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## Evaluation of cooking quality of essential commodities supplied by Amma Hastham scheme, government of Andhra Pradesh

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### Abstract

Govt of India introduced National food security Act, 2013 (NFSB) to address the severe malnutrition and food crisis. The State Govt /UT are responsible for implementation to the targeted beneficiaries. The Govt of Andhra Pradesh launched 'Amma Hastham' scheme all over the State for supplying specified quantities of nine essential commodities in a packet just for Rs.185 to white card households. The study was taken up with an aim to see whether there is any variations in cooking quality and organoleptic attributes after cooking and over all acceptance of the essential commodities supplied by six districts of A.P under Amma hastham scheme.

There was no significant difference in flavour, taste, and overall acceptability in the quality of products prepared with wheat flour, oil, sugar, turmeric, chillipowder, iodised salt between the districts. The products prepared with whole wheat grain wheat flour showed significant difference in texture ( $p < 0.01$ ). Recipes prepared with redgram showed significant difference ( $p < 0.05$ ) in texture between the districts. Maximum were in acceptance without significant variation between the districts. Thus the study helps in change of general perception of the public and develops confidence towards food security schemes

**Keywords:** Food security, Amma Hastham, essential commodities, cooking quality, organoleptic quality, acceptance

### 1. Introduction

Article 21 of the constitution of India provides the right to life to all the citizens of India including the right to food. One third of families in India are regularly going to bed hungry due to soaring food prices. According to world bank estimates one third of Indians believed to be malnourished and over 40% children receive less food than they should. The 2011 Global Hunger Index (GHI) Report ranked India 15th, amongst leading countries with hunger situation. It also places India amongst the three countries where the GHI between 1996 and 2011 went up from 22.9 to 23.7, while 78 out of the 81 developing countries studied, including Pakistan, Nepal, Bangladesh, Vietnam, Kenya, Nigeria, Myanmar, Uganda, Zimbabwe and Malawi, succeeded in improving hunger condition [2]. India is home to the largest number of hungry people in the world "alarming (23.7) food security situation" [1, 2].

In pursuance of the constitutional obligations and obligations under the international conventions, providing food security became priority in Government's planning and policy. Food security has three dimensions-

- 1) Food availability
- 2) Food accessibility
- 3) Food affordability.

According to the Food and Agriculture Organization (FAO), food security "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" [3].

To address the issue of food security at the household level the Government of India is implementing Targeted Public Distribution System (TPDS) under which subsidized food grains is provided to the below poverty line and above poverty line household. Recently Lok Sabha has passed National Food Security Bill, 2013 (NFSB) to provide highly subsidized food grains to nearly 67% of population of India (50% urban and 75% rural) under TPDS. State Govt/ [Union Territories] are responsible for actual delivery of food grains to entitled persons at specified prices. According to NFSB committee the choice of designing and implementation of

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food security scheme is left to the states with a condition that the coverage of population should not be less as envisaged in the proposed bill. With the implementation of the Ordinance the Government of Andhrapradesh launched their own versions of the scheme, most of them have kept the price of wheat and rice lower than what is proposed in NFSB. One rupee-per-kg scheme, Mana Biyyam (using local paddy for local cardholders) and 'Amma Hastham'. The Village Mall would be the fourth scheme by the government under public distribution system. Under this scheme 18 more commodities will be supplied manufactured by private companies.

**Mana Biyyam:** The scheme is a revamp delivery of the Rs 1 per kg rice scheme for below-povertyline families. It is a food welfare Programme by the Government of Andhra Pradesh where rice is supplied at 1 Rupee per kilogram. The scheme provides fine rice at one rupee a kilo with a ceiling of 20 kilos per family living below poverty line, under this scheme, the rice procured only from Andhra pradesh at Rs 25.50 and sold at one rupee to ensure quality, besides remunerative price to farmers. A series of complaints has poured from the beneficiaries from several parts of the state as well as from the cabinet ministers about the mana biyyam scheme as waste and unrealistic. There was a criticism that less preferred varieties of rice from Punjab and Haryana were being fobbed off on the poor, secondly the scheme alone will not serve the desired purpose without providing other essential items as the prices of all other commodities were high. Optimal physical, cognitive and emotional development and function in human requires access to food of adequate quantity and quality at all stages of the life span <sup>[4]</sup> (Cook and Frank 2008)

The scheme 'Amma Hastham' has been launched to counter criticism of Mana biyam and Rs 1/kg rice scheme. 'Amma Hastham' (named after Indira Gandhi) scheme was launched

all over the State on Ugadi day for supplying specified quantities of nine essential commodities in a packet just for Rs.185 to white card households. The essential commodities were selected considering local preferences and regular dietary pattern to relish the taste buds after catering.

The commodities were supplied at subsidized price to protect from inflation. Supply of 9 essential commodities along with rice would meet their dietary needs and food preferences for an active and healthy life.

It is the first innovative scheme to provide nine essential commodities on subsidy for the benefit of 2.25 crore white cardholders without any compromise in quality and quantity. The scheme not only curbs the malnutrition but also encourage cooperative sugar factories and farmers by providing remunerative prices for sugarcane. Similarly Indira Kranthi Patham Self Help Groups were involved in the cleaning, packing and distribution of commodities like tamarind, turmeric and chilli powder.

The Govt desire to supply and maintain minimum quality standard norms for the food grains till it reaches the beneficiaries keeping continues measures throughout the supply chain. In general the attitude towards welfare schemes lack public confidence particularly in respect of foods supplied through TPDS. Some times food grains supplied to beneficiaries at fair price shops are of substandard quality and also there is considerable variation in the quality of grains kept in different godowns with in districts. Hence The study was taken up with an aim to see variations in cooking quality and the acceptance of the commodities supplied by six districts.

## 2. Methodology

Total 9 products were received from 6 districts. The list of the products and the code of the districts were presented in Table 1

**Table 1:** List of the Districts, District code and Number of Samples

S. No	Name of the District	District Code	Samples received	Total number of samples
1	State	D1	Iodised salt, Redgram, Wheat, Wheat flour, Turmeric powder, Tamarind, Sugar, Chilli powder, Oil	9
2	Ananthapur	D2		9
3	Karim Nagar	D3		9
4	Guntur	D4		8
5	Vishaka patnam	D5		9
6	Kurnool	D6		9

The samples were received from 6 districts and coded before transferred into suitable containers. About 10 recipes were selected to test the cooking quality and acceptability of the products. Initially recipes to be cooked were standardized.

The quality of the samples was analyzed within 10 days to avoid the changes that occur during storage period. The recipes selected for evaluation of the respective products are presented in Table 2

**Table 2:** List of selected recipes

S.no	Recipes	Name of the products chosen for evaluation
1	Chapathi	Whole wheat grain, oil, salt
2	Dosa	Whole wheat grain, oil, salt
3	Chapathi	Wheat flour, oil, salt
4	Dosa	Wheat flour, oil, salt
5	Puri	Wheat flour, oil, salt
6	Shakar para	Wheat flour, sugar, oil
7	Rasam	Tamarind, turmeric, oil, chilli powder and salt
8	Sambar	Red gram dhal, Tamarind, turmeric, oil, chilli powder and salt.
9	Plain dhal	Red gram dhal, salt,
10	Kandi Podi	Red gram dhal, salt, and chilli powder
11	Plain Rice	Rice

Each recipe was standardized in terms of raw and cooked volume, number of servings, cooking time and organoleptic

attributes. The same were kept for evaluation. The results of standardized recipes are presented in table 3.

**Table 3:** Observations of standardized recipies

S.No	Name of the recipe	Raw weight (g)	Cooked weight (gm)	Cooking time Min
1	Chapathi (whole grain flour)	140	130	—
2	Dosa (whole grain flour)	350	350	—
3	Chapathi (wheat flour)	140	130	—
4	Dosa (wheat flour)	350	350	—
5	Puri (wheat flour)	80	80	—
6	Shakar para (wheat flour)	200	130	—
7	Rasam	350	310	5:00
8	Sambar	250	320	35:00
9	Plain dhal	50	115	30:00
10	Kandi Podi	50	60	—
11	Plain Rice	50	150	20:00

Except dhal rest of the recipies had taken normal time. Dhal has taken 30 minutes in pressure cooking compared to 15 – 20 mins. Still there was variation in texture between the districts and there was no change in texture though they were cooked beyond 30 min.

### 2.1 Sensory evaluation

Sensory evaluation was conducted for ammahastham products supplied by 6 districts to assess their quality and acceptability by a panel of 8 judges. The panel members were selected from the staff and post-graduate students of the Department of Foods & Nutrition, College of Home Science and ANGRAU, Hyderabad. A score card was prepared for each item keeping in view the quality characteristics of the product under study. The parameters studied were colour, texture, flavor, taste and overall acceptability. A 5- point hedonic scale was prepared to rank each parameter with 5 grades. Point 5 was assigned to the highly acceptable parameter and 1 to the unacceptable one.

### 2.2 Statistical analysis of data

The mean scores, standard error and critical difference for all parameters were calculated using the single- factorial analysis of variance [5].

## 3. Results and Discussion

**3.1. Cooking time:** Except dhal rest of the recipies had taken normal time. Dhal had taken 30 minutes in pressure cooking compared to 15 – 20 mins for dal. Still there was variation in texture between the districts and there was no change in texture though they were cooked beyond 30 minutes.

**3.2. Sensory evaluation:** Each recipe after preparation was evaluated for different attributes to know acceptable levels. The essential commodities were meant for the beneficiaries of heterogenous group. Acceptance of beneficiaries depends on several factors. Hence valuation of each attribute was chosen carefully using 5 point Hedonic scale. The term hedonic means “to do with Pleasure” and is related to the philosophy of hedonism, which holds that pleasure is the ultimate goal of all human behavior. The hedonic aspects of food include appearance, smell, taste, colour and texture. Taste is the most important and often the major criteria for evaluating the food choice [6]. The significance of variation (p value) in mean scores of sensory attributes between the districts was consolidated for all the ten recipies and was presented in table

4

The data indicates the recipies prepared with whole wheat grains after milling were acceptable by the panel. The quality of the end product showed significant difference (\*\* $P < 0.01$ ) between the districts in colour, texture and flavor. Even the taste and overall acceptability varied significantly (\* $P < 0.05$ ) indicating quality disturbance in supply chain.

Significant difference was observed in texture of puri among the products prepared with wheat flour. The recipes of Wheat flour from D1 (state) showed high quality followed by D5 (Visakhapatnam). There was no significant difference in flavour, taste, and overall acceptability indicating that there is no difference in the quality of oil used for deep frying. Recipes such as rasam and sambar were prepared to test the quality of tamarind. Among these rasam didn't show any difference between the districts. But significant difference was observed in sambar this may be due to the variation in quality of the pulses.

Plain dhal and Kandi podi were prepared to evaluate the cooking quality of red gram and chilli powder. It is observed that there is significant difference in texture between the districts in both the recipes. From the above analysis it can be clearly concluded that the redgram and chilli powder supplied by state i.e., D1 is the best among all the districts and the red gram supplied by D2 scored less indicating poor quality. On the whole D2 (ATP), D3 (KRM) scored less acceptability scores for whole wheat grain, redgram recipies (Graph 1).

## 4. Conclusions

All the recipies prepared with essential commodities were acceptable by the panel. There is no significant difference in oil, sugar, wheat flour, turmeric powder, chilli powder, iodised salt, and tamarind supplied by six districts. Significant difference observed in some of the quality attributes of recipies made with whole wheat grain and red gram between six districts. Unfortunately the public in general have wrong perception on quality of products supplied under TPDS.

Monitoring should be strengthened to improve the quality of these two products to develop positive attitude towards this type of welfare schemes. Otherwise sustainability of ammahastham may be jeopardized. To gain public confidence the Govt need to strengthen qualitative, uniform supply of all essential commodities to ensure that hunger is reduced rapidly over time.

**Table 4:** Consolidated P values of mean sensory scores of six districts for 10 recipies

S. No	Name of recipie	Colour	Texture	Flavour	Taste	Overall acceptability
1	Chapathi ( with whole wheat grain)	0.030037*	0.012516*	0.014018*	0.001473**	0.001025**
2	Dosa ( with whole wheat grain)	0.167953	0.380067	0.004158**	0.021475*	0.002606**
3	Chapathi (Wheat flour )	0.799069	0.345171	0.799069	0.970088	0.808489
4	Dosa ( wheat Flour)	0.795756	0.846218	0.771547	0.59052	0.80705
5	Puri (wheat flour)	0.052549	0.027678*	0.17076	0.402211	0.219291
6	Shakar para (wheat flour)	0.945462	0.359281	0.724772	0.139244	0.060289
7	Rasam	0.832093	0.103344	0.737749	0.60325	0.15226
8	Sambar	0.02691*	0.017179*	0.328826	0.102139	0.479251
9	Plain dhal	0.6481	0.045455*	0.928342	0.852054	0.610767
10	Khandhi podi	0.009457**	0.049698*	0.011101*	0.002678**	0.004873**
Note:**P<0.01, * <0.05						

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