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Short Communication

Comparative Study of Nutrient Status of Peel and Edible Parts of Cucumber (*Cucumis sativus*) Grown in Arid Zone

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The importance of vegetables for good health is being realized throughout the world. Besides rich and cheaper source of minerals and vitamins, vegetables are excellent source of fiber. Some vegetables also provide relief from chronic and related diseases (Bose *et al.*, 1993; James, 1979). In modern society most of the vegetables are consumed after skin is peeled off, which results in considerable loss of nutrients. Cucumber (*Cucumis sativus*) is one such vegetable, which is consumed after discarding the outer skin and the pith portion. Therefore, in this study an attempt has been made to estimate the extent of loss of nutrients in the peel. Fruits of seven strains of cucumber, viz., Halki Hari (C1), Poona Safed (C2), Kalyanpur Hara Lamba (C3), Chaubatia Green (C4), Kheera S-45 (C5), Kheera Basi (C6), and Kheera G (C7), grown under field conditions, were studied for their biochemical constituents. The fruits were collected at the stage of marketable maturity. The sugars, total soluble solids, vitamin C, minerals, protein, fats and crude fiber were estimated in the outer peel and pith portion that are discarded and in the middle edible portion. Minerals, protein, fat and vitamin C were estimated as per method of AOAC (AOAC, 1970). Crude fiber was determined adopting method of Kanwar and Chopra (1967). The total soluble solids were determined by a refractometer. Different biochemical parameters of edible portion of seven strains of cucumber revealed that Poona Safed strain contained the highest amount of sugar and was followed by Chaubatia Green (Table 1). Total soluble solids were found to be the highest in Kheera S-45 and the lowest in Poona Safed. The contents of total soluble solids in strains Halki Hari, Kheera Basi and Kheera G were comparable. The Vitamin C content was variable amongst these varieties. Vitamin C was found to be significantly higher in Halki Hari, while drastically low in Kalyanpur Hara Lamba. The mineral contents were highest in Poona Safed and Kheera Basi, and lowest in Chaubatia Green. The protein content varied from 0.15 to 0.45% and was the highest in Poona Safed and Kheera Basi, and the lowest in Chaubatia Green. The fat content was also highest in Poona Safed and lowest in Kheera G. The crude fiber was found to be the highest in Kheera Basi and lowest in Kheera S-45. The biochemical constituents in the peel and pith that are discarded have been depicted in Table 1. It was observed that Chaubatia Green strain was rich in sugar content, followed by Kalyanpur Hara Lamba. Sugar was the lowest

Table 1. Constituents in different strains of cucumber

Var.	TSS		Sugar		Vit. C		Mineral (%)		Protein		Fat content		Crude fibre	
	Edible	Peel	Edible	Peel	Edible	Peel	Edible	Peel	Edible	Peel	Edible	Peel	Edible	Peel
C1	3.35	1.59	1.35	1.17	11.84	3.40	0.39	0.51	0.37	0.35	0.76	1.02	0.75	0.95
C2	2.53	2.33	3.18	0.54	5.34	2.54	0.58	0.91	0.45	0.78	1.27	1.06	0.70	1.03
C3	2.73	3.35	2.33	1.14	2.34	4.56	0.31	0.66	0.29	0.65	0.86	1.86	0.69	1.23
C4	2.26	2.33	1.83	2.54	3.19	3.74	0.23	0.31	0.15	0.51	1.03	2.58	0.49	2.18
C5	4.02	2.80	0.33	0.59	6.11	5.69	0.42	0.82	0.35	0.63	0.61	0.96	0.44	1.18
C6	3.15	3.49	0.33	0.60	5.69	4.59	0.58	0.68	0.42	0.65	0.21	0.51	0.76	1.00
C7	3.55	2.95	0.42	0.62	5.10	4.92	0.46	0.79	0.43	0.66	0.23	0.53	0.70	1.50

in Kheera S-45. The total soluble solids were highest in Kheera Basi, followed by Poona Safed. The vitamin C content was found to be the highest in Kheera S-45. Poona Safed and Kheera Basi contained comparable levels of vitamin C in their peel. The mineral and protein contents were found to be high in the peel of all the strains. These were highest in Chaubatia Green, and the lowest in Kalyanpur Hara Lamba. The protein content in Kheera S-45, Kheera Basi and Kheera G strains was found to be comparable. The strain Kalyanpur Hara Lamba contained the highest fat and crude fiber. The mineral, protein, fat and crude fiber contents were higher in the peel of the majority of strains (Table 1). The relative amount of sugar was also found to be higher in peel of all the strains than in the edible portion, except in Chaubatia Green and Poona Safed, whereas vitamin C was higher in Poona Safed peel. In other strains either it was at par with edible portion or lower than that. On comparing the nutrient contents 32.2% of sugar, 23.3% total soluble solids, 22.3% vitamin C, 31% mineral, 34.0% protein, 31.5% fat and 33.3% of crude fiber

Table 2. Correlation coefficient between various variables for cucumber edible and cucumber peel

Var.	TSS	Vit. C	Mineral (%)	Protein	Fat	Crude fibre
Cucumber edible						
Sugar	-0.77828	-0.24426	-0.12383	-0.16904	0.903689	0.1287
TSS		0.459969	0.265897	0.461037	-0.66158	-0.10436
Vit. C			0.243237	0.388347	-0.13159	0.317719
Mineral (%)				0.912222	-0.28713	0.506642
Protein					-0.36254	0.603147
Fat						-0.23195
Cucumber peel						
Sugar	-0.33229	-0.23658	-0.91396	-0.5302	0.888625	0.780642
TSS		0.609964	0.331323	0.615872	-0.18753	-0.01599
Vit. C			0.159656	0.0786	-0.23794	0.071647
Mineral (%)				0.759934	-0.68649	-0.5834
Protein					-0.24864	-0.1203
Fat						0.678627

were lost by discarding peel of cucumber. The results for the nutrient losses were similar to those reported by Rawat *et al.* (1984).

The correlation coefficient between the variables for edible, as well as peel portion were worked out (Table 2). The results indicate that in edible portion the sugar values were significantly and positively correlated with fat while with other variables a non-significant and negative correlation was observed, barring crude fiber where a non-significant positive correlation was established. Similarly a positive significant correlation was observed in protein and minerals. In peel portion a significant positive correlation was recorded in fat and sugar at 1% level while correlation between crude fiber and sugar, mineral and protein was found significant at 5% level only. The other values did not show any level of significance.

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