**3.7 Chemical Characteristics**

**3.7.1 Total Soluble Solids (TSS)**

After filtration of juice 2-3 drops are placed on the prism of Refractometer. Total Soluble Solids are calibrated in percentage by Automatic Digital Refractometer (ATAGO, RX 5000).

**3.7.2 Acidity (%age)**

Acidity in juice is determined by taking 10 ml of juice from each sample and diluted with distilled water in a 100 ml beaker. 2-3 drops of phenolphthalein are added for end point. The samples are titrated against N/10 NaOH (Hortwitz, 1960). The results are expressed as percent citric acid.

N/10 NaOH used × 0.0064

Acidity %age = --------------------------------------------------- × 100

Volume or Weight of sample used

**3.7.3 Vitamin - C (Ascorbic Acid) (mg/100ml)**

The method described by Ruck (1961) is used for estimation of vitamin-C in juice. 10 ml juice is taken into 250 ml conical flask and volume is made upto the mark using 0.4 % Oxalic acid solution. 5 ml of filtered aliquot is taken in a flask and titrated against 2, 6, dichloropheno indophenol dye to a light pink colour which persist for 10-15 seconds.

Vitamin - C was calculated as:

1× R1 × V

Vitamin-C = ------------------------- × 100 mg Ascorbic acid per 100 ml juice.

R × W × V1

R1 = ml dye used in titration of aliquot

R = ml dye used in titration of 1 ml of standard ascorbic acid solution prepared by adding 1 ml of 0. l % Ascorbic acid + 1.5 ml of 0.4 % Oxalic Acid.

V1 = ml of juice used.

V = Volume of aliquot made by addition of 0.4 % Oxalic Acid.

W = ml. of aliquot used for titration.

**3.7.4 Sugars**

**3.7.4.1 Reducing Sugars**

Sugars in juice were estimated by using Lane and Eynon method (1923) described by Hortwitz (1960). 10 ml juice was taken in 250 ml flask in which 100 ml distilled water, 25 ml lead acetate solution and 10 ml of 20 % potassium oxalate solution was added; volume was made up to mark and filtered. Filtrate was taken in burette and titrated against 10 ml mixture of Fehling solution A and B; using 2-3 drops of methylene blue with continuous boiling till brick red end point. Reducing sugars were calculated by:

Reducing Sugars = 6.25 (X/Y) % reducing sugars

Where

X = ml of standard sugar solution used against 10 ml Fehling Solution

Y = ml of sample aliquot used against 10 ml Fehling solution.

**3.7.4.2 Total Sugars**

Total sugar were estimated by the method described by Hortwitz (1960); 25 ml of aliquot prepared for estimation of reducing sugars was taken in a 100 ml volumetric flask adding 20 ml distilled water and 5 ml concentrated HCL and kept overnight. Next day it was neutralized with 1 N NaOH and made up to the mark. That solution was taken in burette and titrated against 10 ml Fehling solution, similarly as in reducing sugars.

Total Sugars = 25 (X/Z)

Where

X = ml standard sugar solution used against 10 ml Fehling solution.

Y = ml of sample aliquot used against 10 ml Fehling solution.

**3.7.4.3 Non-Reducing Sugars**

These were calculated by the following formula.

(Total sugar % - Reducing sugar %) X 0.95.