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Survey on Wastage of Fruit Pomace among Selected Fruit Juice Outlets

Vasanthi .P[1], Saradha Ramadas .V[2]

[1]PhD Research Scholar, Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women University, Coimbatore, Tamil Nadu

[2]Professor, Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women University, Coimbatore, Tamil Nadu

Abstract: ***Fruit peels are recognized as one of the essential components of our diet as it contains many vital nutrients and non-nutrient compounds, which play an important in well-being. The main objective of the study is to conduct the survey among fruit juice outlets and calculate the wastage of fruit pomace (skin and seed). Ten fruit juice outlets were selected in Coimbatore city for the survey. The wastage of pomace was observed for a period of one week and average pomace waste was calculated. Among all the fruits, major pomace wastage was found in pomegranate (50.2%) followed by watermelon (49.7%). Fruit pomaces contain natural antioxidants, phytochemicals, fibre and also have antimicrobial activity. Hence it can be incorporated into specific food items to increase the therapeutic value of the product and facilitate to improve the health status of the consumers. These value added products will reduce the risk of diabetes mellitus, cardiovascular diseases and metabolic syndrome. Development of value added products can act as an the employment opportunity for the self-help groups or the interested entrepreneurs which will reduce the wastage of fruit pomace and also contribute to food security as a whole.***

Keywords: Antioxidant; fruit peel; phytochemicals; pomace; wastage

1. Introduction

Fruit peels are the novel, easily available, efficient, affordable, eco-friendly, natural and economic source of antioxidants and antimicrobial agents (Prakash*et al*., 2013). In modern diet, fruits are becoming an important nutritious beverage and also gives good taste and variety of nutrients (Hossain*et al*., 2012). Generally fruit peels of common fruits are discarded even when it is safe for consumption. The peels are recognized as one of the essential components of our diet as it contains many vital nutrients and non-nutrient compounds, which play an important in well-being. Fruit wastes, which are highly perishable and seasonal- is a problem to the processing industries and pollution monitoring agencies. Suitable methods are needed in order to utilize them into value added products (Rai and Ranganathan, 2012). Fruit fibres and pomaces are byproducts while processing the fruits into juice or puree. It can be dried, further processed and ground to a fine particle size (Walter *et al*., 1985). Fruit fibre is rich in pectin and hemicellulose in relation to cellulose, accompanied by low fat and protein contents (< 1 %). Fruit based products have good water binding properties that can be used in food processing to control food texture and rheological behavior (Fischer *et al*., 2009). Different fruit pomaces have different total dietary fibre concentration. Apple pomace contains 79 per cent of total dietary fibre whereas grape contains 55 per cent. The ratio of insoluble and soluble fibre of tomato and grape pomaces are 13:1 and 11:1 respectively. Apple pomace have 6:1 ratio of soluble and insoluble fibre (Swanson, 2002). Hence there is a need to study the quantity of pomace waste produced in the fruit juice outlets.

Objectives

To conduct the survey among fruit juice outlets, to find out the types of fruits prepared in the selected juice outlets, to assess the most preferred fruit juices by the selected consumers and to analyse the average wastage of fruit pomace after the juice preparation in the selected outlets.

2. Methodology

2.1 Selection of area

A total of ten fruit juice outlets situated in Saibaba colony, Sivasakthi and Ramalingam colony in Coimbatore district were selected by Convenience sampling method. A well formulated interview schedule was used to collect the basic information on type of fruit juice available, consumer preferences, pomace waste and its utilization.

Initially, the amount of whole fruit used for the production of juice was separately measured and found out the wastage of pomace from each fruit in the 10 fruit juice outlets. Pomace is a waste which remains after the juice preparation. The average pomace waste was calculated.

3. Results

Fruits and vegetables were used for the preparation of juices are shown in Table 1

Table 1: Fruits and vegetables used for the preparation of juices at the various fruit juice outlets

Name of the fruit	*Number of outlets*	*Per cent*
Apple	10	100
Orange	10	100
Musambi	10	100
Grapes	10	100
Pomegranate	9	90
Muskmelon	9	90
Watermelon	7	70
Mango	5	50
Pineapple	4	40
Sapota	4	40
Butter fruit	3	30
Papaya	2	20
Strawberry	1	10
Beetroot	1	10
Plantain stem	2	20
Carrot	2	20

Table 1 shows that apple, orange, musambi and grape juices were prepared by all the selected fruit juice outlets followed by pomegranate and muskmelon. Besides this 20 per cent of the fruit juice outlets were preparing carrot, papaya juices and only in 10 per cent outlets beetroot, strawberry and plantain stem was utilized for the juice preparation.
The commonly consumed juices by the consumer are shown in Table 2

Table 2: Most preferred juices by the consumers

Name of the fruit juice	Number	Per cent
Apple	9	90
Orange	8	80
Musambi	8	80
Muskmelon	8	80
Pomegranate	6	60
Watermelon	6	60
Lemon	3	30
Grapes	2	20

It is clear that 90 per cent of the consumers preferred apple juice and 80 per cent preferred orange, musambi and muskmelon juice. Though muskmelon and watermelon were seasonal the consumers gave first priority to apple followed by musambi, orange and muskmelon. But grape juice consumption was only 20 per cent which was less when compared to that of other fruit juices. The mean wastage of pomace after the juice preparation using various fruits are depicted in figure 1.

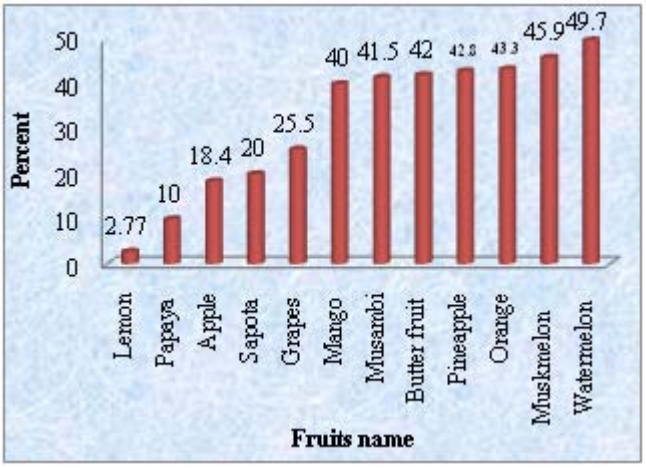

Figure 1: Average wastage of pomace after the juice preparation

Among all the fruit juices prepared in the selected fruit juice outlets the major pomace wastage was found in pomegranate (50.2%), followed by watermelon (49.7%), muskmelon (45.9) and orange (43.9%). The minimum wastage was found in lemon (2.77%). Even though grape pomace was only 25.5 per cent the nutrients present in grape pomace were high when compared to other fruit pomaces. The present finding is on par with that of Paranthaman (2009), the processing of fruits byproducts like peel/skin, seeds and stones are discarded as waste. In some fruits the percent of fruit waste were in the order of banana (20%), mango (30-50%), orange (30-50%) and pineapple (40-50%).

3.1 Age Group of Consumers

The survey shows that 60 per cent of the consumers were in the age group of 40 to 60 years. Forty per cent of the subjects were adults between 20-39 years. All the fruit juice outlets had a fruit selling unit attached. Frequency of purchasing fruits by the proprietors of the fruit juice outlets depends upon the turnover of fruit juices as demand by the consumers and may take place on alternative days or sometimes once in a week. Among all the selected fruit juice outlets, the wastage of pomace was disposed to Municipal dustbin or Corporation dust bin. They were not utilizing for any other purpose.

4. Conclusion

Fruit pomaces (skin and seed) contain natural antioxidants, phytochemicals, fibre and also have antimicrobial activity. In spite of rich in nutrients the fruit pomace become waste and discarded after the juice preparation.

5. Recommendations

Since it is nutritious it can be utilized for various food preparations in the form of dried or incorporated into many value added foods, so it will increase the medicinal value of the product and give health benefits to the consumers and also provide job opportunities to the producers. The therapeutic effect of value added products can be find out by supplementing to the specific disease conditions.

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Author profile

P. Vasanthi is currently persuing PhD in Avinashiingam Institute for Home Science and Higher Education for Women University, Coimbatore, Tamil Nadu. She cleared UGC-NET Exam on JUNE 2013. She completed her M.Phil in the Department of Food Service Management and Dietetics in 2009 in Avinashilingam University, Coimbatore. Her area of research is HIV/AIDS, Cancer and Food Science. She is a life member of Indian Dietetic Association. She had presented paper for Pratima Kaushik Award in 46th Annual National Conference, Indian Dietetic Association (IDA), Pune Chapter, Maharashtra, India

Dr. V. Saradha Ramadas is a Professor in the department of Food Service Management and Dietetics, in Avinashilingam Institute for Home Science and Higher Education for Women University, Coimbatore. She acquired her PhD (1999) in Food Service Management and Dietetics and MBA (2009) in Human Resource Management. She had finished her M.Sc in both Hospitality Management and Food Service Management and Dietetics. She also holds a post of President of Indian Dietetic Association, Coimbatore chapter and Editor of Research Highlight Journal. She has published more than 38 articles in National and International Journals and 11 Books. She has presented 46 posters and papers in National and International Conferences and Seminars. She has given many Radio talk and video lessons for the students and also to the community. She had completed various projects under FAO, UGC, Nutrition Foundation of India, Women's Studies Centre. Her area of research includes: Food Science, Management and Dietetics.