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Vitamins content of fruits and vegetables in common use in Egypt

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With 1 table

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In Egypt, fresh vegetables are available all the year round at reasonable prices. Leafy vegetables, both wild and cultivated, are eaten by everyone. A green salad dish composed of tomatoes, parsley, lettuce, spring onions, leeks, sweet pepper, and carrots never disappears from an Egyptian meal. Different varieties of fruits are cultivated, their prices are within the reach of all.

Different studies were carried out in Egypt on vitamin C content of some vegetables and fruits (7, 3, 13).

In Egypt, animal foods such as milk, butter, cheese and eggs, which are known to be rich in vitamin A and B, are not available in sufficient quantities. People depend to a large extent on the supply of vitamin A in the form of its precursors present in vegetables and fruits. Fruits contain varying amounts of carotenes according to their species. Green leafy vegetables are also good sources of riboflavin and niacin (3).

With the exception of some animal products, only fruits and vegetables contribute vitamin C to the diet. A prolonged absence of fresh foods, especially fruits and vegetables, from the diet leads to a deficiency of this vitamin. The reduction of protein intake over a prolonged period contributes for the nicotinic acid deficiency (4).

In a scheme to study the interaction between different nutrients, mainly the effect of vitamins C and carotene, on the absorption and utilization of iron, calcium and amino acids, it was decided to use both authentic samples of the vitamins as well as fresh juices from different vegetables and fruits (9, 6, 12).

In this respect, the vitamins C, carotene, riboflavin, and niacin were determined in some popular vegetables and fruits.

Materials and methods

The material of this study comprises 38 random samples of vegetables and fruits. They were brought from the local markets in three different localities to give a good representation of what is eaten by the consumers. Samples were taken according to their seasonal availability in the market. Samples were always purchased in the early morning to ensure its freshness. They were

analysed for their vitamin C, carotene, riboflavin and niacin contents. The analyses were carried out within a very short period just after the samples being transferred to the laboratory.

Preparation of samples for analysis

200–300 grams of the samples were taken, cut into small pieces using stainless steel knives. It was then blended or minced in the required solvent according to the vitamin assayed. An aliquot was withdrawn from the resulting slurry. Fruits like orange and lemon were analysed as whole fruits. The juices from these fruits were also separated and their vitamin content was determined.

The analyses of vitamins were performed according to the methods cited in the Association of Vitamin Chemists (1951).

Results and discussion

The data obtained for vitamin C, carotene, riboflavin and nicotinic acid for vegetables and fruits are shown in table 1. From these results, it was found that the green parts of vegetables, generally, were the most rich parts of the plants in their contents of the four vitamins assayed. Higher values for the vitamin content were shown in the whole fruits as compared to their juices. In orange, the vitamin C was 71 mg/100 g and carotene was 4.2 mg/100 g for the whole fruit, while these values for the juice were 48 and 2.6/100 g for vitamin C and carotene, respectively.

Fresh fruits and vegetables are important dietary sources of vitamin C in Egypt, and for this reason scurvy seems to be of a rare occurence in the country (11).

El-Ashwah et al. (5) found that storage did not affect the carotene content of orange. *Ghanem* and *Hassan* (10) found that pickling decreases the carotene content of some vegetables.

They found that riboflavin was not detected in these vegetables after pickling.

Higher values for vitamin C was found at earlier stages of development of the plant, then it decreases by the end of development and maturation (8, 1). On the other hand, *Stino* et al. (13) found that vitamin C of different spinach varieties increased with late planting and age.

El-Ridi et al. (7) stated that sweet pepper was consumed in the green stage while still immature. When the fruits become coloured after full maturation, the vitamin C content also doubled. As the coloured fruits are edible and their quality from all respects is superior to that of the green fruits, they advised to consume pepper fruits when they are fully matured and coloured.

Summary

The vitamin content, namely vitamin C, carotene, riboflavin and nicotinic acid, of some popular vegetables and fruits was determined. It was found that the green parts of the plants were the most rich in these four vitamins. Trigonella foenum-graecum (Helba) was the richest of all vegetables and fruits in vitamin C (207 mg%). Scandicium stellatum (Shabat contains the highest value for carotene (57.3 mg%). Solanum tuberosum (Batatis) was the richest in riboflavin (0.3 mg%) and Pisum sativum (Busselah) in niacin (1.8 mg%).

Table 1. Carotene, ascorbic acid, riboflavin, and nicotinic acid contents of some popular vegetables and fruits (mean of 5 samples, mg%).

No.	Latin name	English name	Local name	Vitamin C	Carotene	Riboflavin	Niacin
1.	Allium cepa	Onion	Bassal Akhdar				
		immature bulbs		67	–	0.02	0.2
		green leaves		67	7.0		
2.	Allium porrum	Leeks bulbs	Kurrat	69	4.16	0.02	0.2
3.	Apium graveolens	Celery leaves	Karafs	57	27.5	0.02	0.2
		Stems		0.4	6.75		
4.	Beta vulgaris	Chard	Salq	57	10	0.06	0.3
5.	Beta vulgaris	Beet		24	traces	0.04	0.3
6.	Brassica oleracea	Cauliflower	Quarnabit	48	traces	0.05	0.3
7.	Brassica rapa	Turnip	Lift				
		leaves		156	26	0.04	0.8
		root		4.3	0		
8.	Brassica oleracea	Cabbage	Koromb malfuf	54	0.075	0.03	0.2
9.	Cucurbita pepo	Squash	Kûsa	16.7	4.6	0.1	1.4
10.	Capsicum annuum	Pepper, sweet	Fulful helou	147	1.5	0.04	0.7
11.	Capsicum pubescens	Pepper, hot	Fulful Hâr	181	5.5	0.07	0.2
12.	Cichorium intybus	Chicory	chicoria	92	0.65	0.07	0.2
13.	Citrus limon	Lemon					
		fruit	limon maleh	44	1.2	0.0	0.1
		juice	assir lymon	33	0.0		
14.	Citrus paradisi	Grapefruit	Lymon Hindi				
		fruit		138	0.2	0.1	0.2
		juice		60	0.0		
15.	Citrus aurantium	Orange	Burtukal				
		fruit		71	4.2	0.02	0.1
		juice		48	2.6		

Table 1 (continued)

No.	Latin name	English name	Local name	Vitamin C	Carotene	Riboflavin	Niacin
16.	Colocosia esculenta	Colocosia tuber	Qulquas	2.6	0.0	–	–
17.	Corchorus olitorius	Jew's mallow	Mulukhiyah	38	5.8	–	–
		as all, leaves		106	15.5	–	–
18.	Coriandrum sativum	Coriander	Kuzbarah	169	26.7	–	–
19.	Cucumis sativus	Cucumber	Khiyar	20	0.6	0.03	0.1
20.	Cynara scolymus	Artichoke	Kharshuf	0.7	traces	–	–
21.	Daucus carota	Carrot (yellow)	Gazar	8	7.8	0.04	0.6
22.	Eruca sativa	Garden Rocket	Jarjir	104	9.3	–	–
23.	Lactuca sativa	Lettuce	Khass				
		as all		11	2.5	0.06	0.1
		leaves		26	8.7		
24.	Lycopersicum esculentum	Tomato	Tamatim	37	1.04	0.04	0.5
25.	Malva persiflora	Mallow	Khubbâri	137	21	–	–
26.	Musa nana	Banana	Moz	7.0	0.4	0.04	0.5
27.	P. Petroselium crispum	Parsley curly	Bagdones	176	25	–	–
28.	Phaseolus vulgaris	Beans	Phasulia	27	0.7	0.08	0.5
29.	Pisum sativum	Peas, garden	Buzzelah	27	1.5	0.11	1.8
30.	Pyrus communis	Pear	Kumetra	7	traces	0.03	0.1
31.	Raphanus sativus	Radish	Fugl				
		leaves		99	5.0	–	–
		root		26	–	–	–
32.	Rumex sp.		Hummad	121	10	–	–
33.	Solanum tuberosum	Potato	Batatis	45	–	0.3	1.2
34.	Scandicium stellatum		Shabat	196	57.3	–	–
35.	Sonchus oleracus		Goodead	67	16	–	–
36.	Spinacia oleracea	Spinach	Sabanekh	87	11	0.16	0.5
37.	Trigonella foenum-graecum		Helba Khadra	207	37	–	–
38.	Vitis vinifera	Grape leaves	Warak enab	187	19	–	–

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