

PHYSICO-CHEMICAL COMPOSITION OF DIFFERENT PAPAYA VARIETIES

Papaya (*Carica papaya* L.) known as the wonder fruit of the tropics can provide the essential protective nutrition for the poorest section of the society. Papaya cultivation has good economic potential especially due to its multifarious uses as fresh fruits, processed products, production of papain, pectin and caripaine alkaloid. Papaya is quite nutritious and has much therapeutic value. Though there are a large number of papaya varieties, the characteristics of these different varieties vary under different conditions. Cultural and environmental condition to which a variety is

exposed can bring about variation in chemical composition (Pantastico, 1975). Hence, a study was undertaken to evaluate the physico-chemical composition of different papaya cultivars.

The experiment was carried out at the College of Horticulture, Vellanikkara, Thrissur. Of the 12 varieties used for the study, nine were released varieties from different centres and three were promising local cultivars. The released varieties used for the study were CO-2, CO-3, CO-4, CO-5, CO-6, 9-1-D, Solo,

Table 1. Physical composition of papaya fruits

Variety	Pulp (%)	Peel (%)	Seed (%)	Placenta (%)	Pulp/peel ratio
CP-14	88.96	6.36	2.65	2.02	14.18
CP-15	90.88	5.91	1.17	2.03	15.38
CO-2	87.14	5.52	5.41	1.92	16.20
CO-3	80.80	12.62	6.58	3.91	6.01
9-1-D	83.08	7.83	5.40	3.62	11.59
MS	81.27	10.13	4.96	3.63	9.08
CO-4	83.72	9.32	5.02	1.94	9.01
CO-5	90.95	5.62	1.65	1.78	16.20
CO-6	90.52	4.73	3.06	1.69	19.53
Solo	81.52	8.97	5.18	4.34	9.20
CP-16	79.62	8.77	9.00	4.54	9.08
Honey Dew	82.42	9.65	4.96	2.97	8.54
CD (0.05)	6.71*	4.29*	3.94*	2.04*	8.61*

Significant at 5% level

Table 2. Chemical constituents of papaya fruit

Variety	TSS (°Brix)	Acidity (%)	pH	Total sugar (%)	Reducing sugar (%)	Non-reducing sugar (%)
CP-14	11.83	0.095	5.113	5.57	4.89	0.68
CP-15	13.50	0.165	5.127	7.16	6.23	0.93
CO-2	11.67	0.094	4.990	6.63	5.57	1.06
CO-3	13.57	0.085	5.563	6.74	5.46	1.28
9-1-D	11.90	0.105	5.810	6.71	5.36	1.35
MS	13.00	0.107	5.733	6.81	4.50	2.31
CO-4	12.53	0.102	5.837	6.27	5.04	1.24
CO-5	10.93	0.098	5.813	5.67	4.76	0.91
CO-6	12.87	0.101	5.663	6.33	5.35	0.98
Solo	15.33	0.077	5.680	7.50	6.13	1.37
CP-16	12.33	0.090	5.440	8.26	6.40	1.86
Honey Dew	14.00	0.105	5.540	6.13	5.48	0.64
CD (0.05)	1.81*	NS	0.379*	NS	NS	NS

Significant at 5% level

Honey Dew and MS and local types were CP-14, CP-15 and CP-16. The fruits were harvested when yellow colour appeared along the distal end of the furrows and kept under ambient conditions with temperatures of 24°C to 30°C and relative humidity 70-80 per cent for ripening. The physico-chemical characters were studied when the fruits were fully ripe. The physical parameters include the proportion of peel, pulp, placenta and seed to the total weight of fruits. The chemical constituents observed were total soluble solids (TSS), acidity, pH, total, reducing and non-reducing sugars.

The physical components of fruits like the peel, pulp, seed, placenta and pulp/peel ratio displayed significant variation between the varieties (Table 1). The proportion of peel was found to be maximum in CO-3 (12.62%) and minimum in CO-6 (4.73%). A high recovery of pulp was obtained from CO-5 (90.95%), CP-15 (90.88%) and CO-6 (90.52%). The proportion of seed to total weight showed an erratic pattern in different varieties, which may be due to poor pollination or abortion of seeds during development (Chitraichelvan, 1975 and Singh, 1990). Maximum pulp/peel ratio was for CO-6 (19.53) and minimum for CO-3 (6.01). The percentage of placenta ranged from 1.69 in CO-6 to 4.54 in CP-16.

Among the different varieties evaluated, Solo recorded maximum value for TSS (15.33°B) followed by Honey Dew (14.0°B) (Table 2).

Minimum TSS was recorded for the variety CO-5. Higher TSS in Solo was also reported by Selvaraj *et al.* (1975) and Veerannah *et al.* (1982). The results of TSS obtained for CO-2 and CO-3 in the present study are supported by the findings of Veerannah *et al.* (1982) whereas the TSS obtained for CO-4 and CO-5 was slightly lower than that reported by them. However, Ghanta *et al.* (1992) reported a lower TSS for CO-2 and CO-6 than that obtained in the present study.

In papayas, the sugar content is greater than the acidity and therefore the sweetness predominates. There was no significant difference between the varieties for acidity. However, the value ranged from 0.077 per cent in Solo to 0.165 per cent in CP-15. The acidity in ripe papaya is comparatively low and is reported to range from 0.002 per cent to 0.116 per cent (CFTRI, 1963), which is in general agreement with the results of the present study. In the case of pH, there was significant variation between the varieties and the values ranged from 4.99 in CO-2 to 5.84 in CO-4.

There was no significant variation between the varieties for total, reducing and nonreducing sugar content. Higher values for total and reducing sugars were registered for CP-16 (8.26%, 6.4%), Solo (7.50%, 6.13%) and CP-15 (7.16%, 6.23%) whereas nonreducing sugar content was higher in MS (2.31%). Selvaraj *et al.* (1975) and Veerannah *et al.* (1982) also reported a higher total sugar content for Solo.

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