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Kelapure NNAssistant Professor, MGM
College of Food Technology,
Aurangabad, Maharashtra,
India**Dr. Jaju RH**Assistant Professor, MGM
College of Food Technology,
Aurangabad, Maharashtra, India**Dr. Sangle JK**Assistant Professor, MGM
College of Food Technology,
Aurangabad, Maharashtra, India

A study on utilization of yam and whole wheat flour in formulation of bakery product

Kelapure NN, Dr. Jaju RH and Dr. Sangle JK

Abstract

The study presented on Utilization of Yam and whole wheat flour in formulation of Bakery Product particularly in Swiss roll. The bakery industry is among the few processed food segments whose production has been increasing consistently in the last few years. Swiss Rolls produced are egg less and pure vegetarian, hence acceptable throughout. The typical ingredients are used and three different trails taken with varying proportions of yam flour and other ingredients. Out of three samples, second sample B is having more acceptance than others. Sample B contains 10% yam flour and 30% whole wheat flour. Then it is further analyzed for sensory and chemical evaluation.

Keywords: Whole wheat flour, yam flour, swiss roll etc

Introduction

Bakery industry in India has an important place in the industrial map of country. With rapid growth improvement in standard of living, westernization, increase in spending power, changing eating habits of people. In India, there are 85,000 bakery units, of which 75,000 are from unorganized sector occupying 65% of the market share. The urban areas have a major share of the Indian bakery, comprising 77.5% of the total market. The bakery industry is among the few processed food segments whose production has been increasing consistently in the last few years. Bakery industry has achieved third position in generating revenue among the processed food sector. Products of bakery include bread, biscuits, pastries, cakes, buns, Rusk etc. Out of which Swiss rolls are the newest product.

Swiss roll is a type of sponge cake roll. A thin cake layer is made of flour with or without egg, sugar and baked in very shallow rectangular baking tray, called a sheet pan. The cake is then removed from the pan and spread with jam, rolled up, and served cross sectional slices.

Objectives

1. Utilization of yam flour and whole wheat flour in formulation of bakery product.
2. To examine the chemical parameters of Swiss roll.
3. To evaluate the quality of Swiss roll by sensory analysis.

Materials and Methods

The present project entitled 'A Study on Utilization of Yam and whole wheat flour in formulation of Bakery Product' was conducted in MGM College of Food Technology, affiliated to MAU, Aurangabad.

Raw Materials Collection

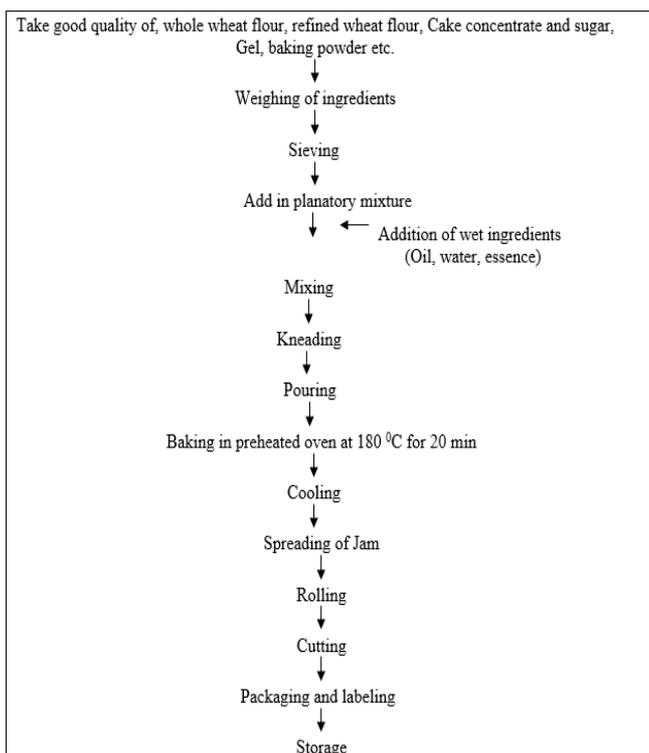
Raw materials Baking Powder, Whole grain wheat flour, Yam flour, Refined wheat flour, Sugar, etc. was purchased from local market.

Methodology**Procedure**

1. **Selection of raw ingredients:** The good quality of raw material for the preparation of Swiss roll was selected.
2. **Sieving:** After selection, all ingredients such as whole wheat flour, refined wheat flour, sugar was sieved.
3. **Weighing:** The ingredients were weighed according to standards.
4. **Mixing:** In large mixing bowl, whole wheat flour, refined wheat flour, cake concentrate, sugar was mixed. Then oil, water, essence was added to the mixture in planetary mixer.
5. **Kneading:** Then the batter was uniform mixed with help of planetary kneader.
6. **Pouring:** Batter was pour into the grease trays

Corresponding Author:**Kelapure NN**Assistant Professor, MGM
College of Food Technology,
Aurangabad, Maharashtra, India

7. **Preheating of oven:** Preheating of the oven was done at 200 °C for 10 minutes
8. **Baking:** Then Swiss rolls were baked in baking oven at 180 °C for 15 minutes
9. **Cooling:** After baking sheets of Swiss rolls they were kept at the room temperature and cool completely.
10. **Jam Spreading:** After cooling, Jam was spread uniformly on sheets.
11. **Rolling:** Rolled them up and then cut it wisely
12. **Packaging and labeling:** Swiss rolls were packed in LDPE container, transparent bags and labelled with the product information, including ingredients, date and location of manufacture with best before date.

2nd Trial

Flow chart of Swiss roll



Sample A



Sample B



Sample C

Formulation of product

By using above formulations we had prepared 5 different samples out of them 2 were on trial basis and then 3 samples with different formulations, After taking sensory analysis of sample A (5% yam flour and 25% whole wheat flour), B (10% yam flour and 30% whole wheat flour) and C (15% yam flour and 35% whole wheat flour) we had decided to finalize the proportion of sample B (10% yam flour and 30% whole wheat flour) and started to prepare the Fortified Swiss roll.

1st Trial

Sensory Evaluation

Sensory evaluation of the sample was carried out by students and staff of the department of MGM College of food technology using Nine points hedonic scale. Attributes like taste, color, texture, flavor and overall acceptability was

scored based on its intensity scaled. 9-Point Hedonic Scale has been used the purpose. The sensory score given by the panel have been evaluated for the sensory result.

Chemical Composition

The chemical composition of prepared Swiss roll analyzed for Moisture, crude fat, crude fiber and ash according to the standard methods of A.O.A.C.

Results and Discussion

Utilization of Yam and Whole wheat flour for formulation of Swiss roll

The present study was undertaken with an objective of utilization of yam and whole wheat flour in the preparation of bakery product and product taken for the present study was Swiss roll, So for the formulation of Swiss roll the 3 different with different formulation were taken namely sample A, sample B and Sample C that contains 10% yam flour and 40% whole wheat flour, 10% yam and 30% whole wheat flour and 4% yam and 36% whole wheat flour. The samples were evaluated for the sensory and chemical evaluation as shown in Table 1.

Table 1: Formulation of Swiss Roll

Sr. No.	Raw material used	Sample A	Sample B	Sample C
1)	Yam flour	11.25g (5%)	22.5g (10%)	33.75g (15%)
2)	Whole wheat flour	56.25g (25%)	67.5g (30%)	78.75g (35%)
3)	Refined wheat flour	157.5g	135g	112.5g
4)	Cake Concentrate	45 g	45g	45g
5)	Sugar	150g	150g	150g
6)	Oil	80g	80g	80g
7)	Jam	200 g	200g	200g
8)	Essence	2.5g	2.5g	2.5g
9)	Eggless Powder	50g	50g	50g
10)	Water	290 ml	290ml	290ml
11)	Cake Gel	5-6g	5-6g	5-6g
12)	Calcium	3-4 g	3-4 g	3-4 g
13)	Baking powder	6g	6g	6g
14)	Salt	1g	1g	1g

Sensory Evaluation of Swiss rolls

The Swiss rolls were prepared from yam flour and whole wheat flour evaluated for Organoleptic qualities by a panel judges on a 9 point Hedonic scale. The mean values for scores for appearance, colour, taste, flavour, texture, mouth feel and overall acceptability (Guichard E., Etievant P. and Issanchous S. 1991).

Table 2: Sensory Evaluation of Swiss Roll

Sample code	Ratio	Appearance	Color	Taste	Flavour	Texture	Mouth feel	Overall acceptability
Control	100% Refined Wheat flour	8.2	7.8	8	7.7	8.3	7.9	8.1
A	05:25(Yam to wheat)	7.8	7.5	7.7	7.6	7.6	7.7	7.6
B	10:30(Yam to wheat)	8.1	7.5	7.9	7.8	7.7	7.9	8.0
C	15:35(Yam to wheat)	8.0	7.6	7.7	7.7	7.6	7.7	7.8
	Mean	8.02	7.60	7.82	7.70	7.80	7.80	7.87

Chemical Evaluation of Swiss roll

The Swiss roll were prepared under uniform laboratory and hygienic condition. The moisture content of the Swiss roll

found in the range of 19 to 22%, crude fat found 6.3 to 9.0% then crude fiber in the range of 3.5 to 4.3 and ash content was 0.7 to 1.1%.

Table 3: Chemical Composition of Swiss Roll

Sample code	Sample Ratio	Moisture	Crude Fat	Crude Fiber	Ash
Control	100% Refined Wheat flour	21	7	4	0.7
A	05:25 (Yam to wheat)	19	9	5	0.9
B	10:30 (Yam to wheat)	21.4	6.34	3.5	0.8
C	15:35 (Yam to wheat)	22	6.8	4.3	1.1

Summary and Conclusion

The present study was undertaken with the aim of utilization of yam and wheat flour in the bakery product like Swiss roll for that trials and samples were made in three different proportions out of which with the help of sensory evaluation Sample B was found best score rating by the panel of experts. The study was continued to know the chemical composition of all the samples, while evaluation of the samples we come to know that, Sample B was found best when compared with standard in all the disciplines determined.

Addition of Yam flour and whole wheat flour will improve the nutritional value of the product, it had given good impact on the factors evaluated sensory as well as chemically also the addition of 10% of yam flour and 30% whole wheat flour found suitable with respect to the product.

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