



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(2): 2194-2196
Received: 26-01-2019
Accepted: 27-02-2019

SR Popale
Director Extension, Professor
W.C.D.T. SHUATS, Allahabad,
Uttar Pradesh, India

DB Shinde
Director Extension, Professor
W.C.D.T. SHUATS, Allahabad,
Uttar Pradesh, India

Dr. AA Broadway
Director Extension, Professor
W.C.D.T. SHUATS, Allahabad,
Uttar Pradesh, India

Studies on preparation of nutritional ragi snacks packed with nitrogen flushing

SR Popale, DB Shinde, Dr. AA Broadway

Abstract

Finger millets also known as Ragi in India is one of the most important cereals. Finger millets contain 5 – 8% protein, 65 – 70 % carbohydrates, 15 – 20 % dietary fiber and 2-3% minerals, of all the cereals and millets finger millets have highest amount of calcium (344mg/100gm of flour), and potassium (408mg/100gm of flour and low fat content. The modern trends for the development of new food product aspires for complementary foods in order to fulfill widening gap of food availability and nutritional security. This paper discuss the new product developed as Ragi snacks prepared by baking method, to avoid excess oil also packed in polyethene bag with nitrogen gas also study the shelf life of product on the basis of sensory evaluation and microbial determination.

Keywords: millets, baking, microbial determination and sensory evaluation

Introduction

India is the leading producer of small millets namely finger millet Ragi and Foxtail Millet. Barnyard millet. Annual planting area under them is around 2-5million hectares& nearly 1.5 million hectares is under finger millet cereals it form a major portion of human diet and are an important source of starch and other dietary carbohydrates which play important role in the energy requirement and nutrient intake of humans. The millets are having higher protein quality and mineral compositions. Millets are most recognized nutritionally for being a good source of minerals magnesium. Phosphorus calcium. Research has linked magnesium to reduced risk for heart attack, phosphorus is important for the development of body tissue &energy metabolism also it is rich in phytochemicals (shashi *et.al* 2007) ^[5].

Ragi usually used for preparation at flour, pudding and Roti (Chaturvedi *et.al* 2008) ^[2] with the changes in scenario of utilization pattern of processed produces and awareness of the consumes about the health benefits. Finger millet has gained importance because of its functional components.

The processing traditional as well as contemporary method for preparation of value added & convenience product would certainly diversify their uses their exploitation for preparation of ready to use or ready to cook products would help in increasing the consumption of millets among non-millet consumers and thereby nutritional security. In this paper, the ragi is used as traditional snacks by the baking methods and is study the shelf life of products made, using nitrogen flushing

Materials & Methods

Ragi snack was prepared with following ingredient. The following proportion of Ragi flour, Oat Flour and Rice Flour mixed and standardized.

Table: table show flour of ragi, oat and rice

	Ragi flour	Oat flour	Rice
I	100	25	75
II	75	50	75
III	100	50	50

Sample were cleaned well before taking any experimental work these prepared by standard techniques sensory evaluation following of point hedonic scale for these food was performed and III Recipe uses done for preparation of snacks.

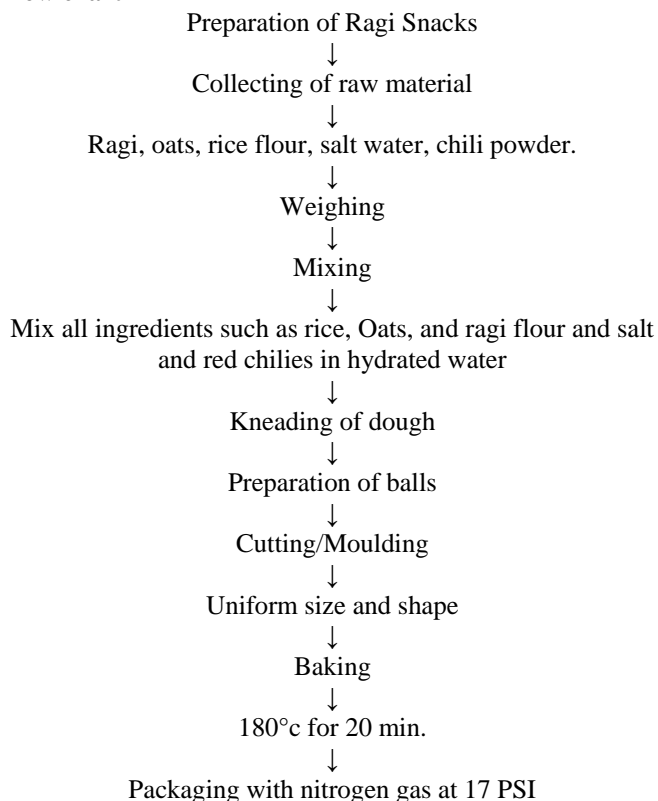
In the preparation of Ragi snacks, Ragi oats, rice and other minor ingredients like chili powder, seasm seed, turmeric powder, edible oil, Ajwaine, cumin and salt purchased by local market of Beed.

Correspondence
SR Popale
Director Extension, Professor
W.C.D.T. SHUATS, Allahabad,
Uttar Pradesh, India



Preparation of Ragi Snacks

Flow chart



Determination of chemical properties of Ragi, Oats and Rice flour

- **Moisture content:** Moisture content was determined by using over the following methods described in (AOAC) 2007 [1].
- **Protein:** Nitrogen content was determined following the Micro Kjeldhal method described in (AOAC (2007) [1] in which nitrogen was the converted into protein by multiplying protein factor 6.25.
- **Total carbohydrates:** Carbohydrate determination was done according to Hedge *et.al* (1962). It is hydrolyzed into simple sugar using dilute hydrochloric acid in hot acidic medium, glucose is dehydrated to form Hydroxy methyl furfural which gives green color with antimony reagent (1mg/ml) at 630nm.
- **Fat:** It is determined by solvent extraction method described in AOAC (2007) [1] through soxhlet apparatus using petroleum ether as solvent.
- Iron, magnesium, calcium the demined by AAS method following AOAC (2007) [1].
- **Crude Fiber:** Crude fiber consist mainly cellulose and lignin (97%) plus some minerals. It can be estimated by the treatment of sample first acid subsequently with alkali. The loss in weight gives the crude fibre content. AOAC 2007) [1].

- Determination of microbial yeast and mold by Total Plate Count method

Result and conclusion

Table 1: Nutritional composition of the flours

Parameters	Ragi	Oats	Rice flour
Carbohydrates	72.6	62.2	78.2
Protein	7.6	14.7	6.8
Fat	1.5	9.1	0.5
Crude fiber	3.6	6.5	5.2
Ash	2.7	1.7	0.6
Calcium (mg)	370	55	10
Iron (mg)	6.3	4	0.5

(K.S.K.C.F.T Food chemistry Lab)

In the given table no 1 gives the nutritional composition of all the flours. They are rich in carbohydrates, protein, crude fiber also rich in the micronutrients such as minerals calcium, iron.

Table 2: Nutritional composition of Ragi snacks

Nutritional facts	Ragi snack
Carbohydrates	82gm
Protein	5.8gm
Fat	4.8gm
Crude fiber	4.6gm
Ash	1.2gm
Calcium (mg)	340mg
Iron (mg)	39mg

(K.S.K.C.F.T Food chemistry Lab)

In the table shows it the Ragi snack having 82gm carbohydrates, 5.8gm protein, 4.8gm Fat, 4.6gm crude fiber, 1.2gm Ash, 340mg calcium, 39mg Iron. This nutritional based Ragi snacks is richest source of major and minor nutrients.

Table 3: Yeast and mold content of the snacks

Plate	0 Days	15 days	30 days	45 days	60 days
10 ⁻¹	18	18	18	17	17
10 ⁻²	18	18	18	16	16
10 ⁻³	16	16	16	16	16
10 ⁻⁴	16	16	16	15	15

(K.S.K.C.F.T Food Micro Lab)

Table no 3 shows yeast and mold content after the every 15 days the product showed the mold and yeast growth in between 20 – 15 cfu/100gm of sample, growth was constant because it maintain equal to optimum moisture of 4.1%.

Table 4: Sensory Evaluation

Days	Appearance	Color	Taste	Mouth feel
0	7.8	7.6	7.8	7.1
15	7.8	7.6	7.8	7.1
30	7.6	7.5	7.6	7.0
45	7.5	7.7	7.4	7.4
60	7.5	7.55	7.3	7.4

(K.S.K.C.F.T.)

Table 4 shows that product were examine for shelf life on the basis of sensory evaluation by 9-hedonic scale, taking time intervals as 15 days the product were packed with nitrogen gas it is odorless and tasteless. After the 60 days it remains the appearance color taste and mouth feel and maintains the moisture content.

Conclusion

The snacks were rich in Carbohydrate, Iron. β -glucan of Ota flour decrease the total serum cholesterol. The product was prepared by baking method were less costing. The prepared product was value added and a commercial product, readily accepted by the children's and low cost of the product would attract buyers.

References

1. AOAC. Official Method of Analysis. 18th ed. Association Analytical Chemist, Washington DC, 2007.
2. Chaturvedi R, Srivastava S. Genotype variations in physical, nutritional and sensory quality of popped grains of amber and dark genotype of finger millet. J. food Sci. Technol. 2008; 45:5.
3. FAO. Rome Italy, Nutritive value of Indian foods, 1998, NIN, Hyderabad, India, 1970.
4. ICAR. ICAR News – a science and technology newsletter. 2010; 16(3):16.
5. Shashi BK, Sharan S, Hittalmani S, Shankar AG, Nagarathna TK. Micronutrient composition, antimicronutrient factor and bioaccessibility of iron in different finger millet (*Eleusine coracana*) genotype, 2007.
6. The snacks were rich in Carbohydrate, Iron. β - glucan of Ota flour decrease the total serum cholesterol. The product was prepared by baking method were less.