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## Studies on chemical attributes of guava (*Psidium guajava* L.) Genotypes in Awadh region

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### Abstract

The current study was conducted in 2021-22 at the Department of Horticulture, School of Agricultural Sciences and Technology in Babasaheb Bhimrao Ambedkar University, (A Central University) Vidya Vihar, Rae Bareli Road, Lucknow. Fruits of six genotypes of guava were collected from Central Institute for Subtropical Horticulture (A unit of ICAR) Rehmankhera, P.O. Kakori, Lucknow, (U.P.) and two genotypes of guava were collected from progressive farmer (R.S.Verma Sultanpur). This research focused on eight guava genotypes: Lalit, Shweta, CISHG-1, CISHG-31, Allahabad Safeda, L-49, Taiwan and VNR Bihi. Fruit samples from each variety were placed in a cotton bag and assigned a treatment/variety number before being transferred for analysis in the laboratory of the department and then stored until the measurement was done. Highest T.S.S. (12.44%) was noted in the T<sub>6</sub> (L-49) variety. The maximum percentage of acidity (0.48%) was found in the T<sub>5</sub> (Allahabad Safeda) variety. T<sub>6</sub> variety (L-49) showed the high ascorbic acid (290.60 mg/100 gm pulp) and reducing sugar (7.25%) content. The non-reducing sugar was found maximum (4.28%) in the T<sub>5</sub> (Allahabad Safeda) variety. The total sugar (13.78%) was recorded to be highest in the T<sub>3</sub> (CISHG-1) variety.

**Keywords:** *Psidium guajava*, Physico-chemical, genotype, parameter

### Introduction

Guava is a well-known edible fruit found in tropical and subtropical climates. Guava, a Myrtaceae family member, is native to tropical America from Mexico to Peru (Samson 1986)<sup>[1]</sup>. Portuguese introduced guava fruit to India in the starting of 17th century and has since become a commercial crop throughout the country. Guava fruit is a berry with a large seedy core. Guava belongs to the genus *Psidium*, it has 150 species, but only *Psidium guajava* is commercially exploited. India has a total cultivated area of approximately 276 thousand hectares, with an annual production of 4236 thousand million tones (NHB Detabase2021-22). Various guava varieties like L-49, Allahabad Safeda, Shweta, Lalit, Chitidar, Arka Mridula, Hafshi, Arka Rashmi, Arka Kiran, Arka Poorna, and Safed Jam etc. are considered to be good. The red-fleshed, oblong-shaped type is regarded as low-quality fruit. Freshly extracted seeds, layering (in a pot and the air), grafting, budding, and root sprouts are the methods used to reproduce guavas. In most tropical nations, guava fruits-which are high in vitamin C, vitamin A, pectin, and other nutrients are most famous for being used to make pickles, jelly, jams, squashes, sherbets, and ice cream. Guava processing products have a significant role in global trade (Kumar et al., 2006)<sup>[4]</sup>.

An example of a standard examination of Indian guava is this: moisture (81.7%), other carbohydrates(11.2%), fiber(5.2%), protein (0.9%), fat (0.3%) and mineral matter (0.7%)-calcium (10%), magnesium (8%), oxalic acid (14%), phosphorus (28%), and iron (1.4%)-are the constituents of this mixture. 212 mg/100g of vitamin, potassium 91%, copper 0.3%, sulfur 14%, chlorine 4%, thiamine 0.03%, and riboflavin 0.03%, as well as sodium 5.5% and potassium 91% (Pandey et al. 2016)<sup>[5]</sup>. The epidermis has the maximum concentration of vitamin C, but the inner layer has lower quantities. As the fruit ripens, its value increases, but it decreases when it gets too ripe. The outer peel of the seeds contains nutritional fiber, while the seeds themselves contain 28% cellulose, 46.3% hemicelluloses, and 25.7% lignin. Guava has several therapeutic benefits. It has been shown that guava plant leaves can help with diabetes issues. It is well known that the narcotic-like compound taken from guava (*Psidium guajava* L.) leaves alters the locomotor activity of mice.

Diabetes was treated in Japan and other subtropical regions using a 50% ethanol extract (G-ext) from guava leaves (Patel et al. 2005)<sup>[10]</sup>. The methanol fraction of the *Psidium guajava* unripe fruit extract was tested for its anti-diarrhea properties.

### Materials and Methods

This study involved the collection of eight guava (*Psidium guajava* L.) varieties/genotypes from Awadh region. The collection of sixteen (16) healthy, uniformly sized fruits free of pests, diseases, and brushes that were randomly selected from the trees of each cultivar in each direction. When the fruits were nearly mature, they were picked up and evaluated at the laboratory of Department of Horticulture, School of Agricultural Sciences & Technology (SAS&T), Babasaheb Bhimrao Ambedkar University (A Central University), Vidya Vihar, Rae Bareilly Road, Lucknow, during the months of mid-December (U.P). Lucknow. The study used a Completely Randomized Design (CRD) with eight treatments. The current study evaluated eight (8) guava genotypes: T<sub>1</sub> (Lalit), T<sub>2</sub> (Shweta), T<sub>3</sub> (CISHG-1), T<sub>4</sub> (CISHG-31), T<sub>5</sub> (Allahabad Safeda), T<sub>6</sub> (L-49), T<sub>7</sub> (Taiwan), and T<sub>8</sub> (VNR Bihi). The fruit length (cm), fruit breadth

(cm), volume (ml), weight (gm), specific gravity (%), T.S.S. (%), acidity (%), ascorbic acid (mg/100gm pulp), reducing sugar (%), non-reducing (%), and total sugar (%) were all observed. The resulting data were statistically analyzed.

### Results and Discussion

During the winter season, highest total soluble solids (12.44 °Brix) were found in fruits of cv. T<sub>6</sub> (L-49). While minimum total soluble solids was observed in cv. Taiwan (10.72 °Brix) followed by T<sub>3</sub> (CISHG-31) (10.84 °Brix). Maximum acidity was found in cv. T<sub>5</sub> (Allahabad Safeda) (0.48%). The minimum acidity was found in cv. T<sub>6</sub> (L-49) (0.28%). Ascorbic acid was found highest in cv. L-49 (290.60 mg/100g pulp). While ascorbic acid content was recorded minimum in cv. Taiwan (228.20 mg/100g pulp). There reducing sugar in fruit was estimated to be maximum (7.25%) in L-49. The lowest reducing sugar was observed in Taiwan (4.82%). Highest non-reducing sugar was recorded in Allahabad Safeda (4.28%). The minimum non-reducing sugar was observed in cv. VNR Bihi (3.05%). The total sugar content of fruit was found to be highest in T<sub>3</sub> (CISHG-1) (13.78%), followed by L-49 (11.31%). Lowest total sugar percentage was noted in cv. VNR Bihi (8.00%).

**Table 1:** Chemical parameters

Genotypes	T.S.S. (°Brix)	Acidity (%)	Ascorbic acid (mg/100g pulp)	Reducing sugar (%)	Non-reducing sugar (%)	Total sugar (%)
T <sub>1</sub> (Lalit)	12.40	0.44	245.08	5.12	3.30	8.42
T <sub>2</sub> (Shweta)	11.65	0.38	236.78	6.22	3.46	9.68
T <sub>3</sub> (CISHG-1)	12.16	0.32	240.82	6.14	4.10	13.78
T <sub>4</sub> (CISHG-31)	10.84	0.36	242.72	6.10	3.85	9.95
T <sub>5</sub> (Allahabad Safeda)	11.55	0.48	280.00	6.68	4.28	10.96
T <sub>6</sub> (L-49)	12.44	0.28	290.60	7.25	4.06	11.31
T <sub>7</sub> (Taiwan)	10.72	0.39	228.20	4.82	3.45	8.47
T <sub>8</sub> (VNR Bihi)	11.76	0.43	239.40	4.95	3.05	8.00
S.Em±	0.008	0.012	0.061	0.011	0.013	0.009
CD at 5%	0.395	1.725	0.666	0.731	1.071	0.459

### Conclusion

- On the basis of chemical character highest sugar content found in CISHG-1 followed by L-49.
- The percentage of acidity was observed maximum in the Allahabad Safeda followed by Lalit and VNR Bihi while lowest percentage of acidity was recorded in L-49 and CISHG-1.
- Lalit, Shweta, CISHG-1, CISHG-31, Allahabad Safeda, L-49, VNR Bihi, and Taiwan were also assessed to be good cultivars to be grown in Awadh region.

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