

# “Formulation of Fruit (Amla Fruit Juice) and Whey Based Beverages Flavoured with Different Herbs Using Natural Sweetener as ‘Stevia’”

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**Abstract:** *The environment in which we live, work and relax, is determining for our health and well being. Physical, as well as chemical and micro (biological) factors in the environment can have repercussions on our health, both physically and mentally. Whey is a nutritious by product from cheese, “chhana” and “paneer” industry containing valuable nutrients like lactose, protein, minerals and vitamins etc., which have indispensable value as human food. Whey protein is a mixture of globular proteins isolated from whey, the liquid material created as a by-product of cheese production. Fruits are important sources of vitamins and carbohydrates like fiber and sugar. They are low in calories and naturally sweet. Fruits and their juices are good sources of water, too and one of the finest body cleansers, cleaning morbid matter from the stomach, liver, kidneys, spleen, bladder, and is considered the finest, known colon cleanser. Herbs are small plants that have a fleshy or juicy stem when they are young. The leaves, stems, or seeds of herbs can be used fresh, or they can be dried for later use. Whey based herbal beverages provide the nutritional and healthy beverages for maintaining the health status and well-being. Storage of whey based beverages will enhance the quality, nutritive value, profitability, digestibility, acceptability and safety and overall increases the shelf- life of the products. The replication five time for all treatments and data obtained from investigation was statically analyzed by using analysis of variance (ANOVA) and critical difference (CD) techniques. Sensory evaluation was carried out by using nine point hedonic scale. In prepared herbal beverages, Treatment T<sub>3</sub>(74% whey, 20 ml Amla fruit juice, 6ml basil, 6ml mint, 6ml ginger, 6ml Alovera, 6ml lemon grass) scored the highest in all aspects in hedonic scale. Nutritional composition of pH, TSS, Acidity, Total sugar, reducing sugar were increased significantly with increased in percentage of prepared beverages. Non reducing sugars, ascorbic acid, protein content in the prepared beverages were decreased.*

**Keywords:** Whey based fruit herbal beverages.

## 1. Introduction

The environment in which we live, work and relax, is determining for our health and well being. Physical, as well as chemical and micro (biological) factors in the environment can have repercussions on our health, both physically and mentally.

A person's health is a very important aspect of his life - "health is wealth". For most human beings, staying fit and healthy is parallel to being wealthy, for a person's everyday life is influenced mainly by the state of his mind and body, especially by the presence and absence of certain diseases.

Beverages that contain sugars and other carbohydrates, proteins and/or fats also provide calories that, like the calories found in foods, contribute to an individual's total daily energy intake. As a result, it's important that beverage calories, like food calories, are managed as part of an individual's overall energy balance strategy to maintain a healthy weight. **Fruit juices have been scientifically proven to give certain health benefits, provided that they are taken in moderation.** Nutritionists also suggest that fruit juices should be taken in their pure state and people should only drink 100% fruit juice.

Freshly squeezed juices from fruits and vegetables are excellent sources of minerals and vitamins that catalyze chemical reactions occurring in the body. These enzymes

also produce the energy needed for digestion, absorption, and conversion of food into body tissues. An increased intake of fruit and vegetable juices ensures that the body will efficiently absorb more minerals and vitamins.

Whey is a nutritious by product from cheese, “chhana” and “paneer” industry containing valuable nutrients like lactose, protein, minerals and vitamins etc., which have indispensable value as human food. It resulted in unraveling the secrets of why protein and other components and established a sound basis for their nutritional and functional value.

Fruits are important sources of vitamins and carbohydrates like fiber and sugar. They are low in calories and naturally sweet. Fruits and their juices are good sources of water, too. Different fruits contain different vitamins, so it is important to eat a variety of fruits. Mangoes, papayas, melons and citrus fruits, like oranges and grapefruit, are high in vitamin C. Cantaloupe, apricots, peaches, and nectarines are sources of vitamin A.

Herbs are small plants that have a fleshy or juicy stem when they are young. The stems of some herbs develop hard, woody tissue when they grow old. The leaves, stems, or seeds of herbs can be used fresh, or they can be dried for later use. Dried herbs can be pounded to a fine powder, placed in airtight containers, and then stored.

Whey based herbal beverages provide the nutritional and healthy beverages for maintaining the health status and well-being. Storage of whey based beverages will enhance the quality, nutritive value, profitability, digestibility, acceptability and safety and overall increases the shelf- life of the products.

## 2. Materials and Methods

The present investigation was Carried out in the Nutritional Research Laboratory Department of Foods and Nutrition, Ethelind School of Home Science, Sam Higginbottom Institute of Agriculture, Technology & Sciences, (Deemed to-be University),(formerly Allahabad Agricultural Institute) Allahabad U.P.

Five types of natural flavouring herbs (Basil, Mint, Ginger, lemon grass and Alovera.) were used in formulation of whey based fruit herbal beverages.

### Development of whey based fruit herbal beverages.

#### Preparation of whey

The milk was heated in a stainless steel vessel to 84<sup>o</sup>C. The hot milk will be acidified by adding citric acid (2%) followed by continuous stirring resulting in complete coagulation of milk protein (casein). The liquid (whey) was filtered using a muslin cloth.

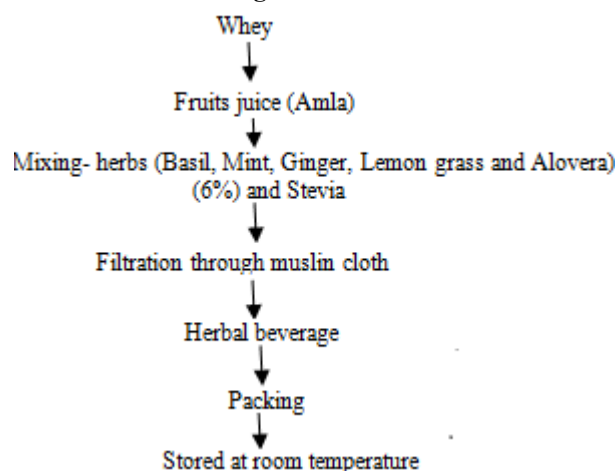
#### Preparation of amla juice

Wash of fresh amla with water to remove dirt. Cut the amla into small chunks that was fit into juicer easily. Turn on cold press juicer. A cold-press juicer is best to use since it does not extract the juice with heat, keeping its enzymes and nutrient profile intact. Slowly add the chunks of amla to the juicer and extract the juice of amla.

#### Preparation of herbs extract

Herbs -Basil, Mint, Ginger, lemon grass and Alovera was prepared from fresh leaves. The leaves will be washed, then blended in a mixer grinder and filtration will be done by muslin cloth.

### Flow Chart for Preparation of Standard Whey Based Fruits Herbal Beverage



Source: Yadav *et al*, (2010) *Development and storage studies on whey based banana herbal beverage. American journal of Food Technology*, 5(2) pp 121-129.

## 3. Results and Discussion

The data of the present study on different aspect as per methodology was tabulated analyzed statistically. The result obtained from the analysis is presented and discussed in this chapter.

- 1) Physico- Chemical analysis of prepared beverages during storages of period.
- 2) Organoleptic characteristics of prepared beverages during storages of period.
- 3) Microbiological characteristics of prepared beverages during storages of period.

### Physico-Chemical Analysis of Prepared Fruit (Orange Fruit Juice) and Whey Based Flavoured With Different Herbs

Component	Treatments							F 5 %	RESULT	CD=SD=+, -
	T <sub>0</sub>	T <sub>1</sub> (basil)	T <sub>2</sub> (mint)	T <sub>3</sub> (ginger)	T <sub>4</sub> (Alovera)	T <sub>5</sub> (lemon grass)				
pH	4.9	4.9	5.0	5.0	5.0	4.9	8.91	S	0.029	
TSS	27.2	21.7	21.7	21.6	21.8	21.7	121.171	S	0.2899	
Acidity	0.40	0.40	0.41	0.41	0.40	0.41	51.0	S	0.0037	
Total sugar	10.58	9.99	10.72	10.80	10.61	10.37	48936.86	S	0.0020	
Reducing sugar	6.56	6.08	6.32	6.28	6.10	6.18	2.08	NS	0.1747	
Non reducing	4.01	3.90	4.39	4.61	4.50	4.18	3048.61	S	0.0072	
Ascorbic acid	160.0	160.3	107.1	105.52	105.35	105.37	4582.799	S	0.0145	
Protein	0.68	0.86	0.90	0.78	1.12	0.70	10.59	S	0.070	

### Organoleptic Characteristics of Prepared Beverages during Storages of Period

Organoleptic quality	Treatments							F 5 %	RESULT	CD=SD=+, -
	T <sub>0</sub>	T <sub>1</sub> (basil)	T <sub>2</sub> (mint)	T <sub>3</sub> (ginger)	T <sub>4</sub> (Alovera)	T <sub>5</sub> (lemon grass)				
Coloure	6.8	8.2	8.4	8.8	8.0	8.4	13.22	S	0.050	
Consistency	7.0	8.0	8.2	8.4	8.0	8.2	10.59	S	0.032	
Flavour	6.0	8.0	8.2	8.2	8.0	8.2	63.39	S	0.016	
Taste	6.0	7.8	8.0	8.2	7.6	7.8	20.58	S	0.043	
Overall acceptability	6.0	.0	8.2	8.4	7.8	8.0	29.37	S	0.036	

**Microbiological load in prepared Orange fruit juice and whey based beverages flavoured with different herbs on different storage of period**

TREATMENT \ DAYS	0 DAY		15 DAYS		30 DAYS		45 DAYS		60 DAYS		75 DAYS	
	B	Y&M	B	Y&M	B	Y&M	B	Y&M	B	Y&M	B	Y&M
T <sub>0</sub>	-	-	-	-	-	-	-	-	-	-	3	2
T <sub>1</sub> (Basil)	-	-	-	-	-	-	-	-	-	-	3	1
T <sub>2</sub> (Mint)	-	-	-	-	-	-	-	-	-	-	3	2
T <sub>3</sub> (Ginger)	-	-	-	-	-	-	-	-	-	-	3	2
T <sub>4</sub> (Alovera)	-	-	-	-	-	-	-	-	-	-	3	2
T <sub>5</sub> (Lemon grass)	-	-	-	-	-	-	-	-	-	-	3	2

#### 4. Conclusion

From the result summarized, it is concluded that the prepared beverages were well accepted with regards to, sensory characteristics. In prepared herbal beverages, Treatment T<sub>3</sub> (74% whey, 20 ml Amla fruit juice, 6ml basil, 6ml mint, 6ml ginger, 6ml Alovera, 6ml lemon grass) scored the highest in all aspects in hedonic scale. Nutritional composition of pH, TSS, Acidity, Total sugar, reducing sugar were increased significantly with increased in percentage of prepared beverages. Non reducing sugars, ascorbic acid, protein content in the prepared beverages were decreased.

#### 5. Recommendation

Intake of beverages is recommended in normal diet as it will help in relieving stress and contribute as an anti-diarrheal agent. It possesses significant therapeutic properties like anti-microbial, anti-inflammatory. Due to incorporation of the fruits and herbs extract in whey, the medicinal value of the beverages increases. Its high nutrient content in the beverages will act as free radical scavengers which purify and detoxify the body and will keep diseases at bay.

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