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Food Preservation Through Dehydration

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Abstract

Food preservation involves all those processes that can be used singly or in combination for optimum utilization and value addition. Theoretically all agricultural produce can be preserved but practically there are limitations. The products that get naturally dried are easily preserved while others need special treatment. Dehydration is one of the easiest methods to preserve agricultural produce. Experiments were designed to standardize methods for optimum value of selected fruits through dehydration.

Keywords: Dehydration, Fruits, value addition

Introduction

Dehydration is one of most important complementary treatment and food preservation technique in the processing of dehydrated foods, since it presents some benefits such as reducing the damage of heat to the flavor, color, inhibiting the browning of enzymes and decrease the energy costs Dehydration results in increased shelf-life, little bit loss of aroma in dried and semidried food stuffs, lessening the load of freezing and to freeze the food without causing unnecessary changes in texture It has been reported that dehydration reduced up to 50% weight of fresh vegetables and fruits

Dehydration involves the immersion of foods in osmotic solution such as salts, and concentrated sugars. which some extent to dehydrates the food. Osmotic dehydration which improves the sensorial and nutritional properties, preserve and improve the organoleptic properties of foods. Osmotic dehydration is used with other drying methods such as freezing and deep microwave drying

to make available better quality final product. However, higher temperature has the significant effect on the structure of tissues and cause flavor deterioration and enzymatic browning at temperature above 45oC.

Material and Methods

Fresh fruits LIKE Apples, Bananas, Mangoes, Papayas, Chickoos and Pineapples were purchased from the market. They were cut into uniform pieces and then they were blanched. For this first they were dipped into hot water then immediately they rinsed with cold water. Then they were strained well. The fruits were then cut into small biting sized chunks. Three sets of fruit chunks are made. The chunks were transferred to air tight containers and were subjected to dehydration in the following sets. One set was untreated so was called as control. The second set of the same was dried with salt i.e., salt was used as a preservative. The third set of the same fruit was dried with sugar i.e., sugar was used as a preservative. Then these sets were kept for dehydration by different methods like dehydration with sun method, dehydration with microwave method and dehydration using freeze drying as a method. The sets were observed after one and then again after two months. The aspects identified were time taken for dehydration, change in texture, colour, aroma, aesthetic value and taste.

Results and Discussion

The fruits chunks which are dehydrated with different dehydration methods Show significantly different texture, colour, odour and taste. The same fruit chunk takes different time to dehydrate in different dehydration methods e.g, Orange took 1 day in microwave for drying while it took 4 days when it was sun dried, and the same fruit took 5 weeks to become freeze dried.The results of all selected fruits chunks are given below in tabulated form which gives the information about the texture, colour, taste, odour.

Table: 1 Showing the texture of dehydrated apple chunks

	Control		Salt Sugar
Sun dried	Average	Excellent	Excellent
Microwave	Average	Good	Excellent
Freeze dried	Excellent	Excellent	Excellent

Table: 2 Showing the of colour of dehydrated apple chunks

	Control	Salt	Sugar
Sun dried	Average	Excellent	Excellent
Microwave	Average	Average	Good
Freeze dried	Excellent	Excellent	Excellent

Table: 3 Showing the taste of dehydrated apple chunks

	Control		Salt Sugar
Sun dried	Average	Average	Excellent
Microwave	Average	Average	Excellent
Freeze dried	Good	Average	Excellent

Table: 4 Showing the Odour of dehydrated apple chunks

	Control	Salt	Sugar
Sun dried	Average	Average	Excellent
Microwave	Good	Good	Good
Freeze dried	Average	Average	Average

Table: 5 Showing the time taken by dehydrated apple chunks

	Control	Salt	Sugar
Sun dried	2 Days	2 Days	2 Days
Microwave	1 Day	1 Day	1 Day
Freeze dried	3 Week	3 Week	3 Week

Table: 6 Showing the texture of dehydrated banana chunks

	Control		Salt Sugar
Sun dried	Average	Good	Average
Microwave	Average	Good	Average
Freeze dried	Average	Average	Average

Table: 7 Showing the colour of dehydrated banana chunks

	Control		Salt Sugar
Sun dried	Average	Good	Average
Microwave	Average	Average	Average
Freeze dried	Average	Average	Average

Table: 8 Showing the taste of dehydrated banana chunks

	Control	Salt	Sugar
Sun dried	Average	Average	Excellent
Microwave	Average	Excellent	Excellent
Freeze dried	Average	Average	Good

Table: 9 Showing the Odour of dehydrated banana chunks

	Control		Salt Sugar
Sun dried	Good	Good	Excellent
Microwave	Good	Good	Excellent
Freeze dried	Average	Average	Average

Table: 10 Showing the Time-taken by dehydrated banana chunks

	Control	Salt	Sugar
Sun dried	2 Days	2 Days	2 Days
Microwave	1 Day	1 Day	1 Day
Freeze dried	4 Weeks	4 Weeks	4 Weeks

Table: 11 Showing the Texture of dehydrated orange chunks

	Control	Salt	Sugar
Sun dried	Average	Average	Average
Microwave	Good	Good	Good
Freeze dried	Excellent	Excellent	Excellent

Table: 12 Showing the Colour of dehydrated orange chunks

	Control	Salt	Sugar
Sun dried	Average	Average	Average
Microwave	Good	Good	Good
Freeze dried	Excellent	Excellent	Excellent

Table: 13 Showing the Taste of dehydrated orange chunks

	Control	Salt	Sugar
Sun dried	Average	Average	Average
Microwave	Average	Average	Good
Freeze dried	Excellent	Good	Excellent

Table: 14 Showing the Odour of dehydrated orange chunks

	Control		Salt Sugar
Sun dried	Good	Good	Good
Microwave	Good	Good	Good
Freeze dried	Average	Average	Average

Table: 15 Showing the Time-taken by dehydrated orange chunks

	Control	Salt	Sugar
Sun dried	4 Days	4 Days	4 Days
Microwave	1 Day	1 Day	1 Day
Freeze dried	5 Weeks	5 Weeks	5 Weeks

Table: 16 Showing the Texture of dehydrated papaya chunks

	Control	Salt	Sugar
Sun dried	Good	Good	Good
Microwave	Average	Average	Average
Freeze dried	Excellent	Excellent	Excellent

Table: 17 Showing the Colour of dehydrated papaya chunks

	Control	Salt	Sugar
Sun dried	Good	Good	Good
Microwave	Good	Good	Excellent
Freeze dried	Excellent	Excellent	Excellent

Table: 18 Showing the Taste of dehydrated papaya chunks

	Control	Salt	Sugar
Sun dried	Good	Average	Excellent
Microwave	Good	Average	Excellent
Freeze dried	Excellent	Average	Excellent

Table: 19 Showing the Odour of dehydrated papaya chunks

	Control	Salt	Sugar
Sun dried	Excellent	Excellent	Excellent
Microwave	Excellent	Excellent	Excellent
Freeze dried	Average	Average	Average

Table: 20 Showing the Time-taken of dehydrated papaya chunks

	Control		Salt Sugar
Sun dried	2 Days	2 Days	2 Days
Microwave	1 Day	1 Day	1 Day
Freeze dried	3 Weeks	3 Weeks	3 Weeks

Table: 21 Showing the Texture of dehydrated pineapple chunks

	Control	Salt	Sugar
Sun dried	Average	Good	Good
Microwave	Excellent	Good	Excellent
Freeze dried	Excellent	Excellent	Excellent

Table: 22 Showing the Colour of dehydrated pineapple chunks

	Control		Salt Sugar
Sun dried	Average	Average	Average
Microwave	Good	Good	Good
Freeze dried	Excellent	Excellent	Excellent

Table: 23 Showing the Taste of dehydrated pineapple chunks

	Control		Salt Sugar
Sun dried	Average	Good	Good
Microwave	Good	Excellent	Excellent
Freeze dried	Excellent	Excellent	Excellent

Table: 24 Showing the Odour of dehydrated pineapple chunks

	Control	Salt	Sugar
Sun dried	Good	Good	Good
Microwave	Excellent	Excellent	Excellent
Freeze dried	Average	Average	Average

Table: 25 Showing the Timetaken of dehydrated pineapple chunks

	Control	Salt	Sugar
Sun dried	1 Day	1 Day	1 Day
Microwave	1 Day	1 Day	1 Day
Freeze dried	3 Weeks	3 Weeks	3 Weeks

Significance Of Value Addition

Dehydration is very significant method of food preservation. Standardisation of methods help in the preservation of extra agricultural produce for future use. These fruit chunks can be utilized in many ways. They can be used them as a mouth freshner, in mocktails, juices, with corn flakes, ice cream, puddings, desserts, cookies etc.

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