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# Development and quality evaluation of thalipeeth premix supplemented with cowpea (*Vigna unguiculata*)

**Pooja Warkad, Dr. Pravin Ghatge, Dr. Ashwini Bidwe and Swati Pawar**

**Abstract**
Thalipeeth is a classic unleavened pancake from Maharashtra made from a mixture of flour dough. The mixture of grains, pulses, and legumes is known as thalipeeth. Commercially produced dry ingredient mixtures known as "premix" that are quick and simple to manufacture. By considering present population increasing demand for a healthy, simple and convenient foods, the present investigations was carried out to formulate cowpea supplemented thalipeeth premix in four different proportions. Variation I, II, III and IV *i.e.* 0%, 10%, 15% and 20%. Were formulated which contain wheat flour, jowar flour, bengal gram flour, pearl millet flour along with, cowpea flour in different levels. It was found that organoleptic evaluation of sample III *i.e.*15% formulation had scored highest in flavour (4.7), overall acceptability (4.8) and taste (4.7) than other variations. By using five point hedonic ranking scale.

**Keywords:** Commercially, premix, investigations, supplemented, organoleptic evaluation

## Introduction
In the present era, everyone's daily existence depends heavily on instant foods. Food that can be prepared quickly, easily, and conveniently while also being hygienic and free of microbial contamination is known as instant food. Due to their convenience of preparation, instant foods have become a necessity for humans (Shanti *et al*., 2000) [10].
Due to changing lifestyles, demanding schedules, and urbanization, the demand for convenience food is rising from time to time. People become accustomed to eating convenience foods or foods that can be prepared quickly because they don't have much time. Because of the indirect impact that rising demand is having on consumer health, consumers nowadays are looking for both quick foods and foods that are nutrient-dense and healthful. It should, in the opinion of the consumer, be highly energizing, nutrient-dense, convenient and readily available in stores, and made in a short amount of time (Mogra and Choudhry, 2014) [4].
Traditional dishes like thalipeeth could be used to increase the nutritional value of meals. Thalipeeth is a classic unleavened pancake from Maharashtra made from a mixture of flour dough. Urbanization and industrialization have raised demand for traditional foods, but this has also increased the need to mechanize their preparation and standardize their manufacturing processes. The mixture of grains, pulses, and legumes is known as thalipeeth. Thalipeeth preparation is time-consuming and involves many steps, including preparing the flour, making the dough, and baking (Gangakhedkar *et al*., 2021) [4].
Legumes are important food items for people in tropical developing nations; a large number of species and varieties are consumed by the populace as a whole because they are affordable and a significant source of protein, carbohydrate, and other nutrients that are good for human health and wellbeing (Otitoju *et al*., 2015) [9].
Together with grains, legumes are the primary source of plant-based protein in the human diet. Additionally, they are often high in carbohydrates and dietary fiber. Lipids, polyphenols, and bioactive peptides are minor constituents of legumes. Therefore, legumes will continue to be a key component of diets for the foreseeable future. Legumes are an excellent source of protein (18–35% of total protein), and they enhance cereals with minerals and B complex vitamins in addition to protein. This is crucial when a low diet with few additional meals contains refined grains like white wheat flour. Plant-based diets enhance fiber consumption, which lowers the risk of reduction of bowel cancer and other disorders, as well as osteoporosis prevalence. High levels of carbohydrates (50–60%) and protein (18– 35%) contents and a similar amino acid sequence to that of nonetheless, make cowpea a potentially significant nutritious supplement to cereal grains an ingredient in human diet (Khalid *et al*., 2013) [6].

The cowpea, also referred to as *Vigna unguiculata*, is a legume belonging to the Fabaceae/ papilionaceae family. Its common name is black-eyed pea. There are four distinct species, namely V. Textilis, V. Sesquipedalian, V. Unguiculata, and V. Biflora. The four types can easily be distinguished from one another based on physiological characteristics such as seed size, shape, color, taste, maturity period, and yield.

Cowpeas are a type of herbaceous legume that have adapted well to warm areas with regular rainfall. Beyond Southeast Asia, it is grown in Africa, the Southern United States, and Latin America. Some Mediterranean nations have also traditionally grown it there. It is uncommon in Europe (Perles *et al*., 2015) [11].

In order to lower the high prevalence of protein and energy malnutrition, cowpeas are a high- quality protein component of the daily diet among economically impoverished groups in developing nations (Animasaun *et al*., 2015) [12]. A dry cowpea grain typically includes 50–60 percent carbohydrates, 23–32 percent protein, and 1 percent fat. Cowpeas have a total protein level that is roughly two to four times higher than that of cereal and tuber crops. Cowpea protein, which is a rich source of the amino acid lysine compared to cereal grains, is utilized as a natural complement to cereals (Gocalves *et al*., 2016) [13]. Compared to animal proteins, it is lacking in methionine and cysteine.

The present study was aimed to development and quality evaluation of thalipeeth premix supplemented with cowpea (*Vigna unguiculata*).

## Materials and Methodology

### Selection of ingredients

Cowpea, wheat, jowar, pearl millet, bengal gram were procured from local market of Parbhani, Maharashtra. Also spices like salt, cumin seed, turmeric powder, red chilli powder, edible oil, onion were purchased from local market of Parbhani, Maharashtra.

### Preparation of raw materials

The procured materials was cleaned and ground in a flour mill to make powder. The powder was stored in air tight container at room temperature for development of food products was mentioned in Figure 1.

### Preparation of cowpea flour

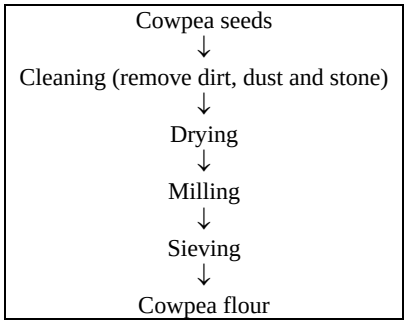


**Fig 1:** Flow sheet for preparation of cowpea flour

Raw Cowpea Seeds

Cowpea flour

### Preparation of thalipeeth premix

The control sample has been prepared. Taken all the four flour then added all the spices was taken in a plastic container mixed with water as per requirement and kneaded to make soft dough. A small dough piece taken on wet piece of cloth and tapped like traditional bhakri or roti after that apply edible oil and make hole in the center or make 3 to 4 holes at the sides. This helps in roasting the thalipeeth well. Then transferred it to hot pan greased with 5-10 ml oil and roast for 4-5 min.

After the selection recipe in the pilot experiment the trials were taken for acceptability of incorporation of cowpea at different levels in thalipeeth. After experiments on trial and error basis of acceptability, levels for incorporation of cowpea in thalipeeth were decided. The selected levels were 0, 10, 15 and 20 percent. Four variations of thalipeeth were prepared for further sensory analysis. Variation one was basic recipe which was prepared without incorporation of cowpea and it served as control, Variations II to III were experimental samples with varying levels of cowpea incorporated in it. As shown in Table 1. And mentioned in Figure 2 and plate 1.

**Table 1:** Development of thalipeeth premix with cowpea flour

| Sr. No. | Ingredients | Amount | | | |
|---|---|---|---|---|---|
| | | I | II | III | IV |
| 1 | Cowpea flour | 0 | 10 | 15 | 20 |
| 2 | Wheat flour | 30 | 20 | 15 | 10 |
| 3 | Jowar flour | 30 | 30 | 30 | 30 |
| 4 | Pearl millet | 5 | 5 | 5 | 5 |
| 5 | Bengal gram flour | 10 | 10 | 10 | 10 |
| 6 | Red chilli powder | 2 | 2 | 2 | 2 |
| 7 | Turmeric powder | 1 | 1 | 1 | 1 |
| 8 | Cumin seed powder | 2 | 2 | 2 | 2 |
| 9 | Onion powder | 5 | 5 | 5 | 5 |
| 10 | Oil | 5 | 5 | 5 | 5 |
| 11 | Salt | to taste | to taste | to taste | to taste |

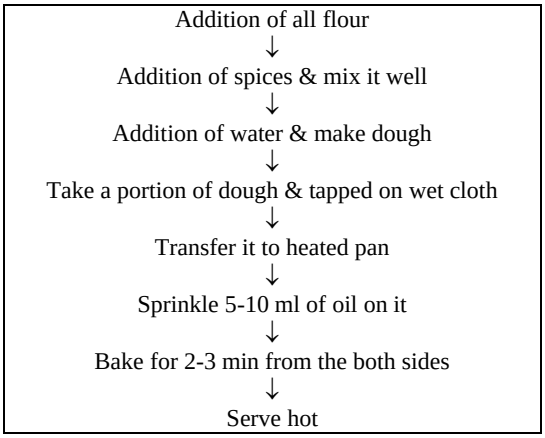


**Fig 2:** Flow sheet for preparation of thalipeeth premix

**Plate 1:** Thalipeeth prepared with incorporation of cowpea flour at different levels

## Results and Discussion

**Organoleptic evaluation of thalipeeth premix prepared without and with different levels of incorporation of cowpea flour:** The mean values of organoleptic scores for the acceptability of thalipeeth premix prepared without and with incorporation of cowpea flour are given in Table 2 and mentioned in Figure 3.

**Table 2:** Mean values of organoleptic scores of thalipeeth premix prepared without and with different levels of incorporation of cowpea flour

| Variation | Level of incorporation flour (%) | Mean values of Organoleptic Scores | | | | |
|---|---|---|---|---|---|---|
| | | Colour | Texture | Taste | Flavour | Overall |
| I | 0 | 4.7 | 4.4 | 4.4 | 4.4 | 4.5 |
| II | 10 | 4.7 | 4.4 | 4.5 | 4.5 | 4.4 |
| III | 15 | 4.7 | 4.4 | 4.7 | 4.7 | 4.8 |
| IV | 20 | 4.0 | 3.8 | 3.8 | 4.0 | 3.9 |

The incorporation of cowpea flour was at the level of 10, 15 and 20 percent. Addition of cowpea flour at 15 percent level increased the sensory scores of all organoleptic parameters. The score of colour and texture of thalipeeth premix of basic sample and sample with 15 percent incorporation of cowpea flour was observed to be same *i.e.* 4.7 and 4.4 respectively. Other parameters such as taste was given scores of 4.4 for basic and 4.7 for variation II, flavour was given score of 4.4 for basic and 4.7 for variation II, overall acceptability was given score of 4.5 for basic and 4.8 for variation II, by the judges. Variation III indicated that as the level of 20 percent incorporation of cowpea flour increased in thalipeeth premix then the sensory scores of all organoleptic parameters decreased. Above data indicates that the thalipeeth premix can be very well prepared with incorporation of 15 percent cowpea flour.

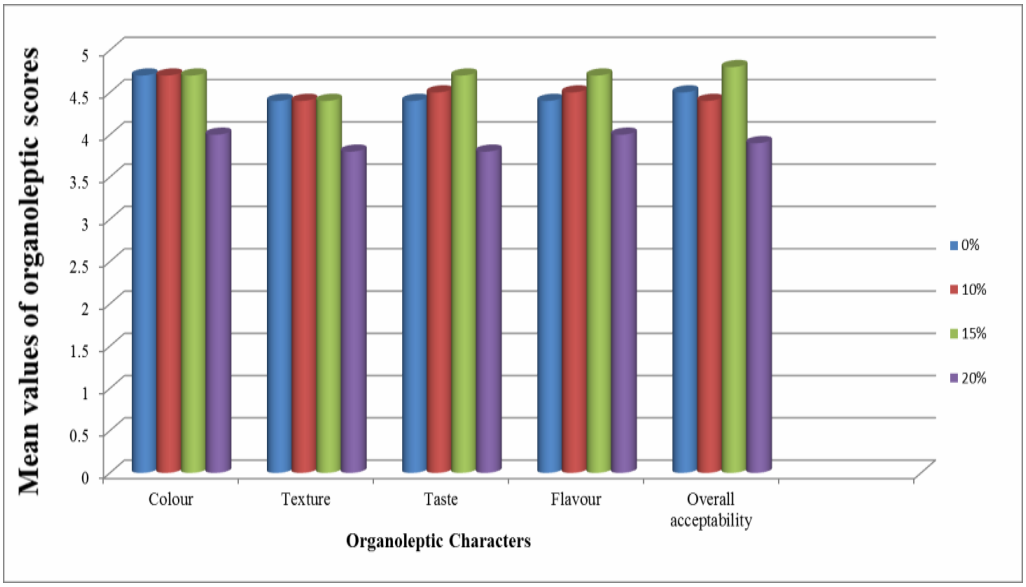


**Fig 3:** Organoleptic evaluation of thalipeeth premix prepared without and with different levels of incorporation of cowpea flour

## Conclusion

From this research it may be concluded that highly acceptable thalipeeth premix can be prepared from wheat flour, pearl millet flour, jowar flour, bengal gram flour and cowpea flour as 15%, 5%, 30%, 10% and 15% respectively. 15% cowpea flour can be successfully added in thalipeeth premix.

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