



## TAPIOCA - CONSUMPTION AND AWARENESS IN TAMIL NADU –RETROSPECTIVE AND PERSPECTIVES

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### INTRODUCTION

Tapioca was unknown to the Old World before the discovery of America. There is archaeological evidence of two major centers of origin for this crop, one in Mexico and Central America and the other in north-eastern Brazil. The first Portuguese settlers found the native Indians in Brazil growing the cassava plant. And Pierre Martyr wrote in 1494 that the "poisonous roots" of a yucca were used in the preparation of bread. It is believed that cassava was introduced to the western coast of Africa in about the sixteenth century by the slave merchants. The Portuguese brought it later to their stations around the mouth of the Congo River, and it then spread to other areas. In 1854 Livingstone described the preparation of cassava flour in Angola, and subsequently Stanley described its use in the Congo. Mostly the Indian food consumption is influenced by many ruler and travelers. Tapioca cultivation increased after 1850 in the East African territories as a result of the efforts of Europeans and Arabs who were pushing into the interior and who recognized its value as a safeguard against the frequent periods of famine.

The tapioca products occupy an important place in the developing and developed countries alike in the world. The southern states in India have the pride of having more units. Of late the growth in the number of sago industries have seen a down trend after the liberalization and globalization. The food resource position globally and more particularly in India is grave as per the published empirical studies. The Indian Economy comprises of a major chunk of population (17%) is below poverty level and faces shortage of food grain. The food substitute is the need of the hour to solve the problems of malnutrition and hunger.

Tapioca as a food substitute is rich in starch and it is a composition of moisture, fiber, sugar, protein with economical and best food substitute for rural India.

### TAPIOCA IN INDIA

Tapioca introduced in India during the later part of the 19th Century, now, is mainly grown in the States of Kerala, Andhra-Pradesh, & Tamilnadu. Products from Tapioca like Starch & Sago were produced in India only in 1940s upwards, first by hand manually & later developed indigenous production methods. Currently, The Tamilnadu State stands first in respect of processing of tapioca into starch & sago in India (**CTCRI**). In India, Sago was produced first in Salem (Tamilnadu). About in 1943-44, some 60 years ago, sago production started on a cottage scale basis in India by pulping the tapioca roots, filtering the milk-extract and after settling the milk, forming globules and roasting these globules. At present there are two large scale tapioca processing factories with world competing modern technology and around 1000 small & medium scale tapioca based factories functioning in Tamil nadu and all over India.

### Nutritious value

Cassava roots are high in starch, making it a good energy source, and vitamin C, but are low in vitamin A and protein. This means that other vegetables must be included in food to make a nutritionally balanced diet. In areas of high cassava consumption, there is concern that the people may accumulate toxic levels of cyanogenic glucoside,

**Table 1, Composition of tapioca**

S.no	Nutritious contents	percentage
1	Moisture	69.8
2	Starch	22.0
4	Sugars	5.1
5	Protein	1.1
6	Fats	0.4
7	Fiber	1.1
8	Ash	0.5



## CONSUMPTION PATTERNS OF TAPIOCA IN INDIA

Economic growth and availability of lifestyle spending options make Indian consumers to demand more food products. KSA Technopak's Consumer Outlook 2004 report estimates that an average Indian spends 40% of his monthly salary on food and grocery. In India, tapioca is consumed in three forms wise Human consumption, Industrial consumption, Animal feed. In Tamil Nadu, a large number of tapioca industries are found in Attur Taluk, Salem District. Salem City has a marketing center for the sago (known as "Javvarisi").

State	Consumption Pattern
Tamil Nadu	- chips, javvarasi
Kerala	- Used along with fish curry, tapioca wafers
Andhra Pradesh	- Chips
Assam	- Raw/cooked tuber
Meghalaya	- Raw/cooked tuber
Gujarat	- Sago, vermicelli
Maharashtra	- Used as khichdi after fasting in the Hindu custom

In India tapioca is used mainly in the industrial application, human consumption and animal feed sectors. Nearly 60% of cassava is used industrially in the production of sago, starch and dry chips. Pune and Nagpur in Maharashtra and Kolkata in West Bengal, Patna in Bihar, Kanpur and Varanasi in Uttar Pradesh, Gauhati in Assam are the main marketing centers for sago in India besides the production centers in Tamil Nadu and Andhra Pradesh. Kerala, Meghalaya, Mizoram and Arunachal Pradesh are the states reporting relatively high cassava consumption in India.

## TAPIOCA CONSUMPTION IN TAMIL NADU

Due to the lack of awareness and food consumption pattern in Tamil nadu is very less. Mostly it is used industrial purposes such as starch and chips, and also animal feed. The consumers in Tamil nadu are not aware of various forms of cooking and varieties of dishes in tapioca compared to North Indian consumers. In Tamil Nadu, tapioca by products are used as occasional food for preparing payasam with tapioca Javvarisi. During the harvesting time most of the farmers boil tapioca the roots and eat. Some of the farmers feed their cattle. In rural Tamil Nadu people use it as ingredient for preparing bonda, vada, baggi mostly in the harvesting season. And 60% of the consumers are not aware about the nutritious value of tapioca.

## METHODOLOGY

The present study has been undertaken with an objective of understanding the consumption of tapioca/cassava products and cooking patterns, awareness about the by products of Tamil Nadu consumers. The survey was carried out the major tapioca processing and cultivation areas like Salem, Attur, Namakkal, Krishnagiri, Dharmapuri and Erode districts. A total of 400 respondents were selected for the sample of the study. Simple random sampling method was used. The questionnaire was administered to them to extract the ideas. The respondents are selected from various age group, sex, income levels and educational qualification. The data was tabulated, analyzed and interpretations were drawn on the basis of chi-square test and percentage analysis.

## DATA ANALYSIS AND INTERPERTATION

The questionnaire was issued to 400 respondents in the four districts of Tamil nadu where the tapioca is cultivated and processed at the maximum. The respondents were asked their preference towards the awareness, consumption, cooking patterns and various food items available and the factors influencing the consumption.

The culture, climate, food habits, awareness and availability of the products make the demand for cassava. It varies from a country to country, state to state and at different places. It is to be noted that rice is used as a staple food in the Southern India and particularly in Tamil Nadu. But cassava is having high nutritive value. In this analysis, it is estimated that the awareness of people towards tapioca food.

## Frequency of tapioca consumption in Tamil nadu

The frequency of consumption of tapioca is very low in Tamil Nadu compared to North Indian states despite being maximum producer and processor of tapioca (CTCRI), next to the Kerala. Most of the consumers in Tamil Nadu consume tapioca once in a month or a year or during the harvesting period.

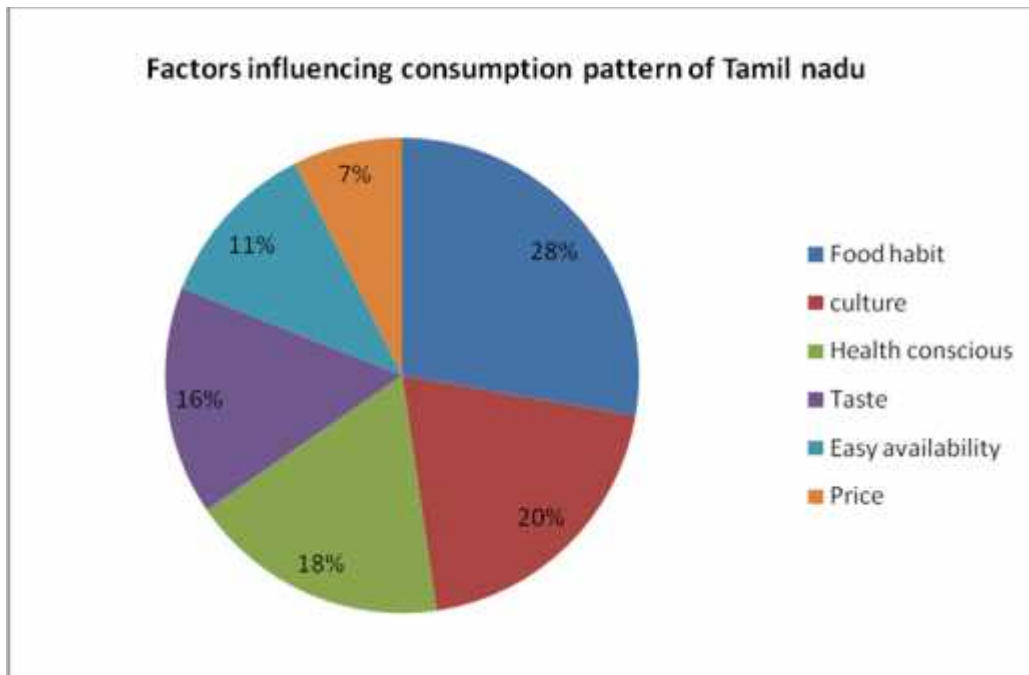


**Table-2 Factors which influence the consumption of food items in Tamil nadu people**

S.no	Reasons	TNR	Percent	Rank
1	Food habit	178	44.5	1
2	culture	128	32.0	2
3	Health conscious	114	28.5	3
4	Taste	100	25.0	4
5	Easy availability	74	18.5	5
6	Price	48	12.0	6
	<b>TOTAL</b>	<b>400</b>	<b>100</b>	

Source: primary data

**Figure-5**



Source: primary data

**Table -3 Comparison of Income category and Ranking Response to Cassava Consumption.**

Observed Count:

Rank Cassava	To	Income category			Total
		Less than Rs. 5000	Rs. 5001 - Rs. 10000	Rs. 10001 - Rs. 15000	
1		8	7	7	22
2		18	29	7	54
3		124	31	21	176
4		64	69	15	148
<b>Total</b>		<b>214</b>	<b>136</b>	<b>50</b>	<b>400</b>



Expected Count:

Rank To Cassava	Less than Rs. 5000	Rs. 5001 - Rs. 10000	Rs. 10001 - Rs. 15000	Total
1	11.77	7.48	2.75	22
2	28.89	18.36	6.75	54
3	94.16	59.84	22	176
4	79.18	50.32	18.5	148
<b>Total</b>	<b>214</b>	<b>136</b>	<b>50</b>	<b>400</b>

Source: primary data

NULL HYPOTHESIS: Ranking response to Cassava is independent of Family Income.

Chi – Square calculated value is, 51.9958. The Chi-square Table Value for 6 d.f, at 0.05 Level of Significance is 12.59159.

INFERENCE: the calculated  $\chi^2$  value (51.9958) is Greater than  $\chi^2$  table value (12.59159). Hence the Null hypothesis is rejected. It clearly indicates that the family Income is related the cassava consumption.

**Table- 4 Comparison of occupation and Ranking Response to Cassava Consumption**

Observed Count:

Rank/ occupation	Farmer.	Employee	Professionals	Business	Total no. of Respondents
1	5	7	5	5	22
2	20	21	7	6	54
3	94	28	6	48	176
4	93	30	8	17	148
<b>Total</b>	<b>212</b>	<b>86</b>	<b>26</b>	<b>76</b>	<b>400</b>

Expected Count:

Rank/ occupation	Farmer.	Employee	Professionals	Business	Total no. of Respondents
1	11.66	4.73	1.43	4.18	22
2	28.62	11.61	3.51	10.26	54
3	93.28	37.84	11.44	33.44	176
4	78.44	31.82	9.62	28.12	148
Total	<b>212</b>	<b>86</b>	<b>26</b>	<b>76</b>	<b>400</b>

Source: primary data

NULL HYPOTHESIS: Ranking response to Cassava is independent of Occupation of Respondent.

INFERENCE: The calculated  $\chi^2$  value (48.3641) is Greater than  $\chi^2$  table value (16.91898). Hence the Null hypothesis is rejected.

As there is a significant association between occupation and cassava consumption, hence hypothesis namely ranking response to Cassava is related to Occupation of Respondent. Stance rejected

**Table-5 Comparison of family size and Ranking Response to Cassava Consumption**

Observed count:

Rank/ family size	Less than 3 members	3 - 5 Members.	6 - 8 Members.	Total no. of respondent
1	8	7	7	22
2	18	29	7	54
3	10	129	37	176
4	14	119	15	148
<b>Total</b>	<b>50</b>	<b>284</b>	<b>66</b>	<b>400</b>



Expected Count:  
Source: primary data

Rank/ family size	Less than 3 members	3 - 5 Members.	6 - 8 Members.	Total
1	2.75	15.62	3.63	22
2	6.75	38.34	8.91	54
3	22	124.96	29.04	176
4	18.5	105.08	24.42	148
<b>Total</b>	<b>50</b>	<b>284</b>	<b>66</b>	<b>400</b>

NULL HYPOTHESIS: Ranking response to Cassava is independent of Number of Family Members in the respondents' house.

Chi – Square calculated value is, 54.773. The Chi-square Table Value for 6 d.f, at 0.05 Level of Significance is, 12.5916.

INFERENCE: the calculated  $\chi^2$  value (54.773) is Greater than  $\chi^2$  table value (12.5916). Hence Reject the Null hypothesis.

As there is a significant association between family size and cassava consumption, hence hypothesis namely ranking response to Cassava is independent of Number of Family Members in the respondents stands rejected.

### CONCLUSION

As per the analysis and information obtained from the survey the consumption and awareness about the tapioca is low and most of the consumers (60%) are not aware about the nutritious value of tapioca. The cultivators of tapioca in Tamil nadu are more next to Kerala in India even though the consumption is low. In Tamil nadu tapioca is used as occasional food during the festival time. Tapioca Javvarisi is used to prepare payasam which is a familiar liquid food item in Tamil Nadu. The consumption of tapioca is majorly influenced by food habit and cultural factor and also due to low image about the production methods of tapioca starch. Most of the consumers in the production area as well as the employees of tapioca processing factories are not interested to consume the tapioca starch. The frequency of consumption of tapioca is 40% of the consumers consume once in a month and 35% of the consumers once in a year. So the tapioca consumption may be increased through effective promotional measures and it will be food substitute for rural and urban consumers with cheap price and rich nutrition. It will give sustainability to the tapioca processing industry especially in Tamilnadu. The increase of tapioca consumption may give opportunity to the farmers and marketing intermediaries. Steps must be taken to minimize the cost of production and intermediary. Vigorous advertisement may be employed to stimulate demand. Cassava products have greater nutritive values and helpful for redressing the malnutrition and other food related deficiencies. As it contains 1% of fiber it will be of great medicinal value. It may be used as a supplement to the original rice consumption. A section of women and college going girls are anemic. It is good for diabetic patient also. Nutritional problems may be averted if tapioca consumption is encouraged in Indian states.

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