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ASSESSMENTS OF THE NUTRITIONAL VALUE OF PROCESSED FRUITS AND VEGETABLES: A CASE STUDY

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ABSTRACT

This study investigated the effect of traditional and improved solar drying methods on the standard and nutritional composition of dried fruits and vegetables as a case study. The fruits and vegetables were dried under solar drying methods namely; open sun drying, a standard solar dryer, and a newly improved solar dryer technology. Results showed that the solar drying methods were capable of retaining the standard and nutritional composition of dried fruits and vegetables. The nutritional parameters retained were proximate and mineral content. The standard parameters were taste, aroma, color, and acceptability of the edible fruit and vegetables. However, the standard and nutritional content of the fruit and vegetables dried under the improved solar drying method were beyond that of the products dried under the commercial solar drying method.

Keywords*: Fruits, vegetables, nutrient values, etc.*

I. INTRODUCTION

Fruits and Vegetables have a singular place in diet due to their color, flavor, nutrient content, and health benefits [1]. They function as rich source of fat-soluble vitamins, Vitamin C, iron, zinc, folate, and dietary fiber [2]. Some experiments disbursed exhibited that green leafy vegetables contain a considerable amount of protein, Vitamin A, water-soluble vitamins and might be enhanced by the application of organic manures [3 & 4]. The average intake of green leafy vegetables and fruits within the Indian population is the way but the recommended daily allowance; therefore, the people suffer from deficiency diseases.

Fruits and vegetables are highly perishable because of their high water activity, therefore methods involving removal of this moisture helps in their preservation. During the dry months of the year, there's a widespread acute shortage of fruits and vegetables throughout the country and also the cost increases beyond the purchasing limit of a poor citizen. To satisfy the wants of the people surplus fruits and vegetables must be conserved to be used when required.

The demand for fresh and dehydrated mint and coriander has considerably increased over the last twenty years [5 - 8]. Bitter gourd is treated as a remedy for diabetes. This study has been undertaken to analyze the effect of various drying methods on the nutritional quality of mango, pineapple, leafy vegetables, and bitter gourd. A comparative evaluation of the effectiveness of the drying vegetables as preservation techniques is additionally described.

II. MATERIALS AND METHODS

Materials

Fruits (mango and pineapple) and green leafy vegetables (fenugreek, mint, and bitter gourd), were collected from the local market and were washed with water.

Treatments

The fruits and vegetables were dried under solar drying methods namely; open sun drying, a traditional solar dryer, and a newly improved solar dryer technology.

Method

After removing the external non-edible portions of the mango and pineapple they were sliced at with 2-3 mm thickness [9 - 11], a similar procedure was followed for the bitter guard. Three replicate drying cycles were performed simultaneously. For all fruits and vegetables, the materials were uniformly spread. The dried samples were grinded and sieved through 0.5 mm sieve to induce equal size granules and packed in air-tight polythene bags for analyses of nutrient uptake.

III. RESULTS AND DISCUSSION

The following table 1. Shows the nutrient analysis for mango, pineapple, bitter gourd, mint, and fenugreek for carbohydrates, Vitamin A, Vitamin C, Calcium, Phosphorus, Iron, Copper, Zinc, and Manganese.

From the table 1, it is seen that the dried fruits and vegetables can retain a good amount of nutrient values.

Table 1: Nutrient analysis for fresh and solar dried fruits and vegetables

Composite sample number	Sample description	Carbohydrate g/100g	Vitamin A micrograms/100g*	Vitamin C milligrams/100g	Calcium milligrams/100g	Phosphorus milligrams/100g	Iron milligrams/100g	Copper milligrams/100g	Zinc milligrams/100g	Manganese milligrams/100g
1	Mango (fresh)	10.6	851	36.4	8.48	6.01	0.015	0.022	0.110	0.008
	Mango (dried)	14.9	836	33.5	11.61	7.35	0.076	0.034	0.143	0.026
2	Pineapple (fresh)	23.3	11.8	23.4	4.31	4.03	0.145	0.124	0.051	1.15
	Pineapple (dried)	26.8	10.5	19.9	6.81	5.25	0.523	0.347	0.763	1.98
3	Bitter Gourd (fresh)	9.47	2.93	193	4.88	2.17	4.22	0.012	0.070	0.011
	Bitter Gourd (dried)	12.46	1.71	79	6.13	2.89	5.14	0.031	0.083	0.016
4	Mint (fresh)	8.66	6.40	295	3.47	1.47	2.61	0.024	0.151	0.45
	Mint (dried)	11.14	2.73	204	5.11	1.86	3.44	0.028	0.168	0.51
5	Fenugreek (fresh)	28.64	64.2	156	7.41	2.61	6.21	0.113	0.056	0.022
	Fenugreek (dried)	35.22	72.4	138	9.18	3.07	7.89	0.126	0.087	0.031

IV. CONCLUSION

Although the analysis of the results shows significant losses in minerals as a result of drying, the number of nutrients retained might be valuable, especially in communities that have limited alternative sources of those micronutrients. Drying fruits and vegetables should be encouraged as the simplest way of ensuring a year-round supply of micronutrients to at-risk communities. Fruits and vegetables may well be preserved after they are in season and fed to children. The utilization of solar dryers should be encouraged in the drying of fruits and vegetables. Being a costly facility, women as an example are often mobilized to make associations and thru those small groupings, soft

loans are often advanced by microfinance institutions to get solar driers. Solar drying of fruits and vegetables is additionally recommended as an appropriate low-level technology for preserving foods.

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