

# Preparation and Quality Assessment of Sattu Bread Prepared by Using Refined Wheat Flour, Sattu (Gram & Barley) and Sago Flour (Tapioca)

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**Abstract:** Baking industry is currently seeking to expand its product range, but also to constitute a way of maintain and improving people's general health. Bakery products are mainly prepared from wheat as its main ingredient. Bread is widely consumed and is an ideal vehicle for functional delivery. The objective of this work was to develop sago flour and sattu bread. The use of wheat flour, sago flour and sattu blends as a source of high protein, fat and low gluten content in production of sattu bread was studied. The flour blends of refined wheat, sago and sattu were composites at replacement levels of 70:25:05 (T1), 70:20:10 (T2), 70:15:15 (T3), % while the wheat flour bread 100:00:00 (T0) served as control bread. Various analysis parameters were analyzed by two-way ANOVA to obtained a predicted optimum result Prepared bread was subjected to chemical, microbial, and sensory analysis to evaluate the suitability of breads were T2 protein (11.65%), fat (1.54%), ash (2.35%), moisture (10.1%) and carbohydrate (74.96%) as comparable to control without adversely affecting the sensory parameters. Based on the result it was indicated that beneficial components of sago flour and sattu made them more favorable choice for food technologist to develop Atta bread especially for celiac disease.

**Keywords:** Quality, Assessment, Market research.

## 1. Introduction

Bread is one of the oldest and largest consumed foodstuffs and is consumed across the globe by all age groups. Bread may be described as a fermented confectionery product which is produced mainly from wheat flour, yeast, water, sugar, salt and other ingredients needed accordingly, by a series of process involving mixing, kneading, proofing, shaping, baking bakery products like bread. recorded history it has been popular around the world and is one of the oldest artificial foods, having been of importance since the dawn of agriculture.

Bread is served in various forms with any meal of the day. It is eaten as a snack, and used as an ingredient in other culinary preparations, such as sandwiches, and fried items coated in bread crumbs to prevent sticking. It forms the bland main component of bread pudding, as well as of stuffing's designed

to fill cavities or retain juices that otherwise might drip out. Bread is a bakeryproduct priced for its taste, aroma and texture. It is a staple food prepared by baking dough of flour and water (Osuji, 2006). Salt, fat, and yeast, are common ingredients, in addition to a wide range of other ingredients, namely, milk, egg, sugar, spice, fruits, vegetable, nuts and seeds (Encyclopedia Britannica, 2006). Bread supplies a significant portion of the nutrients required for growth, maintenance of health and well-being. It is an excellent source of proteins, vitamins, minerals, fibre and complex carbohydrates. It is also low in fat and cholesterol. Bread is quite bulky so it takes longer to digest and is therefore more satisfying and less fattening than the fats, sugars and alcohols commonly consumed in excess. All breads are nutritious and the differences between them in nutritional value are not significant if we eat a balanced diet.

**Refined Wheat Flour:** Maida is a white flour from the Indian subcontinent, made from wheat. Finely milled without any bran, refined, and bleached, it closely resembles cake flour. Maida is used extensively for making fast foods, baked goods such as pastries, bread etc.

**Sattu:** Sattu is a ready-to-eat traditional snack food of northern India and most popular in Bihar and Uttar Pradesh. It is prepared from flour of roasted cereals only, or legumes only or, combination of cereal and legumes with added flavouring agents.

**Sago Flour:** Sago also has a low calorie and fat content, which are good for diet. Its protein content is very low and free from casein and gluten, so it is good to be consumed as a non-allergic food. In addition, sago is safe to be consumed by diabetic people because it does not raise blood glucose levels immediately (low glycemic index).

## 2. Materials and Methods

The ingredients and chemicals used for this work were purchased from a local market at Rambagh, Prayagraj, UP.

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**Raw materials:**

- Refined Wheat flour
- Sattu (Gram and Barley)
- Sago flour
- Salt
- Sugar Yeast Skimmed milk powder

**Chemicals:**

- Calcium propionate
- GMS(Emulsifier)

**Equipment's:**

- Weighing balance
- Incubator
- Baking oven
- Molds

**Miscellaneous:**

- Measuring cylinder, beaker, muslin cloth.

**A. Plan of Work**

**Treatment combination:**

- T0-Control prepared from refined wheat flour (100%)
- T1-Experimental sample prepared from refined wheat flour, sattu and sago flour (70:25:05)
- T2-Experimental sample prepared from refined wheat flour, sattu and sago flour (70:20:10)
- T3-Experimental sample prepared from refined wheat flour, sattu and sago flour (70:15:15)

**Plan of layout:**

- Number of replication - 5
- Number of treatment - 4

**3. Result and Discussion**

**Moisture percentage:** There was non-significance differences in moisture content of different treatments and control, the highest mean moisture percentage was recorded in the sample of T0 (14.15) followed by T1 (13.04), T2(12.23), T3(11.94). The differences in moisture was due to the composition different of wheat flour, sattu, sago flour which are used in difference proposition in a different treatment

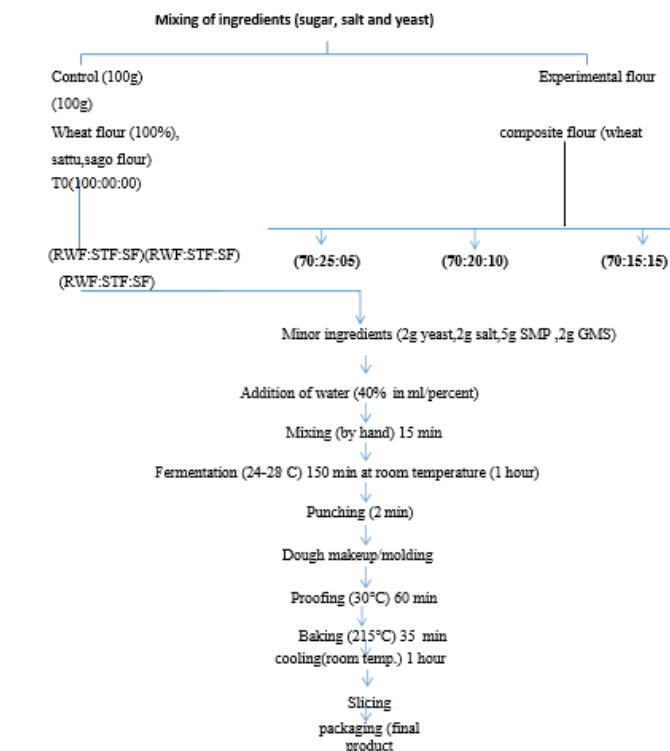


Fig. 1. Flow chart of procedure for manufacturing of bread

**Ash percentage:** There was non-significance differences in ash content of different treatments and control, the highest mean ash percentage was recorded in the sample of T3 (3.68) followed by T0 (1.39), T1(2.87), T2(2.83). The differences in ash was due to the composition differences of wheat flour, sattu, sago flour which are used in different proposition in a different treatment.

**Protein percentage:** There was non-significance differences in protein content of different treatments and control, the highest mean protein percentage was recorded in the sample of T3 (10.33) followed by T0 (8.83), T1(9.75), T2(10.08). The differences in protein was due to the composition different of wheat flour, sattu, sago flour which are used in difference proposition in a different treatment.

**Fat percentage:** There was non-significance differences in

Table 1  
Average data for different parameters of control and experiments

Parameters	Treatments			
	T0	T1	T2	T3
Chemical analysis				
Fat	2.32	3.109	1.54	2.389
Protein	8.83	12.61	11.65	10.92
Carbohydrate	72.81	71.79	74.96	74.93
Ash	1.39	2.701	2.35	1.86
Moisture	14.15	9.9	10.1	10.68
Coliform count	Nil	Nil	Nil	Nil
Organoleptic scores (9-pointedonic scale)				
Colour	9.00	8.50	8.50	8.00
Taste	8.50	9.00	8.90	8.70
Flavor	9.00	9.00	8.90	8.00
Overall acceptability	8.84	8.73	8.76	8.23
Cost analysis				
Cost in Rs./100g	9	11.68	15.67	13.74
Microbial analysis				
Yeast and Molds (cfu/gm)	3 (1 Yeast; 2 Mold)	6 (1 Yeast; 5 Mold)	3 (2 Yeast; 1Mold)	2 (2- Yeast; 0 Mold)

fat content of different treatments and control, the highest mean fat percentage was recorded in the sample of T3 (3.46) followed by T0 (2.32), T1(2.78), T2(2.99). The differences in fat was due to the composition differences of wheat flour, sattu, sago flour which are used in different proposition in a different treatment.

*Carbohydrate percentage:* There was non-significances differences in carbohydrate content of different treatments and control, the highest mean carbohydrate percentage was recorded in the sample of T0 (87.45) followed by T1 (84.53), T2(84.10), T3(82.53). The differences in carbohydrate was due to the composition differences of wheat flour, sattu, sago flour which are used in different proposition in a different treatment.

Organoleptic analysis

*Colour percentage:* There was non-significances differences in colour percentage of different treatments and control, the highest mean colour percentage was recorded in the sample of T0 (9.0) followed by T1 (8.5), T2(8.5), T3(8.0). The differences in colour was due to the composition differences of wheat flour, sattu, sago flour which are used in different proposition in a different treatment.

*Taste percentage:* There was non-significances differences in taste percentage of different treatments and control, the highest mean taste percentage was recorded in the sample of T1 (9.0) followed by T0 (8.5), T2(8.9), T3(8.7). The differences in taste was due to the composition differences of wheat flour, sattu, sago flour which are used in different proposition in a different treatment.

*Flavour percentage:* There was non-significances in flavour percentage of different treatments and control, the highest mean flavor percentage was recorded in the sample of T0 (9.00) and T1 (9.00) followed T2(8.9), T3(8.00). The differences in flavour were due to the composition differences of wheat flour, sattu, sago flour which are used in different proposition in a different treatment.

*Overall acceptability score:* There was non-significances in overall acceptability score of different treatments and control, the highest mean overall acceptability percentage was recorded in the sample of T0 (8.84) followed by T1 (8.83), T2(8.76), T3(8.23). The differences in overall acceptability score were due to the composition differences of wheat flour, sattu, sago flour which are used in different proposition in a different treatment.

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