



Value addition of tamarind: An option for livelihood of tribal people of Panchmahal

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Abstract

Tribal rural families of district Panchmahals, Gujarat are living in poverty due to small holding size which is low in productivity due to poor soil fertility and unavailability of irrigation facilities resulting in to subsistence farming. However, these tribal families traditionally grow many minor fruit crops having drought tolerance especially tamarind and manila tamarind on the fringes of their land; fruits of which they sold in the market at cheaper rates. KVK, Panchmahal has promoted value addition in tamarind through training with the help of scientist of C.H.E.S., Godhra and N.G.O. Anandi for higher income generation. Different types of value added products were made from tamarind fruits viz. tamarind puree, toffee and Oil polished tamarind pulp. Study was carried out to determine the levels and preference range of ingredients in the various products to formulate recipes of the products prior to processing and training the community members. The products made in this study were shown to be viable, of good quality and good sources of income for rural tribal communities. As promotion of minor fruit crops like tamarind without market linkage is risky, it is advisable to train the community for development of value added products so that they generate more income from available resources and to avoid seasonal glut in the market.

Key words: Tamarind, value addition, livelihood security

Introduction

Tamarind (*Tamarindus indica* L) a member of sub family Caesalpiniaceae of family Leguminosaceae, is highly drought hardy and can be grown in dry land areas and on degraded wasteland. It is considered to be one of the most exquisite and valuable fruits of the tropics and sub tropics. It is source of timber, fruits, seeds, fodder, medicinal extracts and has potential of industrial use (Karale, *et al*, 1999, Pareek and Awasthi, 2002 and Singh and Singh, 2005, Singh and Singh, 2007). In India, the pulp is used mainly for culinary purposes, while in other countries it is processed in to nectar, juice, sauce, jam, jelly, beverages including carbonated drinks. Tamarind kernel powder (TKP) is extensively used for starching of cotton yarns and jute fabrics. The TKP can also be used as a cattle feed.

Panchmahal is a tribal populated district of the Gujarat. Climatologically it comes under semi-arid zone. This region is endowed with plenty of scattered tamarind plants in nearby villages and on the fringes of the cultivable land. Tamarind pods produced in these areas are sold locally by the rural people at very cheap rate. Tribal people collect the tamarind pods and after dehusking and it is sold to local traders @ Rs 20 to 30 per kg. Farmers were not adopting any technology for value addition of tamarind pulp. KVK, Panchmahal observed these problems and organized training programme for value addition of tamarind pulp with the collaboration of NGO Anandi and C.H.E.S., Godhra.

Materials and methods

Groups of the Tribal women of different villages of Goghamba & Shehra Taluka, Panchmahal were formed to undertake the activities for value addition of tamarind pulp. There were 30 tribal women selected from different villages and they were advised to collect tamarind pods from their locality. Collected pods were dehusked and deseeded properly. They were also suggested to harvest the pods at ripening stage. For assessment of correct stage of ripening, separation of pulp from rind was followed. After harvest, pods were dried in open sunlight for two days which resulted in easy pulp extraction. Total soluble solids and titratable acidity were determined by standard methods. Vitamin C and sugars were analyzed by the method advocated by AOAC, (1990). Different products were prepared from the pulp:

Oil polished tamarind pulp:

Ingredients : Deseeded tamarind pulp 1 Kg., castor oil 50 ml,

Collect & Select the fully ripened tamarind pods

↓
Dehusked and deseeded

↓
Clean all the fiber

↓
Mix Salt 5 gm/kg. pulp

Polished with castor oil @ 50 ml/1 kg. pulp

↓
Fill in Plastic Jar and Seal

Tamarind puree:

Ingredients : Deseeded tamarind pulp 1 Kg., vinegar 10 ml,

Collect & Select the fully ripened tamarind pods

↓
Clean, dehusk & deseed

↓
Pour in water for 1 hr.

↓
Mash and remove all the fiber, husk, seed etc.

↓
Strain the pulp with Nylon net cloth or strainer

↓
Mix 100 ml vinegar/kg. pulp

↓
Fill in Plastic bottle and seal

↓
Labeled

Tamarind Chutney :

Ingredients : Deseeded tamarind 250 gm, Jaggery 250 gm, water 250 ml, black salt ½ tea spoon, salt ½ tea spoon red chilli powder roasted cumin

Soak deseeded tamarind in water for 30 minutes in a steel pan

↓
Keep the pan on the flame and boil (simmer) 10 minutes

↓
Switch off the flame and allow the pulp to cool till it is easier to handle

↓
Strain the pulp and discard left in the sieve

↓
Transfer the tamarind pulp in pan and keep on flame

↓
Add jaggery and mix stir and cook the pulp till the jaggery melt

↓
Add the Salt, Black Salt, Cumin Powder red chilly resins and cardamum powder and mix well

↓
Fill in Clean and dry bottle

↓
Seal and label (If required)

Ten participants were trained as panelists to evaluate the various products. Each tribal farm women was asked to taste the coded samples of each product and score each product for preference on a five -point scale, ranging from “most preferred” (preference score = 1) to the “least preferred” (preference score = 5). This process was repeated three times in three days and the results were recorded for statistical

analysis. The data statically calculated as per method given by Snedecor and Cochran, (1994).

Results and Discussion

After drying, rind becomes bristol and it separates easily from pulp. Earlier they sold dehusked fruit with seed only. Tamarind is leguminous crop, seed of which is rich in protein and this caused early spoilage due attack of insect-pests which resulted in heavy economic loss to the tribal farmers. It has been observed that a tribal farmer can earn only Rs. 600 to 700 from single tree of tamarind annually through selling of dehusked pod to the local trader. In this way, it fetches less price in the market as compared to its potential. Therefore, there was need of fusion of value addition technology. Primary processing and value addition activities have potential of improving livelihood. Its little primary processing can significantly improve family income of Tribal Farmers. KVK organized a training programme for tribal women with the collaboration of Anandi NGO. In this training, 30 tribal women farmers' have been skilled in value addition of tamarind. They were trained for development of 05 value added products. Tribal farm women were trained through learning by doing process. Most of the products were prepared with low cost technology i.e. without chemical treatment or with the use of vinegar only. Different physico chemical characters were also studied. The pod weight ranged between 16.98 to 26.40g among the samples collected from different villages.

The data given in table 2 revealed that the overall highest grade was given by the panel to Goli (3.65) followed by puree (3.60) and oil polished pulp and chutney (3.50). For appearance, puree got maximum score (3.80) followed by oil polished pulp (3.50), Goli and Chutney (3.40). The highest score (3.75) for colour of product was given to puree followed by Goli (3.60) and oil polished pulp and chutney (3.50) of various products. The preference mean scores for flavor of the various products, maximum recorded to Goli followed by puree, chutney and minimum to oil polished pulp, 3.80, 3.70, 3.60 and 3.40 respectively. On the basis of taste of products, the oil polished pulp and Goli got equal rank (3.60) followed by puree (3.55) and the minimum to chutney (3.50). This is may be due puree was prepared from freshly removed pulp that is more shiny and attractive do not blended and season or fry. The similar findings are also reported by Lingappa, *et al*, (1993), Shankaracharya, (1998) and Ulrich, (1970) in tamarind. The similar findings also reported by Lata, *et al*, (2006) in turmeric. After compilation of training program, tribal women have been skilled in value addition of tamarind. They are preparing chemical free various products, sold and earned Rs 150-200 per kg in comparison to Rs 15-20/kg earlier. These products are sold in their locality and nearby markets. So tamarind products has got preference and acceptability, only the potential for its popularization through awareness campaign, skilled training and assured linkage of market is the need of the hour.

It can be concluded from the study that there is a promising future for the processed, stored products using

tamarind fruits. The study further emphasizes the need for popularization and development of diversified value added products from the tamarind so as to create ready market for the products. This will not only reduce spoilage of fruits but also enable for quick disposal of the produce which will in turn bring potential earnings to the farmers, unemployed youth or S.H.G members of the district.

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Table 1. Fruit quality attributes of tamarind collected from different villages.

Name of villages	Taluka	Pod weight (g)	Seed weight (g)	Shell weight (g)	Pulp weight (g)	TSS (Degree Brix)	Acidity (%)	TSS/ Acid Ratio	Total Sugar (%)
Sanayada	Ghoghamba	18.58	5.56	4.89	8.13	62.00	9.10	6.81	46.42
Khan Patla	Ghoghamba	17.89	6.50	5.41	5.98	63.50	10.53	6.03	47.20
Sajora	Ghoghamba	16.98	4.40	4.45	8.10	52.00	12.89	4.03	41.30
Gajapura	Ghoghamba	20.45	6.20	6.75	7.50	63.56	13.15	4.83	47.40
Kaatu	Ghoghamba	19.75	6.78	5.20	7.77	62.00	12.20	5.05	45.50
Bhesal	Shehra	22.20	5.49	5.40	11.31	64.50	11.85	5.44	49.72
Nava Mehla	Shehra	21.89	7.50	4.42	9.95	63.70	12.40	5.13	47.86
Vaghjipura	Shehra	26.40	7.70	10.10	8.60	65.40	13.49	4.84	51.40
Nandarva	Shehra	22.00	6.30	6.74	8.96	64.10	14.50	4.42	49.50
Dhandalpur	Shehra	23.12	8.70	5.20	9.22	62.00	14.40	4.30	48.10
Khojal Vasa	Shehra	22.50	6.20	6.63	9.67	61.20	13.50	4.53	47.20
CD (p= 0.05)		1.05	0.52	0.62	0.63	2.20	1.02	0.45	1.59

Table 2. Preference mean scores for value added products of tamarind pods

Product	Appearance	Color	Texture	Flavor	Taste	Over all	Grading
Oil polished pulp	3.50	3.50	3.60	3.40	3.60	3.50	III
Puree	3.80	3.75	3.75	3.70	3.55	3.60	II
Goli	3.40	3.60	3.50	3.80	3.60	3.65	I
Chutney	3.40	3.50	3.60	3.60	3.50	3.50	III

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