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**DETERMINATION OF VITAMIN C IN IRANIAN
CITRUS FRUITS¹**

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ABSTRACT

Titrimetrically determined vitamin C values of mechanically extracted juice of citrus fruits obtained from 13 locations in Iran were compared. Citrus fruits of Bam and Shah-savar showed the highest content of vitamin C. Light and air oxidation lowered the vitamin C content of the lemon juice stored at room temperature.

INTRODUCTION

The importance of vitamin C in nutrition is an established fact. Not much is known about the vitamin C content of various citrus fruits grown in Iran. Most of citrus juices commercially produced in Iran do not contain any additives. There are no reports on the effect of light, temperature and air oxidation on the ascorbic acid content of various citrus juices.

The present investigation was undertaken to compare the ascorbic acid content of various citrus juices in Iran and to study the effect of temperature, light and air oxidation on lemon juice.

MATERIALS AND METHODS

The study was conducted during 1974 on fruits from 21 locations. Samples of fresh citrus fruits were taken at random in each area from different groves and were stored

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under refrigeration (about 4 C) for two to seven days. Each sample contained a total of 50 ripe fruits. Before juice extraction, the fruits were washed with detergent, rinsed and halved and their juice was extracted using a hand press type juice extractor. Vitamin C was titrimetrically determined using 5 ml of fresh juice and a standard solution of 2,6-dichlorophenolindo-phenol (2). Other quality components were measured according to the A.O.A.C. methods (1). The effect of light and air oxidation on ascorbic acid contents of the stored lemon juices of Bam region were investigated at room temperature using a sample of juice containing 37.2 mg/100 ml ascorbic acid. Preservatives and anti-mold agents were not used.

RESULTS AND DISCUSSION

Table 1 gives the initial chemical composition of orange and lemon juices of Shahsavari and Bam regions. Results of analysis of ascorbic acid for different citrus fruits are given in Table 1. It was noted that citrus fruits of Shahsavari and Bam regions contained the highest amounts of vitamin C.

Results of the effects of light and air oxidation on stored lemon juices of Bam are graphically shown in Fig. 1. For curves a,b,c,d and e vitamin C retentions are 93,81,46,34 and 10%, respectively, after 30 weeks.

Table 1. Chemical composition of fresh orange and lemon juices.

Fruit juice tested	Location	Vit. C, mg/ 100 ml	Citric acid, g/100 ml	Total solid,g/ 100 ml	Ash,g/ 100 ml	Nitro-gen,g/ 100 ml	Specific gravity
Sweet orange	Bam	64	1.3	12.3	0.31	0.18	1.06
"	Shahsavari	52	1.7	10.8	0.50	0.13	1.05
Lemon	Bam	37	—	7.7	0.28	0.10	1.02
Lemon	Shahsavari	45	—	8.3	0.22	0.12	1.02

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Table 2. Ascorbic acid content of freshly extracted citrus juice from various regions in Iran.

Fruit juice tested	Location	Mean ascorbic acid concentration, mg/100 ml \pm S.E.
Lime	Minab	20.3 \pm 0.3
"	Jiroft	20.6 \pm 0.2
"	Shahsavari	23.1 \pm 0.1
"	Bandar Abbass	22.3 \pm 0.2
Lemon	Jahrom	31.2 \pm 0.5
"	Shiraz	28.6 \pm 0.4
"	Ghasr-e-Shirin	36.0 \pm 0.2
"	Shahsavari	45.2 \pm 0.3
"	Kazeroon	33.3 \pm 0.5
"	Bam	37.7 \pm 0.5
"	Dezful	36.0 \pm 0.2
Sweet orange	Shahsavari	52.2 \pm 0.4
"	Noushahr	29.6 \pm 0.2
"	Ramsar	33.8 \pm 0.4
"	Bam	63.6 \pm 0.5
Bitter orange	Bam	36.0 \pm 0.3
Grapefruit	Shahsavari	33.8 \pm 0.4
"	Ahwaz	42.2 \pm 0.2
Tangerine	Shahsavari	35.2 \pm 0.4
"	Bam	47.9 \pm 0.3
"	Jahrom	36.0 \pm 0.1

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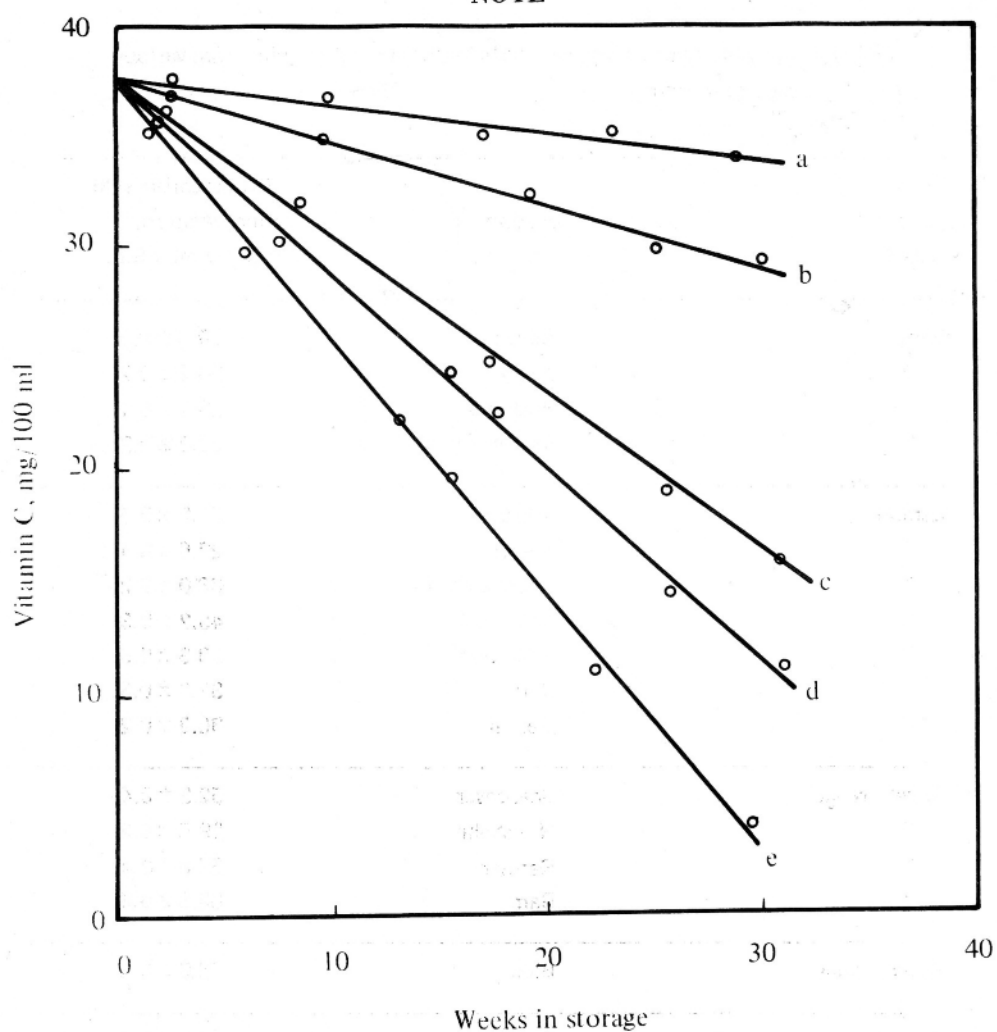


Fig. 1. Variation in ascorbic acid concentration (initial concentration 37.2 mg/100 ml) with time for a sample of fresh lemon juice of Bam region kept at room temperature under ordinary light. a= sealed can, b= filled 150 ml brown stoppered bottle, c= filled 250 ml colorless stoppered bottle, d= 1/10 filled one liter stoppered bottle and e= 1/10 filled one liter colorless stoppered bottle.

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The result of this study show that the effects of light and air oxidation on the destruction of vitamin C of samples is a significant factor for the shelf-life of citrus juices.

LITERATURE CITED

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