate was mixed with 1% HCl and about 6 drops of Mayor's reagents. A Creamish or pale yellow precipitate indicated the presence of respective alkaloids.
2. *Test for amino acids:* 1 ml of the extract was treated with few drops of Ninhydrin

reagent. Appearance of purple color shows the presence of amino acids.

3. *Test for tannins:* 1 ml of the extract was treated with few drops of 0.1% ferric chloride and observed for brownish green or a blue-black coloration.
4. *Test for anthraquinones (Borntrager's test):* 1 ml of the extract solution was hydrolyzed with diluted Conc. H₂SO₄ extracted with benzene. 1 ml of dilute ammonia was added to it. Rose pink coloration suggested the positive response for anthraquinones.
5. *Test for saponins:* Froth test for saponins was used. 1g of the sample was weighed into a conical flask in which 10ml of sterile distilled water was added and boiled for 5 min. The mixture was filtered and 2.5ml of the filtrate was added to 10ml of sterile distilled water in a test tube. The test tube was stopped for about 30 second. It was then allowed to stand for

RESULT AND DISCUSSION

Orange

pH Content- Orange juice ranges in pH from 3.3 to 4.19. It has 122 calories, 139 percent of the DV for vitamin C, 12 percent of the DV for folate and 13 percent of the DV for potassium per cup.

Discussion: Orange juice has a pH level of 3 (Table 1). According to the pH scale, which measures acidity and alkalinity, anything less than 7 is acidic. Orange juice is acidic because it contains elevated concentrations of citric acid, which is a naturally forming preservative found in Orange juice (Fig.1].

Total Solid Sugar Content- Sugars are the major soluble solids in fruit juice. Other soluble materials include organic and amino acids, soluble pectins, etc. Soluble solids concentration (SSC%, o Brix) can be determined in a small sample of fruit juice using a hand held refractometer.

Discussion: Determining the total soluble solids (Brix) is an important measurement taken in a wide range of crops. In the citrus industry this is a measure of the total soluble solids in the juice. These soluble solids are primarily sugars; sucrose, fructose, and glucose found the final result 7 TSS (Fig. 2).

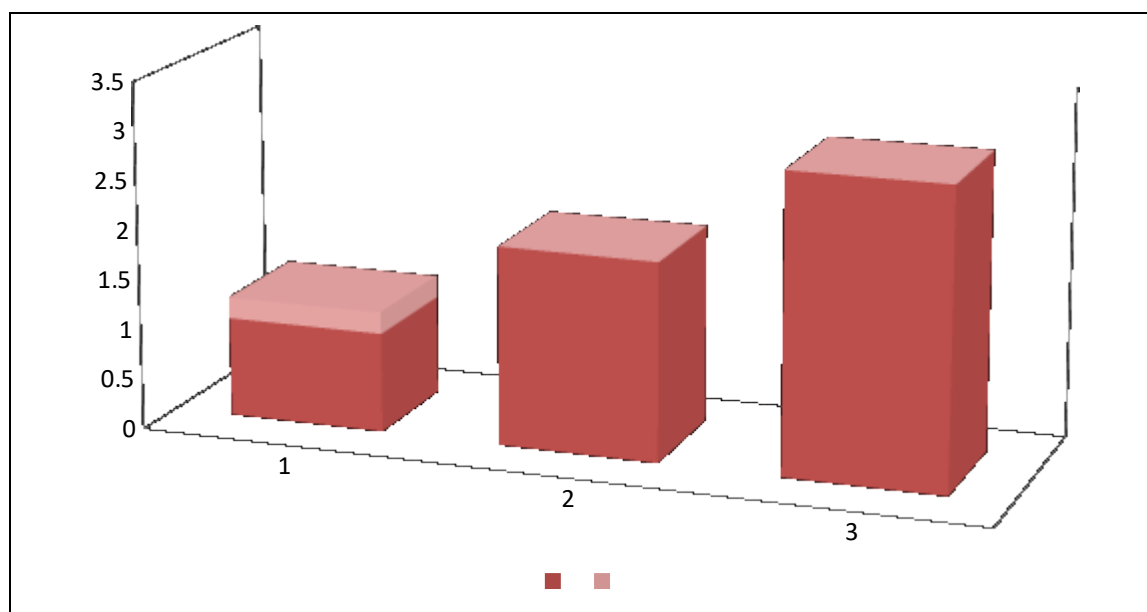


Fig. 1: pH level of Orange juice.

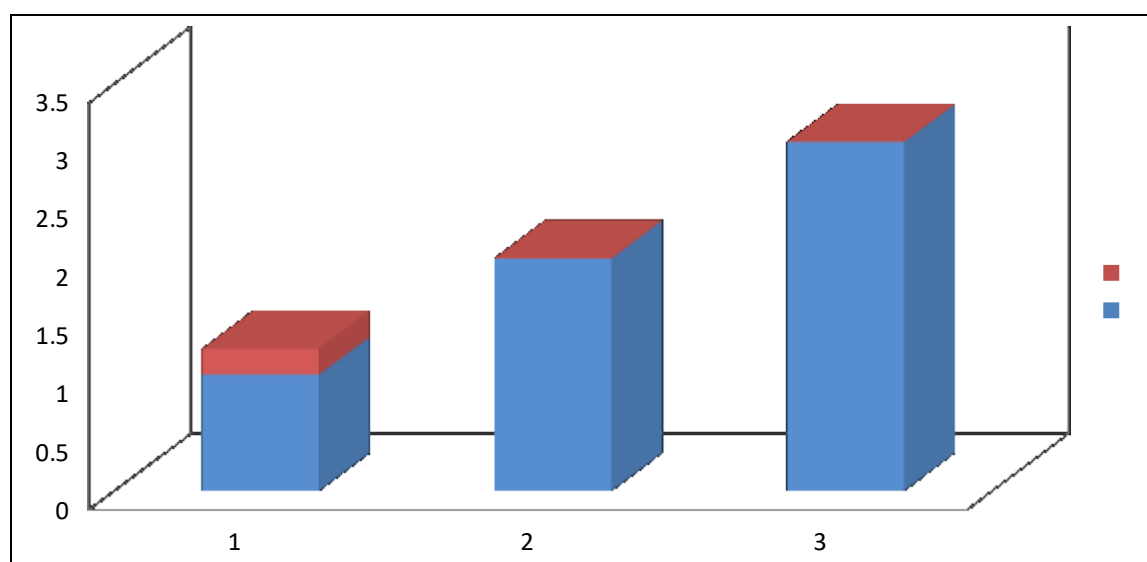


Fig. 2: Total Solid Sugar Content in Orange Juice

Titration Acidity Content- Titration is a chemical process used in ascertaining the amount of constituent substance in a sample, e.g. acids, by using a standard counter-active reagent, e.g. an alkali (NaOH). Once the acid level in a sample has been determined it can be used to find the ratio of sugar to acid.

Discussion: Citric acid and small amount of tartaric acid, give citrus its tartness and unique taste. The levels of acid are at the highest concentrations early in the season and they decrease as the fruit mature. The amount of acid present in the juice is reported as percent citric acid. To calculate this value we use a titration

with NaOH and found result acidic juice (Fig. 3).

Vitamin C Content- Citrus juices are reported to be the largest contributor of vitamin C. Vitamin C can help support collagen production which is important for maintenance of healthy skin, bones, cartilage, muscle and blood vessels.

Discussion: Per 10 ml is test vitamin C. and we found in high amount of vitamin C and very citric. Very souring content to high and color changing to easily. Note: The color of the vitamin C indicator was a royal blue.

Carrot

Moisture Content- The moisture content of carrot varies from 86 to 89%. Carrots are a good source of carbohydrates and minerals like Ca, p, Fe and Mg.

Discussion: 10% carrot juice found in moisture content 18 % carrot in present in high moisture (Fig. 4).

Vitamin C Content- Carrots provide vitamin C too. This antioxidant nutrient plays an essential role in the production of the tissues that make up your blood vessels, bones, teeth, gums, muscle and skin. It also supports immune

system function and helps your body absorb the iron in beans, grains and other plant-based foods.

Discussion: 10 ml carrot juice found in low content of vitamin C. It is not good source of vitamin C.

Fiber Content- Carrots are loaded with beneficial fiber. Whether you enjoy eating baby carrots as a mid-morning snack, adding shaved carrots to your lunchtime salad or piling steamed carrots on your plate at dinner, this nutrient-dense veggie packs healthy fiber into your diet (Fig. 5).

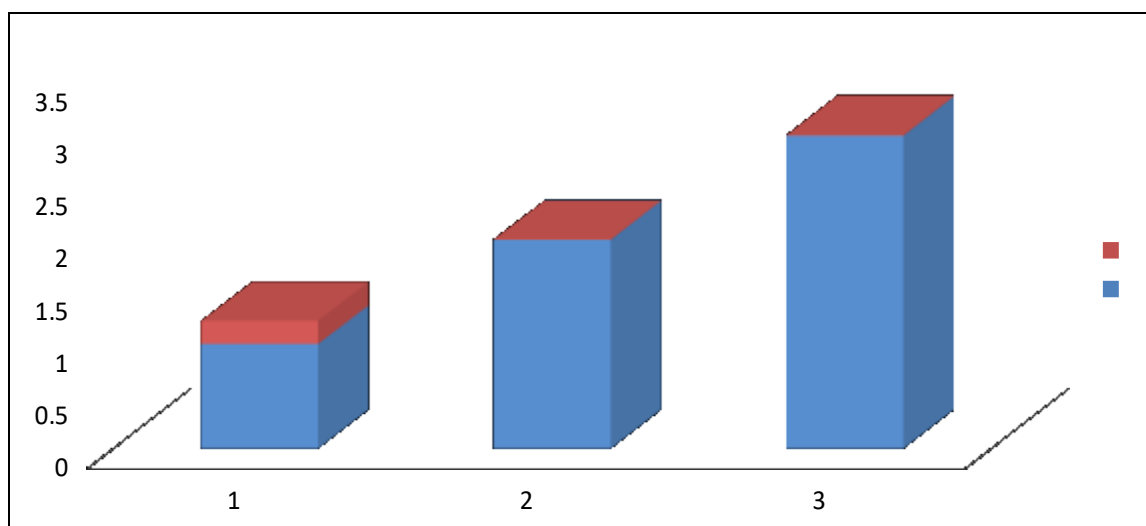


Fig. 3: Titration Acidity Content in Orange Juice.

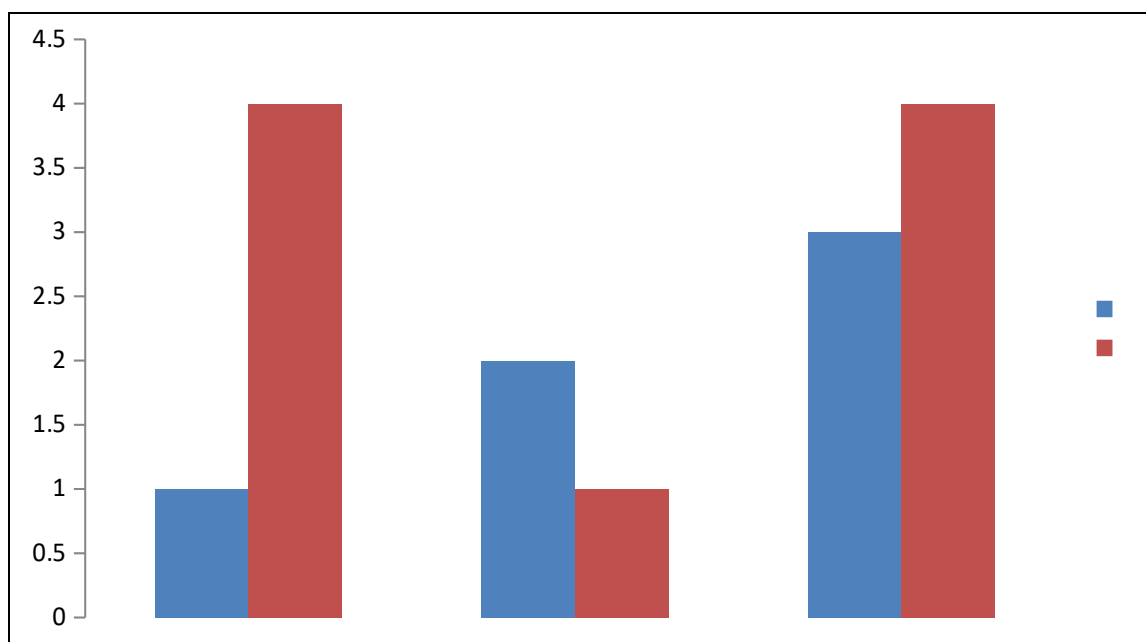


Fig. 4: Total Moisture Content in Carrot.

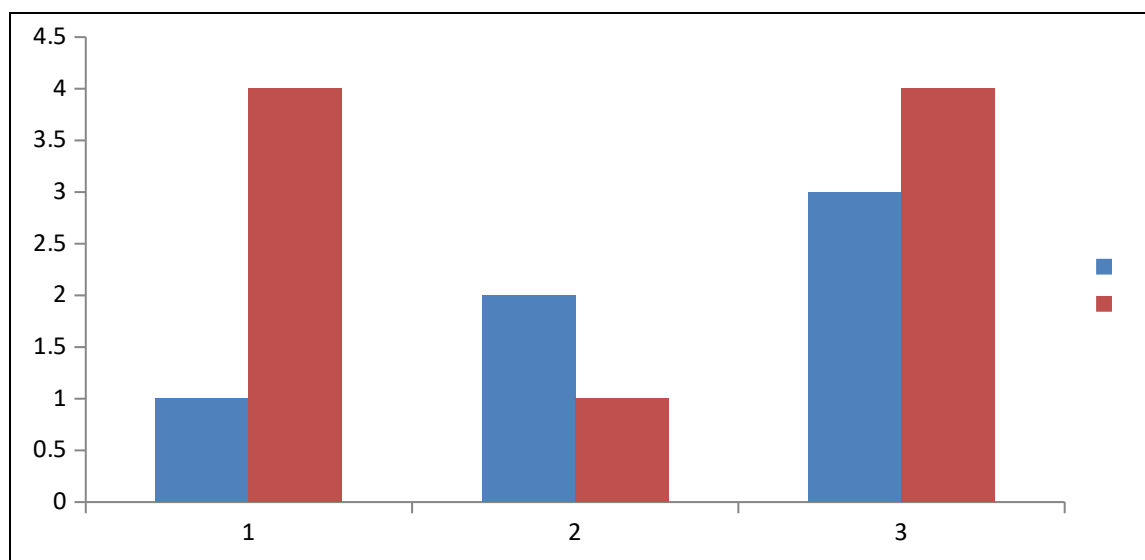


Fig. 5: Total Fiber Content in Carrot.

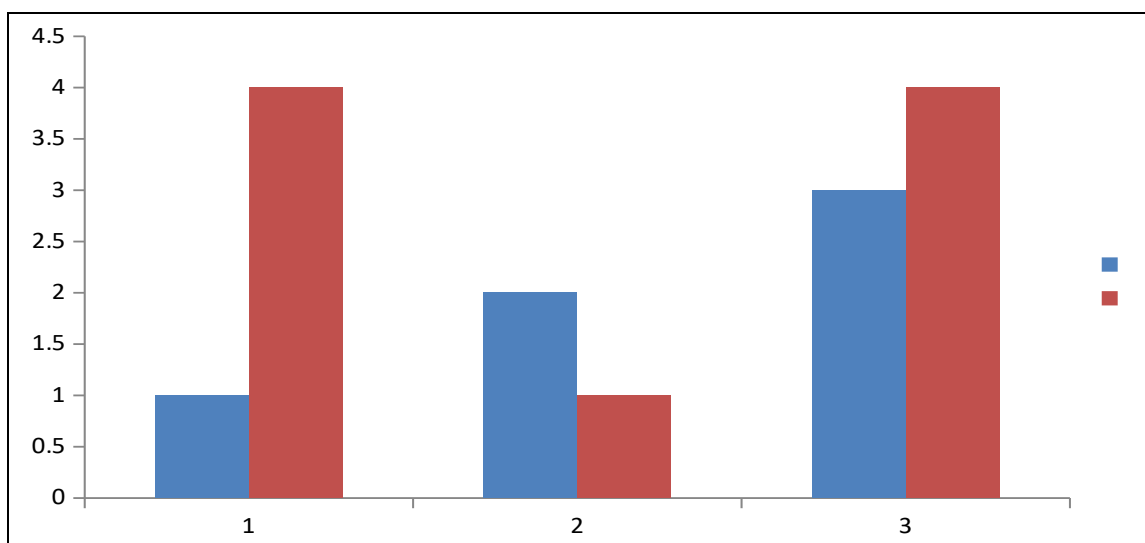


Fig. 6: Vitamin C content in Aloe vera.

Sugar Content -Carrots don't contain a lot of calories per serving, with only 50 calories per cup of raw carrots, but they do provide significant amounts of vitamins and minerals.

Aloe vera

Vitamin C content- Aloe vera contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids. Vitamins: It contains vitamins A (beta-carotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline (Fig. 6).

pH Content- Aloe vera has a natural pH level of 4.5-5.5 and having a neutralized pH level in your scalp enhances cellular regeneration.

Discussion: pH is average content to found. Blue line is pH present in carrot (Fig.7).

Moisture Content- Amount of water (in any form) in a material or substance.

Discussion: To find the water content of *Aloe*, the small piece of samples were taken from each leaf part. The sample which is taken 10 ml *Aloe vera* juice. There are three samples from each leaf part, this purposed for water content repetition measurement. Each sample was scaled with Sartorius precision weighing with 0.1 mg scale division. Each sample was evaporated the water content and measured the weight with two hours intervals. Totally four hours needed to evaporate the water from *Aloe*.

In the final state, the dry masses of *Aloe* were checked with precision scale weighing. Comparing the mass of evaporated water with initial weight and multiplied with 100% to gain the moisture content of *Aloe*. A force convection dryer was used to evaporate the water content (Fig.8,9).

Fiber Content- Fibre is the indigestible parts of plant foods, such as vegetables, fruits, grains, beans and legumes. It is type of a carbohydrate that helps keep our digestive systems healthy. There are three different types of fibre which all have different functions and health benefits.

Discussion: 10 ml carrot juice present found in 8 % fiber carrot is good source of fiber to found 8% fiber content.

Mix Juice Healthy Drink

Titration Acidity Content- Titration is a chemical process used in ascertaining the amount of constituent substance in a sample, e.g. acids, by using a standard counter-active reagent, e.g. an alkali (NaOH). Once the acid level in a sample has been determined it can be used to find the ratio of sugar to acid (Fig. 10).

pH- Citrus fruits such as lemons, limes, oranges and grapefruits contain citric acid and have a pH range between 2 and 6 -- pH is the scale that determines how acidic or basic a substance is with neutral having a pH value of 7 (Fig.11).

Total Solid Sugar- Sugars are the major soluble solids in fruit juice. Other soluble materials include organic and amino acids, soluble pectins, etc (Fig.12).

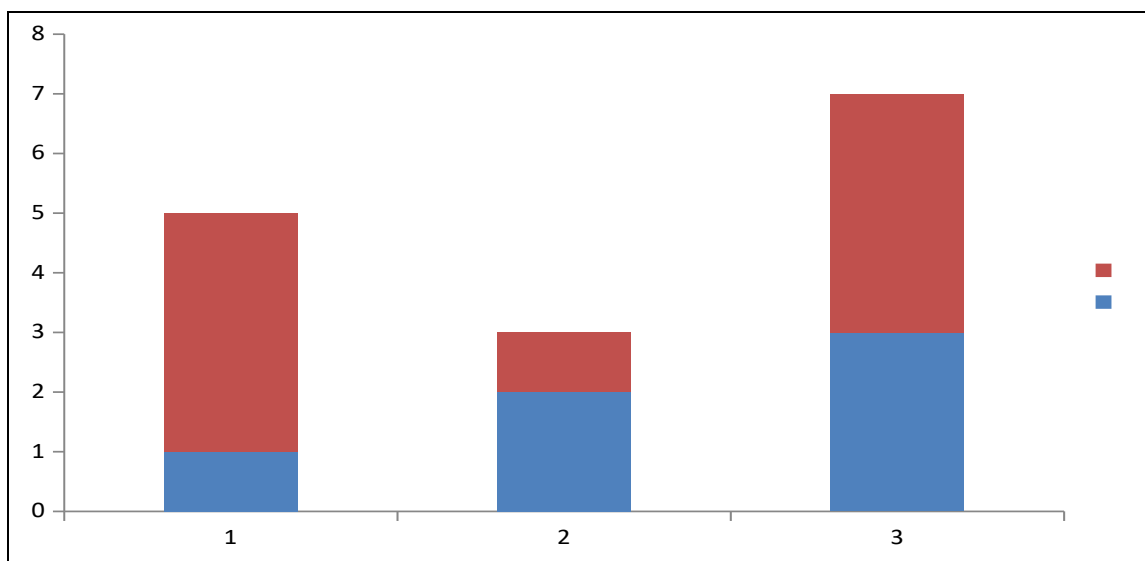


Fig. 7: Total Fiber Content in Carrot.

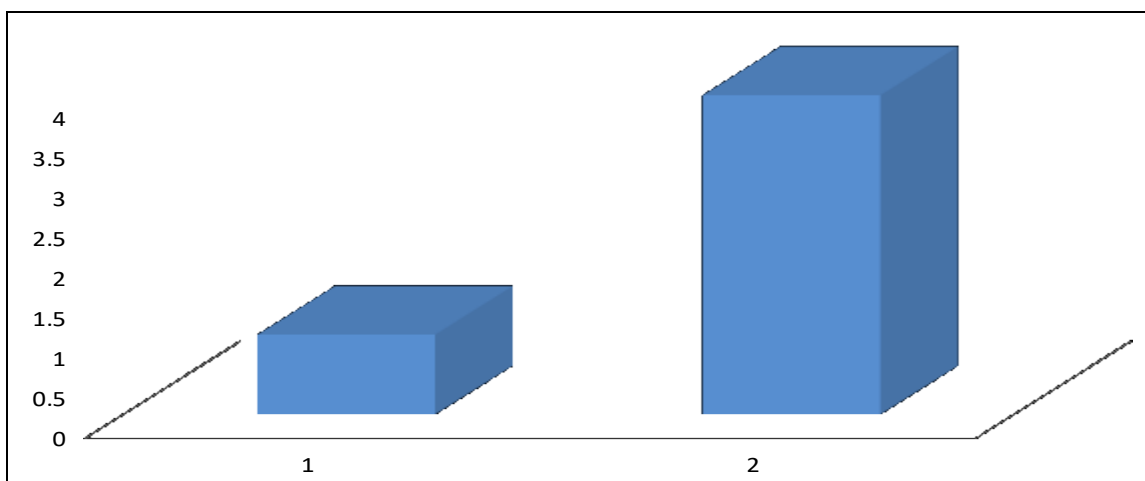


Fig. 8: Moisture Content in Aloe vera.

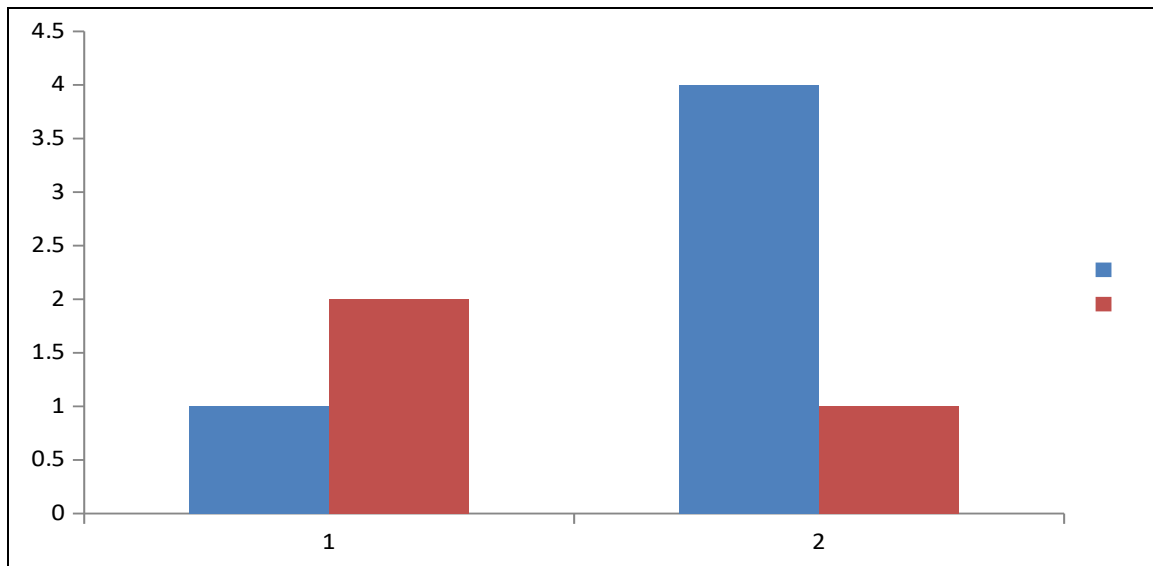


Fig. 9: Moisture Content in Aloe vera.

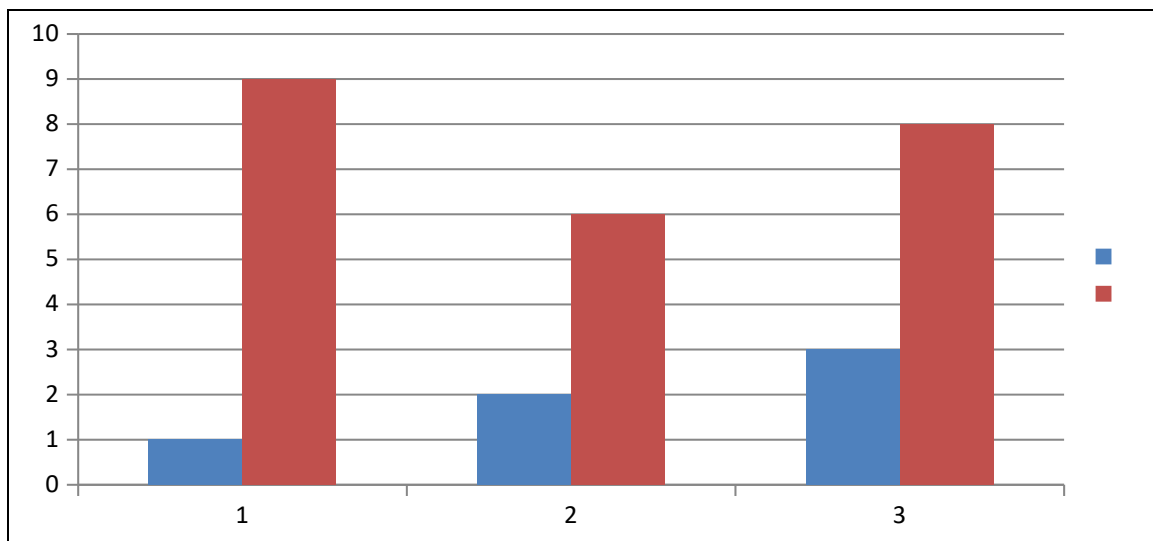


Fig. 10: Titration Acidity Content of mix juice.

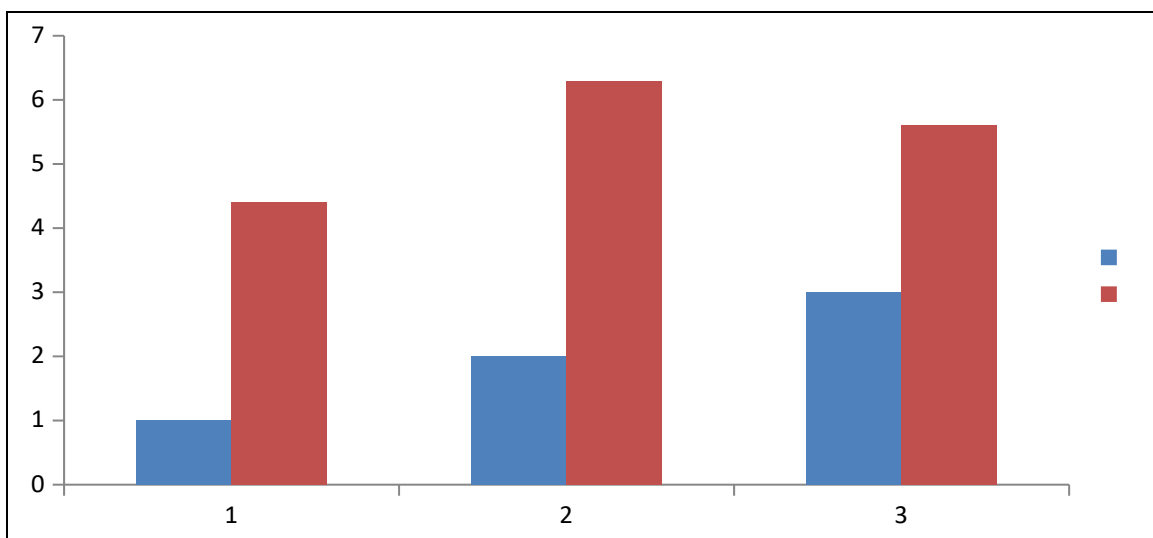


Fig. 11: pH of mix juice.

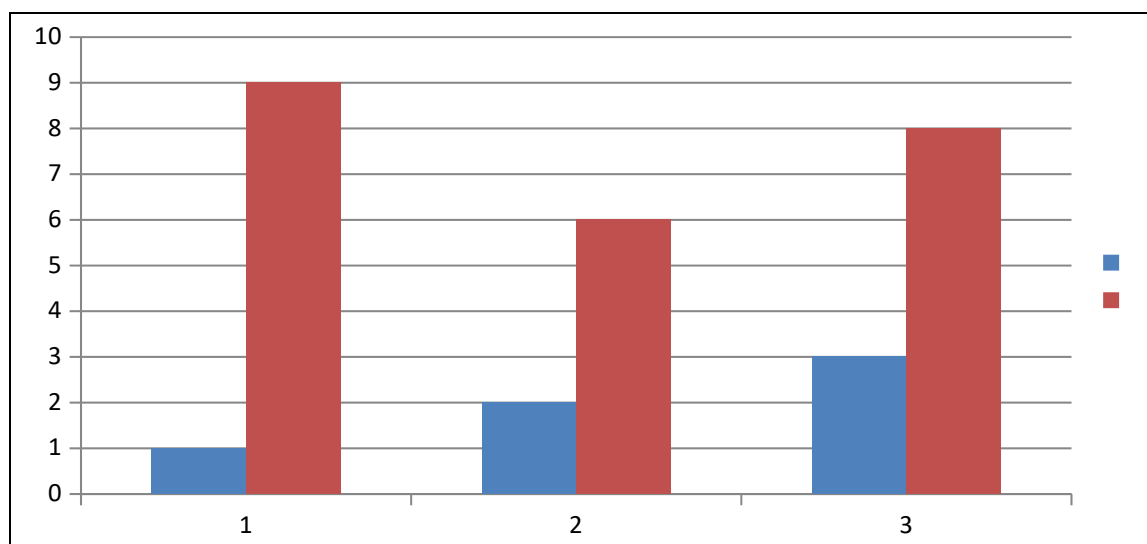


Fig. 12: Total Solid Sugar in mix juice.

Table 1: Physico-chemical and Nutritional properties properties of juices.

Sample	pH	Moisture	Vitamin C	Sugar	Titration acidity	Fiber
Orange	4	-	0.22mg	7 brix	4.44	-
Carrot	-	18.2	0.1mg	0.4brix	0	1
Aloe vera	1	10.1	0.8mg	-	-	0.02

CONCLUSION

Orange juice may be considered a good source of natural floated in respect to content and stability during storage and simulated digestion. Moreover, added folic acid fortificant in a folic acid/iron fortified orange juice was stable during shelf life. In the experiment, “The Effect of Type of Orange Juice on Vitamin C Content,” the object is to determine which type of orange juice contains the most vitamin C—freshly squeezed, “not from concentrate”, or frozen concentrate. The hypothesis for this experiment is, if orange juice is freshly squeezed, then it will contain more vitamin C because it has not been processed and chemically altered like frozen concentrate and “not from concentrate” orange juice. This experiment was based on comparing the vitamin C content of three samples of orange juice to a standard solution that had a known quantity of vitamin C. The comparisons were done using the process of titration. A standard starch solution was mixed to each sample of juice and an iodine solution was titrated, or measurably added, that interacts with the vitamin C. When the reaction occurred, the juice turned purple. Multiple tests were done to the different types of orange juice on the same day and under the same conditions

along with the standard solution. The dependent variable, the vitamin C content, was chosen to be tested against the independent variable, the different types of orange juice because vitamin C is necessary for good health and orange juice is a good source of vitamin C.

The current manufacturing methods for making and storing orange juice have become so complex, that what many thought was a simple juice from a fruit put into a carton, may in fact have been juice, or remnants of juice, sitting in a vat for months, or possibly have been reengineered all together. Based on this research, freshly squeezed orange juice, which is most removed from the manufacturing process, should have the highest vitamin C content. The data from this experiment did support that hypothesis. The data suggests that that freshly squeezed orange juice had the most vitamin C, with an average 13.14 mg of vitamin C, followed by frozen concentrate juice, with 10.29 mg of vitamin C, and, in a surprising third, the “not from concentrate” orange juice, with 9.90 mg of vitamin C. These data shows that the healthiest type of orange juice is freshly squeezed, as it comes directly from the fruit and has not been processed and modified in a factory. The frozen concentrate, which came

out of a tube in log, had the second highest vitamin C content of the juices tested. This result was very surprising because, as the name suggests, it is a concentrate which means the water was removed prior to packaging and since vitamin C is water soluble, it would be expected to have the least vitamin C. Rounding out third was the “not from concentrate” juice. When looking at the data as a whole, frozen and “not from concentrate” were only 4% different from each other, therefore, not a material difference, however, they were approximately 25% lower than the freshly squeezed. The results of this research apply to the greater world in situations where people are looking for the healthiest choices of food. When shopping for fruits and vegetables, the best source for the most vitamins would be directly from the unprocessed plant. Most fruits and vegetables are offered fresh, frozen, or packaged in cans. Where possible, choosing the fresh option would lead to the highest concentration of the respective plant’s vitamin or mineral.

One constant not accounted for was the brand of orange juice. The brands chosen for each the frozen concentrate and the “not from concentrate” orange juice were what were available at the time of the experiment. Different manufacturing processes by different companies could impact the amount of vitamin C in the product. As a result, because frozen concentrate and “not from concentrate” were so close in vitamin C content that the difference could have related to the brand. Another constant not accounted for was the type of orange in each of the juices. Oranges are grown all around the world and there are different types of oranges. The oranges for the freshly squeezed juice could have been a different variety and/or source than the frozen concentrate or the “not from concentrate” orange juices. This constant was not accounted for because it was impractical to get all three types of juices from oranges that originated from the same field. An adequate number of trials were performed on the standard solution and the three types of juices to produce results that were within the acceptable margin of error. The independent variable, the type of orange juice, and the dependent variable, the amount of vitamin C, were the best variables to measure because orange juice is very popular and one of the best sources of vitamin C. The tools used to

measure these variables were sufficient for the purpose of this experiment. There are more sophisticated titration systems on the market aimed at professional lab technicians, but outside of the budget assigned to this project. A possible human error that could have occurred in the test is the manual titration process. Titration involves turning a stopper and releasing a measured amount of solution. Without patience and precision, too much liquid could be released which would result in a higher than normal measurement. We have reviewed the importance of sweet orange (*Citrus sine sis L*) in different areas of human health: treatment of arteriosclerosis, prevention of cancer, kidney stones, stomach ulcers and reduction in cholesterol level, high blood pressure and strengthening of the immune system. These health benefits are as a result of vitamins, especially vitamin C, physiochemical compounds like limuloids, synephrine, Hesperidia flavonoid, pectin etc. A single orange is said to have about 170 phytonutrients and over 60 flavonoids with anti-tumor, anti-inflammatory, blood clot inhibiting and antioxidant properties. It is therefore necessary to control the impact of diverse pathogens that limits its production, nutritional value and market qualities through chemical treatment of fruits, use of biological.

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