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# Preparation, Quality Control and Standardization of Amla Juice

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***Abstract*: The study leads to the Amla juice in which study about the preparation of Amla juce because Amla is a major source of vit. C and it is very helpful for improving the vision power of eyes and Prevent the color of the hair and it is maintain the skin tone and it standardization and quality control parameters such as Viscosity is help to determining the thickness, Density of a substance is the relationship between the mass of the substance and how much space it takes up (volume), Total solid content means the total value of content found in the juice, pH is determining the the nature of the Amla juice, Phytochemical analysis is helps to identification of the chemical constituent present in the Amla juice (like alkaloids, glycosides, terpenoids, tannin, reducing sugar, carbohydrates, etc.) & TLC is used for the separation of the phytochemical compound present in the Amla juice.**

***Keywords*: Amla Juice.**

## 1. Introduction

Ayurveda is composed of two words: ayu means life and veda means science, hence the name means ‘science of life’. Ayu is that which is always moving, indicating a dynamic dimension. Therefore, it deals with creation as a whole, with a special emphasis on the biological living being. The principles of Ayurveda are holistic. Ayurveda, the ‘science of life’, has emerged out of the philosophies of ancient India. Western philosophy and contemporary psychology have promoted Cartesian dualism of the mind and body and scientific parsimony. The specializations in the field of medicine are seen as hallmarks of scientific advancement. Ayurveda is anchored in Samkhya and Nyaya philosophies, which have anticipated the most advanced concepts of contemporary science. As there is no compartmentalization of the various disciplines, the medical system of Ayurveda follows the Samkhya tradition in its scientific approach. The major Ayurvedic treatises are supposed to be compilations of the works of the sages Charka, Sushruta, Vagabhata the younger and elder and Kashyapa (Charaka Samhita, 400–200 BC, Astanga Sangraha of Vagabhata, 500 AD, Sushruta Samhita 600 AD), especially for children’s diseases. Ayurvedic practices incorporate bio-psycho-social domains of human existence, adopting a holistic approach.

- Swarasa (Juice of drugs): The juice extracted from the drug is known as swarasa. It is one of the basic preparations in Ayurveda and one among the pancavidha kashaya kalpana and the most potent among them Ex: Tulasi swarasa. It is used as a bhavana dravya and as shodhana dravya in mineral preparation. It is mainly administered in the dose of ½ - 1 pala. there are different methods involved in for the extraction of juice from drug and they are mainly based on nature of drugs the different method involved for exteration are pounding for soft drugs for hard drugs adding 8 times of water and reducing it to ¼ parts and for fibrous drugs putapaka method is adopted.

*Standarization of amla juice:* Standardization is the process of developing, promoting and possibly mandating standards-based and compatible technologies and processes within a given industry. Standards for technologies can mandate the quality and consistency of technologies and ensure their compatibility, interoperability and safety. Quality Controls a process by which entities review the quality of all factors involved in production. ISO 9000 defines quality control as "A part of quality management focused on fulfilling quality requirements".

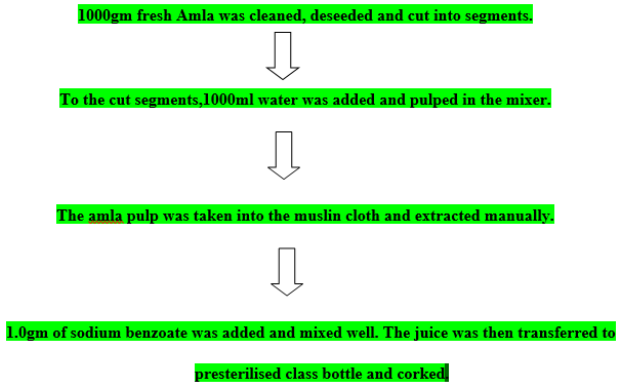
This approach places an emphasis on three aspects (enshrined in standards such as ISO 9001):

1. Elements such as controls, job management, defined and well managed processes, performance and integrity criteria, and identification of records
2. Competence, such as knowledge, skills, experience, and qualifications
3. Soft elements, such as personnel, integrity, confidence, organizational culture, motivation, team spirit, and quality relationships.

Inspection is a major component of quality control, where physical product is examined visually (or the end results of a service are analyzed). Product inspectors will be provided with lists and descriptions of unacceptable product defects such as cracks or surface blemishes.

*Quality control:* Quality control is a process by which entities review the quality of all factors involved in production. ISO 9000 defines quality control as "A part of quality management focused on fulfilling quality requirements."

## 2. Method of Preparation of sample




### A. Organoleptic evaluation

Organoleptic evaluation was carried out to assess the color, odor and taste of the marketed and in-house formulations.

Table 1
Result of organoleptic evaluation

| S. No. | Parameters | Result |
|---|---|---|
| 01 | Color | Off white |
| 02 | Odor | Aromatic |
| 03 | Taste | Sour and astringent |
| 04 | Flavor | Sour |

### B. Physical Evaluation

- *Determination of density:* The density (ρ) is elementary physical property of matter. For a homogeneous object it is defined as the ratio of its mass (m) to its volume (V)
- *Determination of Viscosity:* Viscosity was determined with the help of Ostwald's viscometer.
  Formula:

$$n_Y = n_w \times d_Y t_y / d_w t_w$$

Where,

$n_Y$ : Viscosity of tested liquid.
$n_w$ : Viscosity of water.
$d_Y$ : Density of tested liquid.
$t_y$ : Timing of runoff of tested liquid.
$d_w$ : Density of water.
$t_w$ : Timing of runoff of water.

- *Determination of total solid content:* 10 ml of the samples were taken in dish and evaporated at low temperature until the liquid was removed and then heated until the residue was apparently dried. Thereafter, it was transferred to an oven and dried to constant weight at 105°C.
- *Determination of pH:* The pH of the all the seven formulation was determined with the help of pH meter.

Table 2
Result of Physical evaluation

| Sr.no. | Parameters | Result |
|---|---|---|
| 01 | Density | 1.1g/cm$^3$ |
| 02 | Viscosity | 0.012 poise |
| 03 | Total solid Content | 4.8 gm |
| 04 | p$^H$ | 3 |

### C. Phytochemical Evaluation

*1) Test for alkaloids*

- *Dragandroff's Test:* Take 2-3ml sample and add few drops of Dragandroff's reagent gives Orange brown ppt is formed.
- *Mayer's Test:* Take 2-3ml sample and add few drops of Mayers reagent gives ppt.
- *Hager's Test:* Take 2-3ml sample and add few drops of Hager's reagent gives yellow ppt.
- *Wagner's Test:* Take 2-3ml sample and add few drops of Wagners reagent give reddish brown color.

*2) Test for Glycosides*

- *Borntrager's Test:* Take 3ml sample, add dil.$H_2SO_4$, boil and filter, to cold filtrate, add equal volume benzene or chloroform. Shake well. Separate the organic solvent. Add $NH_3$. Ammoniacal layer turns pink or red.
- *Keller-killiani Test:* Take 2ml sample and add glacial acetic acid, 1 drop 5% $FeCl_3$ and con. $H_2SO_4$ appears reddish brown color at junction of two liquid layers and upper appears bluish green color.

*3) Test for Saponin*

- *Foam Test:* Shake the drug extract or dry powder vigorously with water. Persistent foam observed.

*4) Test for Tannin:*

- Take 2-3ml of sample; add lead acetate solution gives deep blue black color.
- Take 2-3ml of sample; add Gelatin solution gives white ppt.
- Take 2-3ml of sample, add $KMnO_4$ gives discoloration.
- Take 2-3ml of sample; add $HNO_3$ give reddish to yellow color.

*5) Test for Carbohydrate*

- Molish's test: Take 2-3ml of sample, add few drops of alcoholic solution alpha- naphthanol, shake and add conc.$H_2SO_4$ from the side of test tube. violet ring is formed at the junction of two liquids.

*6) Test for Reducing sugar:*

- Fehling's test: Mix 1ml fehling solution A and 1ml fehling solution B, boil for 1 min., add equal volume of test solution. Heat in boiling water bath for 5-10 min. First yellow, then brick red ppt is observed.

### D. Fluorescence analysis

The behavior of the samples with different chemical reagents and fluorescence characters of were observed under ordinary and long ultra violet light at 245nm and short ultra violet light . Fluorescence is the phenomenon exhibited by various chemical constituents present in the plant material. Some show fluorescence in the visible range in daylight. The ultraviolet light produces fluorescence in many natural products (e.g. alkaloids like berberine) which do not visibly fluoresce in daylight. Some of the substances may be often converted into

Table 3
Result of Phytochemical evaluation

| Chemical | Test | Observation | Result |
|---|---|---|---|
| Alkaloids | Dragandroff's Test : | + | Present |
| | Mayer's Test | + | Present |
| | Hager's Test | + + | Present |
| | Wagner's Test | + | Present |
| Glycosides | Borntrager's Test | + | Present |
| | Keller-killiani Test | + + | Present |
| Saponins | Foam Test | - | Absent |
| Tannins | Sample+ Lead acetate solution | + + | Present |
| | Sample+Gelatin solution | + | Present |
| | Sample + $KMnO_4$ | + | Present |
| | Sample + $HNO_3$ | + | Present |
| Carbohydrate | Molish's test | + + | Present |
| Reducing Sugar | Fehling's test | + + | Present |

fluorescent derivatives by using different chemical reagents though they are not fluorescent.

Table 4
Result of fluorescence analysis

| Reagents | Long wave length | Short wave length | Day light |
|---|---|---|---|
| Con. $H_2SO_4$ | Black | Green | Brown |
| Con. HCL | Black | Light green | Yellow |
| Ethanol | Black | Green | Light Yellow |
| Methanol | Black | Green | Light Brown |
| Dragendroffs | Black | Light green | Light Brown |
| Mayer's | Black | Green | Light Brown |
| Wagner's | Black | Black | Orange |
| Hager's | Black | Green | Green |
| Picric acid | Black | Green | Black |
| Dil.HCL | Black | Light green | Yellow |
| Dil.$H_2SO_4$ | Black | Green | Light yellow |

## 3. TLC

TLC was performed on TLC plates to identify the retention factor ($R_f$). TLC was used to separate the phytochemical components present in the extract. Different ratio of solvents was used at following ratio Ehanol: 10% Glacial acetic acid (9.5:0.5). TLC plates were observed in ultraviolet chamber using 400nm long wavelength. The $R_f$ values were calculated by:

$R_f$ = Distance travel by solute/Distance travel by solvent

Table 5
Result of T.L.C.

| | |
|---|---|
| Mobile phase | Ehanol**:** 10% Glacial acetic acid<br>9.5 **:** 0.5 |
| Stationary phase | Silica gel –G (2-5%) |
| $R_f$ | 0.93 |

## 4. Conclusion

The standardization of Amla juice was performed. Amla is a major source of vitamin C and it is very helpful for improving the vision power of eyes and prevents the color of the hair and maintain the skin. Standardization and quality control parameters such as viscosity will help to determine the thickness, Density of a substance is the relationship between the mass of the substance and how much space it takes up (volume), total solid content means the total value of content found in the juice, $p^H$ is determining the nature of the Amla juice, phytochemical analysis helps to identify the chemical constituents present in Amla juice (like alkaloids, glycosides, terpenoids, tannin, reducing sugar, carbohydrates, etc.) & TLC is used for the separation of the phytochemical compound present in the Amla juice. This project will help in the standardization of herbal formulations.

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