

Rice Bran Ragi Pancakes Instant Mix

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Abstract: The present study shows different compositions for developing an instant gluten free pancake mix having rice bran, ragi and sugar as main ingredients. Rice bran is a byproduct obtained by milling of paddy and constitutes about 10% of total weight of paddy. It consists of 12 – 15% of proteins and is a very good source of amino acid and bioactive compounds like tocopherols, tocotrienols and hypoallergenic protein which is very important and desirable in infant formulation. It seems that taking 85 grams of full-fat rice bran per day lowers total cholesterol by 8% and more over contains antioxidant activity. Ragi, comonly called finger millet is known to be as powerhouse of nutrients and is mostly used in rural

population of south india. Unlike other cereals ragi has a very high levels of calcium, antioxidants and phytochemicals. The glucose levels in blood of diabetic patients is controlled by total dietary fiber present. It is most commonly converted to flour and then used to make the final product more tasty, attractive and consistent. Sugar is the natural sweetner obtained from sugarcane without the use of chemicals. It is very substantial in minerals like calcium, iron, magnesium and potassium. It is used to provide burst of energy and also used to boost mood. Pancakes are flat cakes which are prepared from starch based batter and in this study the starch based ingredients are replaced by gluten free ragi flour.

Keywords: Pancakes, Instant mix, Rice bran, Ragi, Sugar, Gluten free, Dietary fibre, Bioactive compounds.

I. INTRODUCTION

A. RICE BRAN

Rice, *Oryza sativa*. L, one of the most consumed cereal in many countries of the world and the production capacity equals to the production capacity of wheat. Rice can be grown on large range of climatic conditions as it is an annual plant. India is also a wide producer of rice. If the usage scenario is taken into account, rice is used in many forms including bakery industries.

Conventionally from years, rice is milled to yield fine polished edible rice throwing out the brown layer. This drives for the generation of a by-product that is generally considered as an agricultural waste.

Now – a - days rice bran is occupying a great place in many food industries for its nutritional properties which include protein, lipid, vitamins and minerals. Thus, these nutritional properties raised the value of rice bran.

It also hides antioxidant, antibiotic along with anti-cholesterol properties in it. But for now, it is used as oil extraction, animal feed, wax production and occassionally as food ingredients. Rice bran can be studied under two types namely full fat rice bran (no fat removed) and defatted rice bran (fat removed). The composition of rice bran is 40-55% carbohydrate, 14-18% protein, 1.6-20% fat, 13-15% ash, and 8-10% fibre. Rice bran also contains high amount of soluble and non-soluble fibres, vitamins as well as minerals. It is a vital source of protein and also contains essential amino acids. Rice bran also contains anti cholesterol properties since they have property of decreasing Low Density Lipoprotein (LDL) cholesterol i.e., hypocholesterolemic influence.

INGREDIENTS	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
Rice bran (gm)	0	2	4	6	8	10	12	14	16	18	20	22
Ragi (gm)												
Jaggery & cardamom powder (gm)	45	44	43	42	41	40	39	38	37	36	35	34
Skimmed milk powder (gm)	45	44	43	42	41	40	39	38	37	36	35	34
Skimmed milk powder (gm)	10	10	10	10	10	10	10	10	10	10	10	10

Table 1 Formulation of ingredients

B. RAGI

Ragi, scientifically, *Eleusine coracana*, also known as Finger Millet, has been rising in India since years. It stands ahead of white rice in having greater dietary fibre, sulphur containing amino acids, and minerals. Recent studies revealed that finger millet has properties like lowering of glucose levels in blood, lowering of cholesterol, anti ulcerative and wound healing. Finger millet is a prolific source for free sugars 1.04%, starch 65.5%, and non-starchy polysaccharides. Prolamines are the major part of proteins present in finger millet than all other variety of proteins. The fat content of finger millets is lesser compared to all other millets and this low lipid containing property serves as one of the property for its better storage property of ragi compared to other millets. Ragi is known to have high levels of phenolic compounds.

C. SKIMMED MILK POWDER

Milk is well known for its nutritional benefits. It bags all the nutrients, proteins which are of many uses in different ways. The major proteins types present in the milk are whey and casein. It also comprises of serum albumin, α -lactalbumin β -lactoglobulin, immunoglobulins, and lactoferrin

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along with some minor proteins which take part in biological processes. SMP also being named as non-fat dry milk i.e., NDM and dry skim milk (DSM) is recognised for having less fat content (0.8g/100g). It is a rich source of many nutrients and contains high amount of animal proteins. Besides SMP also contains high amount of carbohydrate of which lactose occupies most space. When it comes to lifespan, it can be placed in shelf for about 3 years.

II. MATERIALS AND METHOD

D. RAW MATERIAL PROCUREMENT

The raw materials were procured from the local market. The rice bran used in these studies was procured from a nearby rice milling industry which is the key ingredient in present studies.

E. STABILIZATION OF RICE BRAN

Bran is an abundant source of nutrients but the lipids present in the rice bran degrades and produces off – flavours or off – odours. These off – flavours give an undesirable flavours in foods. Thus, stabilization of rice bran before using in foods is very crucial to remove the off flavours and give a very good palatability when rice bran foods are consumed. The stabilization of rice bran can be done using different methods like microwave heating, roasting, steaming and autoclaving.

TRIALS	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
Texture	7	7	6	6	6	7	8	8	6	5	5	4
Taste	8	7	7	6	6	7	9	8	8	6	5	5
Mouth feel	7	6	5	5	5	7	9	9	7	4	6	5
Colour	7	8	6	7	5	5	9	8	7	4	6	5
Aroma	8	7	8	7	7	6	9	8	7	5	6	4
Overall acceptability	7	7	6	6	6	7	9	8	7	5	6	5

Table 2: Sensory scores for different trials of pancakes

F. RICE BRAN POWDER

Roasting not only stabilizes the rice bran but also helps in the removal of moisture and decreases the water activity. The low moisture content allows the rice bran to be used in foods which have a longer shelf life. The roasted rice bran is further ground to powder and sieved to obtain a fine powder of particle size around 125µm. This particle size of rice bran allows it to be used in instant mixes.

G. RAGI FLOUR

Ragi flour with a particle size of 50µm is most commercially available in the local market which was used in these studies. Ragi helps to maintain a dough like consistency in the batter.

H. JAGGERY POWDER

Jaggery powder containing less than 3mm particle size is used in these studies to give a very good flavor to pancakes. The jaggery powder has a longer shelf life upto two years when packaged in polyethylene polyester packaging.

I. SKIMMED MILK POWDER

The skimmed milk powder acts as binding agent in this present project. It gives taste to the final product and helps

in textural maintainance. of skimmed milk powder. Since recent studies also

showed that consuming 12gm of rice bran would reduce cholestrol upto 2% and more consumption may lead to some side effects. The sensory result received for this trial was maximum and satisfactory. The texture of the pancakes was very accepting and consumable. This trial i.e., trial - 7 was best suited for consumption and health benefits.

III. RESULTS AND DISCUSSIONS

A total number of 12 trials were examined to get the best combinations of the product. Various proportions were considered to finalize the perfect sample to get perfect pancakes(Table. 1). A variety of proportions of all the ingredients were tried so as to make the total composition to 100gm as basis. Sensory evaluation was taken for all the trials performed (Table. 2). Almost all the trials were unsatisfactory except the trial 7. When the quantity of rice bran was low, there were no satisfactory results upon consuming it. And when the bran content was too high, the texture of the pancake was not satisfactory. Due to more fibre content the pancakes were broken and dried after certain amount of time. Considering all those results, trail 7 was chosen as the best trial for consumption and as well as for availability of nutreints. The composition of best trial was obtained for trial – 7.

IV. CONCLUSION

The instant mix contains a good amount of fiber and calcium. The rice bran which was used in this helps in lowering the fat levels in people. The ragi used helps in controlling the glucose levels in blood of people. Due to the stabilization process of rice bran, rice bran do not contain any type of off flavours and is not prone to rancidity. The shelf life of the product was shown to be 5 months. The instant mix is a very rich source of nutrients due to the presence of rice bran and ragi.

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Ms. Bammidi Madhuri is a post graduate in Food processing technology from Jawaharlal Nehru Technological University, Kakinada, Andhra Pradesh. She is a graduate from Biotechnology and has a sound knowledge food technology as well as biotechnology related areas. She has done an industrial project on Disinfestation of cashew nuts using IR radiation. She is rightaway working as an Assistant Professor in department of chemical engineering, branch food technology, in Vignan’s Foundation for Science, Technology and Research.



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