Title of the Research Experiment: Standardization of process technology for the preparation of Aloe vera and Aonla blended juice **(CJA Item No 19.4.3.18/19.7.3.1)**

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Investigators:

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Background and justification:

Aloe vera gel / juices help to improve general immune system, help in prevention of arthritis, diabetes, cancer, maintain stomach acids, constipation, heart burns, regenerate tissues, increase absorption of nutrients and even neutralize toxic elements. Apart from various medicinal uses, Aloe vera juice has various cosmetic benefits including anti-microbial properties. The Aloe vera gel is being used for the preparation of juice. The Aloe vera juice presently available in the market is un-sweetened and tasteless resulting un-acceptance among the consumers. Due to presence of very low acid level, it is also very difficult to preserve the Aloe vera juice for long time. Aonla is one of the minor fruit crops of commercial significance. It is used in Ayurvedic and Unani systems of Indian medicines. It possesses antibacterial, anticarcinogenic, antiemetic, antioxidative, antipyretic, antitumour, antiviral and expectorant activities (Mitra and Pathak, 2008). However, hindrance occurs in its consumption due to highly acidic as well as astringent taste. Therefore, the experiment was conducted to prepare a blended Aloe vera and aonla juice to enhance the sensory properties and its acceptability. So, the research experiment was carried out with the following objectives.

Objectives:

1. To analyze proximate parameters of Aloe vera and Aonla juices
2. To standardize recipe for Aloe vera and Aonla juice blends
3. To optimize process parameters for preparation of Aloe vera and Aonla juice blends
4. To characterize quality parameters of blended juice and its storage stability

Year of Commencement: 2023-24

Specification of Juice: Fruit part - 100 %
TSS - 12^{o} Brix

Technical Programme :

Ex. 1. Standardization of recipe for preparation of blended Aloe vera and aonla juice

Treatment details: Juice proportion (Aloe vera : Aonla)

T_1 = 100 : 00
T_2 = 85 : 15
T_3 = 80 : 20

T_4 = 75 : 25
T_5 = 70 : 30
T_6 = 65 : 35
T_7 = 60 : 40
T_8 = 00 : 100

Added spices as common ingredients:

Spices	Weight (g/lit Juice)
1. Black Salt	3.0
2. Ginger Juice	3 ml

Number of Treatments: 8
Number of Repetitions: 3
Design: CRD
Sample size: 200 ml
Packaging material: Glass bottle
Storage: at ambient temperature
Observations: Initial, 2, 4, 6 and 8 months of storage

Observations recorded:

A. Physico-chemical Parameters	B. Sensory Parameters
1. Total Soluble Solids (TSS) °Brix 2. Acidity (%) 3. Total sugars (%) 4. Ascorbic acid (mg/100 ml) 5. Potassium (mg/100 ml) 6. Phenols (µg/100 ml) 7. Calcium (mg/100 ml) 8. Sodium (mg/100 ml) 9. Non enzymatic browning (OD 440 nm)	1. Colour 2. Consistency 3. Flavour 4. Taste 5. Overall acceptability
C. Microbial Parameters	**D. Economics**
1. Total Plate Count (Coliform count, Yeast and mould count)	

Experiment. 2. Optimization of process parameters for preparation of blended Aloe vera and aonla juice

Treatment details (temperature and time):

T_{1}- 90oC for 15 min
T_{2}-90oC for 30 min
T_{3}-90oC for 45 min
T_{4}-95oC for 15 min
T_{5}-95oC for 30 min
T_{6}-95oC for 45 min

Number of Treatments =6
Number of Repetitions =3
Design: CRD
Sample size = 200 ml

Packaging material: Glass bottle
Storage: at ambient temperature
Observations: Initial and 2months of storage

A. Physico-chemical Parameters	**B. Sensory Parameters**
1. Ascorbic acid (mg/100 ml) 2. Phenols (µg/100 ml) 3. Non enzymatic browning (OD 440 nm)	1. Colour
C. Microbial Parameters	
1. Total Plate Count, Coliform count, Yeast and Mould count	

Process Flow-chart:

Selection of *Aloe vera*
↓
Sorting & Washing
↓
Removal of slip peel & Separation of Gel
↓
Pre - treatment of gel to remove aloin
↓
Washing of pre-treated gel
↓
Extraction of juice
↓

Selection of Aonla Fruits
↓
Sorting & Washing
↓
Cutting into segments
↓
Separation of Seed
↓
Extraction & filtration of juice
↓

↓
Blending of juices (as per treatments)
↓
Addition of common ingredients
↓
Heating at 95±1°C for 5 minutes
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Filling hot blended juice into pre-sterilized bottles (keeping 1.5cm head space)
↓
Thermal treatment at 95±1°C for 30 minutes
↓
Cooling and storage at room temperature

Methodology used for preparation for blended juice