

- Doijode, S.D. (1988). Comparison of storage containers for storage of french bean seeds under ambient conditions. *Seed Res.* 16: 245-247.
- Jeyaraj, T. Vadivelu, K.K., Dharmalingam, C., Vijayakumar, A. and Irulappan, I. (1987). Effect of seed treatments and containers on vegetable seed storage under different places. *South Indian Hort.* 36: 183-187.
- Krishnasamy, V. (1982). Studies on certain aspects of production and storage of sorghum seed. Ph.D., Thesis, TNAU, Coimbatore.
- Mathews, S. and Powell, A.A. (1981). Controlled deterioration test. In *Vigour Test Hand Book*, ISTA, Zurich.
- Palanisamy, V. and Vanagamudi, K. (1987). Viability of Okra seeds in storage. *Seed Res.* 15: 221-222.
- Presley, J.T. (1958). Relation of protoplast permeability of cotton seed viability and predisposition to seedling disease. *Pl. Disease Reporter*, 42: 842.
- Pushpamma, P. and Reddy, M.U. (1979). Physico-chemical changes in rice and jowar stored in different agro-climatic regions of Andhra Pradesh. *Bull. Grain Tech.* 27: 97-108.
- Saxena, O.P. and Gita Singh. (1987). Seed deterioration studies in some vegetable seeds. *Horticulture*, 215: 39-44.
- Singh, H. and Singh, G. (1990). Maintenance of germination of onion seeds. *Seed Res.*, 8: 163-165.
- Thomas, W. (1979). Seed viability in relation to storage conditions in varieties of soybean, M.Sc. (Ag.) thesis, UAS Bangalore.

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Consumers preference and perceptions to fresh and processed spices in Coimbatore and Palakkad

N.R. PADMANABAN

Agricultural Research Station, Kovilpatti - 628 501, Tamil Nadu.

Abstract : A study was conducted in Coimbatore and Palakkad with 200 sample respondents to analyse the consumers preference to fresh and processed spices in 1998. The results revealed that consumers distinguish fresh and processed spices as different products. Consumers preference was more for fresh spices than for processed one. (*Key words: Spices, Consumer, Preference, Fresh, Processed; Perceptions*).

The history of Indian spices dates back to the beginning of human civilization. India is the largest producer, consumer and exporter of spices in the world. Though India is the leading producer of spices, it consumes 93 per cent of its production. It is estimated that the global import demand in 2000 AD for pepper was 1.85 lakh tonnes, for chillies 0.37 lakh tonnes, turmeric 0.38 lakh tonnes, ginger 0.23 lakh tonnes and small cardamom 0.12 lakh tonnes (Source: Indian Agriculture, 1996).

Change in food habits and practices could be attributed to changing attitudes of house-

wives towards cooking task, reduced dependence on servants, increased usage of appliances, non-traditional foods or easy to prepare snacks entering the menu, change initiated by children and status factor (Cherian, 1995). Environmental factors which add impetus to the above factors are liberalisation of economy, globalization of business and special concessions to food industry.

Ying Chein and Potty (1996) reported that in traditional foods and medicinal preparations in India, China and many countries with ancient civilisations spices especially of herbal origin form an important ingredient in various food

and indigenous medicinal preparations and their effectiveness is generally attributed to many aromatic chemicals which are mostly volatile in nature. As part of diet besides, imparting taste, colour, aroma and flavour they can also contribute to the general well-being of the consumers through the physiological effects of some of the spice principles.

Spices are traded in various forms, around 85 per cent marketed in whole form and 15 per cent as ground powder/spice oils and oleoresins. Quoted 45 per cent of kitchen time is spent on grinding and pounding of spices. Nowadays, housewives prefer processed spices in order to complete the cooking quickly. There is a marked demand towards processed spices among the housewives. Hence, this study was attempted to analyse the consumers preference to fresh and processed spices and also the perceptions on processed spices with the focus on readymade spice cooking intermediaries.

Materials and Methods

For this study, Coimbatore city and Palakkad town was purposively selected. Coimbatore is an industrially well developed city, cosmopolitan in nature with people of different communities, language, customs and cultures settled together. In contrast, Palakkad is a predominantly agrarian district with more than 65 per cent of the workers engaged in agriculture.

To select the sample respondents for this study, two stage random sampling technique was adopted. Coimbatore city has 72 wards. In the first stage, 10 wards were selected randomly from the total number of wards in the corporation. Then, from each selected ward 10 sample households were randomly drawn. Similarly, in Palakkad municipality, among 32 wards, 10 wards were selected randomly and from each of these wards 10 households were selected. Thus, the total respondents were 200 from both the study areas together.

The study was conducted during the months of November 1997 to January 1998. Households rather than individuals were considered as a unit of measurement for two reasons. First, the household is the frame of reference for consumption decisions. Secondly, the household acts as an economic unit on the income side. The housewives were interviewed for this study.

The sample households were post-stratified into four income groups. The mean and standard deviation of monthly income of the sample

households were found out, the standard deviation was added and subtracted from the mean to arrive at the class interval and thereby classify the respondents into different income groups. Accordingly, four groups identified are given in Table.

Monthly income range (Rs.)	Income group
<8500	Lower middle income group (LMIG)
8501-15000	Middle income group (MIG)
15001-21500	Upper middle income group (UMIG)
>21500	High income group (HIG)

Gordon Foxall (1981) described a technique for attitude assessment. He indicated how the formal definition of consumers attitudes in terms of their evaluations and preferences for specific food products may be operationalised by means of a consumer preference profile and how the use of indices derived from this measure of attitudes facilitates the interpretation of the meanings attributed, by consumer's preferences for specific product attributes. The validity of consumer preference profile was examined and conclusions were drawn with respect of the use of this approach to attitude testing in consumer research generally. Sabeson (1991) used consumer preference profile in his work on processed fruit and vegetable products to compare the attitude of consumers towards fresh and processed products.

Same method is used here to measure consumers attitudes towards processed branded spices and fresh spices. Primary purpose was to identify the variables in terms of which the consumer evaluates and chooses between the two.

The consumers are expected to evaluate and choose the product according to the following variables :

1. More appetising in nature
2. Expensive
3. Superior quality
4. Readily available in shops
5. Increased convenience of cooking
6. Storage quality is good
7. Available in convenient pack
8. Makes a tasty meal

9. Better aroma
10. Versatile in nature
11. Preferred by family members
12. Adulteration
13. Worth for the money spent
14. Better flavour and pungency
15. Round the year availability

The statements were given to consumers and they were asked to state whether the statement is more appropriate to fresh, processed or both. For the answers three indices were prepared.

- 1). Index of Statements power to Discriminate (ISD) between fresh and processed

$$\text{ISD} = \frac{\text{Fresh} + \text{Processed}}{\text{Total replies}}$$

ISD indicates the proportion of respondents who do distinguish between the products on the basis of the attribute named in the statement. When the value of the ISD for a statement is higher (above 0.70) it means both the products are much different when compared by that statement and they can not to be substituted by each other on that aspect. If ISD is low (below 0.50) it means consumers are not differentiating the two items with respect to that statement.

- 2) Index of Statements Relative Applicability (ISRA)

$$\text{ISRA to fresh} = \frac{\text{Fresh}}{\text{Fresh} + \text{processed}}$$

$$\text{ISRA to processed} = 1 - \text{ISRA for fresh}$$

The ISRA denotes whether the statement has more applicability for processed or fresh spices.

- 3). Index of Statement Assignment Value (ISAV)

$$\text{ISAV for fresh spices} = \text{ISD} \times \text{ISRA for fresh spices}$$

$$\text{ISAV for processed} = \text{ISD} \times \text{ISRA for processed spices}$$

Results and Discussion

Consumer preference profile was employed to understand the reason for consumers preference for fresh or processed spices. The responses obtained from the consumers are presented in Tables 1 and 2 as respective indices, the Index of Statement Discriminatory power (ISD), Index

of Statements Relative Applicability (ISRA) and Index of Statements Assignment Value (ISAV).

It could be noted that ISDs for 11 out of 15 statements were above 0.700 and for two statements between 0.600 and 0.700 in Coimbatore. In Palakkad, ISDs for 13 out of 15 statements were above 0.700. Because of the higher number of statements with ISD values more than 0.700, one could infer that the respondents perceive fresh and processed spices as entirely different items. This implied that they can not be substituted for each other.

In Coimbatore, the highest value of ISD was obtained for taste aspects like flavour, pungency and appetising nature of the product. About 0.900 ISD value was recorded for storage aspect, aroma, superior quality and availability of product. Between 0.800 and 0.900 ISD value was obtained for statements regarding availability in convenient quantities and adulteration.

In Palakkad, highest ISD values was assigned for superiority in quality of product and convenient for cooking. More than 0.900 ISD value was assigned for taste, keeping quality, aroma and appetising nature of the product and between 0.800 and 0.900 value for statement relating to versatility, availability in convenient quantities and worth for the money spent. A higher value for a statement indicates that the consumers differentiate the two products with respect to that characteristic of fresh and processed spices. The statement with low ISD value includes those regarding price and preference of family members. A low ISD value indicates that such statement do not have much bearing in decision making process with respect to either fresh or processed spices.

By using the ISRA and ISAV values, the consumers perception of fresh and processed spices are discussed below.

Buying and Cooking

Processed spices were clearly preferred by majority of consumers over fresh spices, because of easy availability and absence of seasonality in buying, but scored very less compared to fresh spices with regard to their ability to make a meal tasty and appetising. In the case of availability ISRA to processed was 0.897 and 0.760 in Coimbatore and Palakkad respectively, implying processed spices were readily available than the fresh. Also, ISAV to processed was well above 0.500 in both the study areas indicating that this statement can be assigned to processed

Table 1. Indices for consumer preference profile in Coimbatore

Statement	ISD	ISRA to fresh	ISRA to processed	ISAV to fresh	ISAV to processed
Appetising nature	0.98	0.551	0.449	0.539	0.440
Expensive	0.35	0.314	0.686	0.109	0.240
Superior quality	0.94	0.670	0.330	0.629	0.310
Readily available	0.87	0.103	0.897	0.089	0.780
Convenience in cooking	0.91	0.152	0.848	0.138	0.772
Storage quality	0.95	0.768	0.232	0.729	0.220
Convenient quantities	0.82	0.805	0.195	0.660	0.159
Tasty meal	0.73	0.561	0.439	0.409	0.320
Better aroma	0.91	0.242	0.758	0.220	0.689
Versatile	0.68	0.500	0.500	0.340	0.340
Preferred by family members	0.66	0.591	0.409	0.390	0.269
Adulteration	0.86	0.035	0.965	0.030	0.829
Worth for the money spent	0.72	0.514	0.480	0.370	0.349
Flavour and pungency	0.97	0.629	0.371	0.610	0.359
Round the year availability	0.94	0.064	0.936	0.060	0.879

ISD - Index of Statements Discriminatory power

ISRA - Index of Statement Relative Applicability

ISAV - Index of Statement Assignment Value.

Table 2. Indices for consumer preference profile in Palakkad

Statement	ISD	ISRA to fresh	ISRA to processed	ISAV to fresh	ISAV to processed
Appetising nature	0.97	0.711	0.289	0.689	0.280
Expensive	0.33	0.212	0.788	0.069	0.260
Superior quality	0.99	0.747	0.252	0.739	0.249
Readily available	0.75	0.240	0.760	0.180	0.570
Convenience in cooking	0.99	0.151	0.848	0.149	0.839
Storage quality	0.97	0.711	0.289	0.689	0.280
Convenient quantities	0.89	0.764	0.236	0.679	0.210
Tasty meal	0.97	0.742	0.258	0.719	0.250
Better aroma	0.92	0.565	0.435	0.519	0.400
Versatile	0.87	0.678	0.322	0.589	0.280
Preferred by family members	0.57	0.895	0.105	0.510	0.059
Adulteration	0.79	0.038	0.962	0.030	0.759
Worth for the money spent	0.82	0.915	0.085	0.750	0.069
Flavour and pungency	0.98	0.735	0.265	0.720	0.259
Round the year availability	0.85	0.729	0.271	0.619	0.023

ISD - Index of Statements Discriminatory power

ISRA - Index of Statement Relative Applicability

ISAV - Index of Statement Assignment Value.

Table 3. Perceptions on processed spices by the sample respondents

Statements	Coimbatore					Palakkad				
	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Uniformity in aroma and taste	2	18	1	64	15	3	53	4	31	9
Help bring about same taste and flavour	21	47	2	27	3	5	24	8	47	16
Absence of domestic cooks	14	52	7	13	14	18	45	8	22	7
Straight are preferred over blends	8	29	18	24	21	7	26	25	27	15
Time saving and convenient	48	32	9	8	3	18	63	13	5	1
Trendy and modern	8	51	16	18	7	4	49	16	22	9
Availability	14	55	7	18	6	6	46	18	26	4
Identity of cook is lost	5	21	7	49	18	3	23	8	58	8
Ready-made blends facilitates experimentation in cooking	30	56	5	9	2	20	49	12	17	2
Necessity in modern life	41	39	6	13	2	26	49	9	15	1
Storage quality is better	1	29	4	48	18	3	15	13	53	16

spices. Similar was the case of seasonality in availability.

With regard to the ability of the product, processed or fresh spices, to prepare tasty and appetising meals, relative applicability was more for fresh than processed spices in both the study areas. An assignment value of more than 0.500 indicates that majority of consumers felt that fresh spices helped them to make more tasty and appetising meals. But in Coimbatore, ISAV for fresh and processed spices regarding tasty meal was 0.409 and 0.320 respectively. Thus indicating that, even though assignment value for fresh is higher than processed, we cannot assign the attribute to fresh since the ISAV value is less than 0.500.

Quality aspect

An overwhelming majority of consumers opined that superiority in quality was for fresh spices compared to processed spices (ISAV for fresh was 0.629 in Coimbatore and 0.739 in Palakkad). Regarding flavour and pungency of the product also, fresh was preferred over processed in both the study areas. But in the case of aroma, for consumers in Coimbatore, the attribute was more relatively applicable to processed than fresh spices. Whereas the consumers in Palakkad have assigned that statement to fresh spice with

an ISAV of 0.519. Adulteration problem, according to the consumers in both the study areas was more applicable to processed than fresh with a high assignment value of 0.829 and 0.759 for processed spices in Coimbatore and Palakkad respectively.

Physical aspects

Consumers evidently distinguish between fresh and processed spices with respect to storage quality as indicated by a high ISD value and had assigned better storage quality for fresh spices with a high ISAV value. For the statement regarding convenience in cooking, an overwhelming majority felt that it was more relatively applicable to processed spices. Fresh spices were available in convenient quantities compared to processed spices with ISAV of 0.679 and 0.660 for Palakkad and Coimbatore respectively.

Price

Consumers did not differentiate fresh and processed spices with respect to price as shown by a very low ISD value in both the study areas. In the case of worth for the money spent, consumers opined it was for fresh spices in both the study areas. But in the case of Coimbatore, the assignment value even though high for fresh spices was less than 0.500.

Usage characteristics

Consumers in Coimbatore felt both fresh and processed spices as equally versatile with an applicability value of 0.5 for both fresh and processed spices. In Palakkad, consumers assigned fresh spices as more versatile than processed. The ISD value for preference by family members was low, indicating that consumer does not distinguish much between fresh and processed spices based on this characteristic. Even then the applicability of the statement was for fresh spices showing a clear preference of family members for fresh spices in both the study areas.

The perceptions of the respondents with respect to processed spices is presented in Table 3. Several aspects about the processed spice products were given and the respondents were asked to express their extent of agreement or disagreement on each statement.

In Coimbatore, 79 per cent of the respondents disagreed with the statement that processed ground spices does not have uniformity in aroma and taste. Whereas in Palakkad, 56 per cent agreed that uniformity in aroma and taste was better for processed spices. Regarding the ability of readymade spices to bring forth same taste and flavour as that of fresh spices, 68 per cent of respondents in Coimbatore felt processed spices helped them to bring about same taste as that fresh. But the respondents in Palakkad were of the view that processed spices cannot bring about the same taste as that of fresh.

Around 66 per cent of consumers in Coimbatore and 63 per cent in Palakkad agreed that dearth in availability of domestic cooks help necessitated the use of processed spices. Similarly, 80 per cent of consumers in Coimbatore and 81 per cent of consumers in Palakkad, felt processed spices were time saving and convenient. Opinion was equally divided between agreement and disagreement with respect to the statement whether straight were preferred over blends and the percentage of those undecided was very high constituting 18 per cent in Coimbatore and 25 per cent in Palakkad. About 59 per cent of consumers in Coimbatore and 53 per cent in Palakkad opined that they felt trendy and modern in using readymade spices. Only about 26 per cent of respondents in Coimbatore and Palakkad feared that the identity of the cook will be lost when processed spices are used.

About 86 per cent of respondents in Coimbatore and 69 per cent in Palakkad held the opinion that readymade blends facilitated

experimentation in cooking, and that processed spices were a necessity in modern life. Regarding storage quality, majority of respondents viewed fresh ones to be having better storage quality than processed spices.

Conclusions

It could be concluded that the consumers of spices attach more importance for taste aspects like flavour, pungency and appetising nature of the product. Further the processed spices were clearly preferred by majority of the consumers over fresh spices, due to easiness of cooking. Majority of consumers felt that fresh spices helped them to make more tasty and appetising meals. It is interesting to note that 79 per cent of respondents in coimbatore felt that processed ground spices have uniformity in aroma as well as taste.

With regard to policy implications, the Spices Board can take the needed efforts to further popularise the processed spices among the domestic and foreign consumers, so that consumption and export can be enhanced. Further, it is necessary to fix certain standards for preparation of various processed ground spices and other culinary mixers which are purchased, increasingly by the consumers.

References

- Cherian, D. (1995). Food Processing Industry - present and future. *Indian Food Packer*, 49 : 139-142.
- Foxall, G. (1981). Measuring consumers Food preferences, part I : Methodology of the consumer preference profile. *Agricultural Administration*, 8 : 31-40.
- Foxall, G. (1981) Measuring consumers food preferences, part II: Interpretation and Evaluation, *Agricultural Administration*, 8 : 109-122.
- Sabeson, C. (1991). Consumer survey for processed fruit and vegetable products in Coimbatore city. M.Sc. (Ag.) Thesis, TNAU, Coimbatore.
- Ying Chein, L. and Potty, V.I. (1996). Study on use of De-aromatised Spices as a source of dietary fibres and minerals in bread. *Jour. Food Science Technology*, 33: 285-290.

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