

CHEMICAL COMPOSITION OF GUAVA AND BANANA FRUITS GROWN IN HYDERABAD REGION

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(Received May 27, 1969)

Chemical composition of five varieties of guava and two varieties of banana fruits was determined. The data showed that the varieties V4 and V5 of guava fruit had more total sugars, vitamin C and protein contents, while Basrai banana was found to be richer in non-reducing sugars, proteins and vitamin C contents than the rest of the varieties under study.

Fruits play a very important role in the balanced nutrition of man and are, therefore, essential in our daily diets. Banana and guava are among the most important fruit crops grown in the Hyderabad Region. They are rich in carbohydrates, minerals and vitamins and are, therefore, considered to be very nutritious and cheapest source for these ingredients.

Although considerable work has been done elsewhere on the moisture^{1,3,4,8,10,12} ash^{1,3,4,8,10,12} sugars^{1,8,11} acidity^{4,8} crude protein^{1,3,8,10,11,12} crude fat^{3,11} and vitamin C contents^{4,8,9,13} of these fruits, yet no detailed information is available about the various constituents in different varieties of these fruits grown in this part of the province.

An attempt has, therefore, been made in the present studies to assess the nutritive value of different varieties of guava and banana fruits grown in the Hyderabad Region (West Pakistan).

Material and Methods

Five varieties of guava (V1-V5) and two varieties of banana (Basrai and local) fruits were taken for the present study.

The following varieties of guava fruit selected on the basis of some of their physical characteristics mentioned below were taken for the present study:

Variety No. 1: Diameter 4.5 cm; round in shape; centre completely full of seeds.

Variety No. 2: Diameter 4.9 cm; long in shape; centre completely full of seeds.

Variety No. 3: Diameter 5.5 cm; round in shape; moderately full of seeds.

Variety No. 4: Diameter 7.3 cm; oval in shape; fairly seeded.

Variety No. 5: Diameter 7.8 cm; round in shape; sparsely seeded.

The chemical analysis of the fruits was done by the standard methods of analysis^{2,14} six times in each case to minimize the experimental error.

Results and Discussion

The mean values obtained in case of each estimation regarding the chemical composition of guava and banana fruits are given in Table I and discussed separately in the following pages under each fruit:

Guava Varieties.—From the data it appears that the variety V5 in case of guava fruit had the highest moisture and lowest dry matter contents. The highest dry matter content was however found in variety V1.

The ash content of guava varieties indicate that the mineral matter content was highest in V1 (0.68%) followed by V2, V3, V4 and V5 varieties. The reports of Chughtai *et al.*³ and Hayes⁵ showed lower values of the ash contents, while Watt and Merrill¹² reported higher values. In the present investigations the difference in the results of ash contents may be due to different soil and climatic conditions under which the fruit crops were grown.

Reducing sugars were highest in variety V4 (6.79%) while in case of other varieties, it was in the order of V5 > V3 > V1 > V2. Non reducing sugars were found to be highest in variety V5 (2.22%), while in case of other varieties, these values were in the order of V2 > V3 > V1 > V4. Total sugars on the contrary were highest in variety V5 (18.15%), followed by V4 > V3 > V2 > V1.

The pH values in all the varieties ranged from 4.6-4.8 while acidity percentage ranged from 0.42 to 0.56%.

The observations with regard to crude protein contents showed that the values ranged from

TABLE I.—CHEMICAL COMPOSITION OF GUAVA AND BANANA FRUITS.*

Varieties	Mois- ture	Dry- matter	Ash	Reduc- ing sugars	Non- reduc- ing sugars	Total sugars	Total soluble solids	Acidity	pH	Grude protein	Grude fat	Vita- min C mg/100 g
<i>Guava</i>												
V1	78.47	21.53	0.68	4.44	1.44	5.64	7.43	0.48	4.7	1.29	0.64	175.53
V2	80.02	19.98	0.63	3.99	1.56	5.63	7.53	0.42	4.8	1.28	0.57	104.18
V3	80.68	19.32	0.61	4.52	1.19	5.27	7.47	0.43	4.7	1.23	0.52	140.75
V4	82.63	17.37	0.57	6.79	1.09	7.94	10.27	0.44	4.7	1.20	0.50	185.06
V5	83.07	16.93	0.55	5.81	2.22	8.15	10.60	0.56	4.6	1.13	0.47	251.71
<i>Banana</i>												
Basrai	74.02	25.98	0.65	7.02	9.58	17.11	19.33	0.40	4.6	1.11	—	10.96
Local	66.19	33.81	0.85	13.23	5.36	18.87	20.33	0.34	4.5	1.00	—	10.80

*As percentage on fresh weight basis.

1.13 to 1.29%. The highest crude protein content was found in variety V1 and the lowest in variety V5.

The data pertaining to crude fat contents of the guava varieties showed that crude fat content ranged from 0.47 to 0.64%. The results regarding crude protein are highest in V1 and lowest in V5.

Vitamin C contents ranged from 251.71 mg/100g (in V5) to 104.18 mg per 100 g (in V2). The value on the whole was found to be in the following order. V5(251.71 mg 100 g) > V4 > V1 > V3 > V2.

From the aforesaid discussion it may be concluded that the varieties V5 and V4 are good dessert varieties, as they contain more of the sugars and vitamin C contents. The rest of the varieties, viz. V1, V2 and V3 owing to their high total solids, low sugars and low vitamin C contents, may prove better for the preparation of guava by-products.

Banana Varieties.—From the data presented in Table I, it appears that the percentage of moisture, in the pulp of Basrai variety was higher than the local variety. Reverse was the case in dry matter content. The moisture contents were found to be within the range reported by Adriane,¹ Simmonds,¹⁰ and Watt and Merrill.¹²

Local variety of banana was found to contain comparatively high percentage of ash. The ash contents in case of local variety are in complete agreement with the findings of Adriane¹ and

Simmends¹⁰ whereas in case of Basrai, it is very close to the findings of Loesecke.⁸ Reducing and non-reducing sugars were alternatively lower and higher in case of Basrai and local varieties of banana. The total sugars in case of local variety were slightly higher than the Basrai variety.

The results regarding sugar content of both the varieties are well within the range reported by Adriane¹ and Loesecke.⁸

The percentage of total soluble solids in the pulps of local variety was slightly higher than the Basrai variety.

The Basrai variety of banana was found to contain higher acidity than the local variety, while the pH value in case of local variety was recorded to be less than Basrai. Both the values agree well with the findings of Loesecke.⁸

The results regarding crude protein contents show that the Basrai variety contained slightly higher crude protein than the local variety.

As regards vitamin C, the data reveal that both the varieties of banana had more or less similar vitamin C contents. The findings are in close agreement with the range values quoted by Loesecke.⁸

It is evident from the above discussion that the Basrai variety of banana is more sweet and palatable than the local variety owing to its high content of non-reducing sugars and low dry matter content.

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