

STUDY ON NUTRITIOUS SUPPLEMENT FOR PRE-SCHOOL CHILDREN.

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ABSTRACT:

Nutrition is the human basic need and prerequisite for healthy life. A proper diet is essential from very early age of life for growth, development and active life style. Nutrition is the science that deals with all the various factors of which food is composed and the way in proper nourishment is brought about. A proper balance of healthy snacks for kids, healthy day care lunch menus, preschool treats and school lunch ideas will make your kids and preschoolers feel great, provide more healthy productive energy as well as to improve their concentration, development and individual dispositions. Your toddler and kids need the proper preschool nutrition from their pre-school snacks, pre-school treat and day care lunch.

The biscuit sample prepared with incorporation of higher amount of malted ragi flour was rich in minerals, crude fibre. Addition of bengalgram flour increased protein, fibre, fat and mineral so malting was beneficial. Nutritional addition of bengalgram flour to the biscuits proved to be superior in quality. Sprouted wheat flour makes biscuit much easier for children to digest since much of the sugar was vegetable sugar. The biscuit sample prepared with 45% wheat, 15% ragi, 30% Bengal gram and 5% skim milk powder was good in taste, nutritionally balance & acceptable by the people.

Nutritional composition & sensory scores for the biscuit was higher in some cases as compared to the market sample. Thus it was acceptable by the people. Hence the biscuit sample prepared by supplementation with malted ragi and Bengal gram was beneficial for growing children. .

KEYWORDS: Nutritious, Supplement, Biscuits, Malting, Sensory Score.

INTRODUCTION:

The word "supplement" means a nutrients or group of nutrients (vitamins, minerals, protein, carbohydrates, fat and oils) that are meant to supplement, but not substitute for, a healthy diet that you eat on regular basis. Supplements are available as pills, capsules, powders, liquids and even in gel form.

The principle ingredient of biscuit is wheat flour which is high in nutrients. It contains protein that interact with each other when mixed with water forming gluten which is important for leavening action. The starch component of wheat flour also plays an important role in dough structure of biscuit (Moreno- Alvarez, 2009) and starch is currently enjoying attention owing to its usefulness in different food products (Udachan et.al, 2012). Ragi is another ingredient of biscuit which is rich in calcium content. It gives added health benefit. (Kaletune & Breslauer, 2003). Supplementation with legumes is one way to meet the needs for protein as such Bengal gram flour is commonly consumed by the public (Shakuntala, Mansur et.al, 2009).

Soy supplemented biscuits could be used as protein supplemented Cereal Sanck Food for nutritional and organoleptic benefits. Soybean used for supplementation of wheat flour at different levels (Oluwamukomi et.al,2011) resulted rise in protein content.

The present study was conducted to provide formulation of healthy snacks as nutritious supplement for preschoolers in the form of biscuits. (Gopalan et.al, 2004).

MATERIALS AND METHODS:

The following raw materials were used in the present study.

Wheat, Ragi, Bengal Gram, Soybean, Skimmed Milk Powder, Sugar, Fat, Baking Powder, Salt, Dextrose etc.

All the chemicals and reagents were of AR grade.

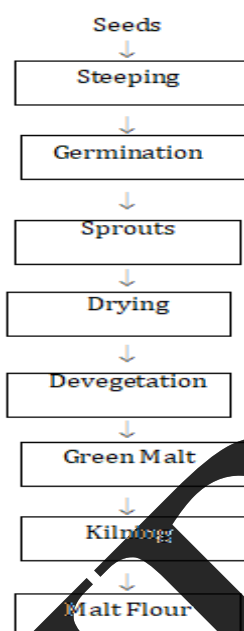
METHODS:

A) ANALYTICAL METHODS:

All standard methods were used for the determination of proximate analysis such as Moisture, Protein, Fat., Carbohydrates, Ash, Crude Fibre, etc. (Ranganna, 2009).

B) MALTING PROCESS:

Seeds were washed with water for five times and soaked in water. Excess water was drained. Seeds were tied in a muslin cloth and kept for germination at 27⁺ 30c then dried. Seeds were ground into flour by electric grinder (Nirmal, Murlikrishna, 2009, Taur et.al.1984)



Flow diagram for the preparation of malted flour.

C) FORMULATION OF BISCUIT:

Formulation of ingredients for biscuit production was given in Table No. 1. Different compositions C1 to C6 were prepared and C was kept under control. Other ingredients were Vegetable oil 60 g, Sugar 80 g, Fat 60 gm, Baking Powder 1.25 gm, Salt 1.25 gm, Dextrose was added to each Formulation (Singh et.al, 2006)

Table 1 Formulation of Biscuit (grams)

Sample	Malted wheat flour	Malted ragi flour	Malted bengal gram flour	Soyaben Flour	Skim milk powder
C	90.00	-	-	-	10.00
C1	44.00	14.00	30.00	6.00	6.00
C2	40.00	10.00	40.00	5.00	5.00
C3	36.00	14.00	42.00	4.00	4.00
C4	30.00	18.00	44.00	3.00	3.00
C5	30.00	22.00	46.00	1.00	1.00
C6	45.00	15.00	30.00	5.00	5.00

D) SENSORY EVALUATION:

It was carried out by 9-point hedonic scale in terms of attributes such as appearance, colour, falvour, crispness, sweetness taste and overall acceptability.

RESULT AND DISCUSSION:

Table2 Chemical Composition of flour (%)

Parameters	Wheat Flour		Bengal gram flour		Ragi Flour		Soybean Flour	
	Unmalted	Malted	Unmalted	Malted	Unmalted	Malted	Unmalted	Malted
Moisture	12.20	14.90	9.90	9.80	12.67	11.70	4.37	6.70
Ash	2.70	3.88	2.70	3.00	1.76	7.93	4.63	4.67
Protein	11.10	11.40	20.80	21.00	6.52	6.50	35.17	35.10
Crude Fiber	1.90	2.01	1.20	3.90	3.62	3.80	10.38	14.60
Pat	1.70	2.73	5.60	5.57	1.08	1.11	15.42	15.30
Carbohydrate	68.40	72.10	59.80	60.9	76.51	76.55	23.65	18.70

Table 3 Chemical Composition of Biscuit (%)

Sample	Moisture	Protein	Fat	Crude Fiber	Ash	Sugar
C	1.12	7.50	22.00	0.58	0.50	22.00
C1	3.30	4.30	20.10	1.30	4.30	20.00
C2	1.98	6.00	25.60	0.88	0.57	17.00
C3	3.11	3.31	21.40	0.92	3.12	15.50
C4	2.90	2.35	22.80	2.01	2.19	13.80
C5	1.70	2.42	20.20	1.48	2.57	19.10
C6	2.02	7.80	21.80	1.89	2.48	22.67
SE	0.211	0.287	0.121	0.258	0.257	0.387
CD	0.228	0.298	0.108	0.247	0.312	0.412

Table 4 Organoleptic attributes of biscuit

Sample	Appearance	Colour	Flavor	Crispness	Smell	Sweetness	Taste	Overall Liking
C	7.00	7.00	8.00	8.50	7.50	6.00	6.00	8.00
C1	3.00	4.00	5.00	3.60	5.00	5.00	6.00	4.00
C2	3.00	5.00	6.00	3.40	5.00	6.00	4.00	4.00
C3	4.00	5.00	6.00	2.30	6.00	7.00	5.00	5.00
C4	5.00	6.50	6.50	2.50	7.00	6.00	6.00	6.50
C5	7.50	7.50	7.00	2.50	7.00	8.00	7.00	7.00
C6	8.00	7.00	6.00	6.50	6.50	7.00	8.00	7.00
SE	0.134	0.245	0.563	0.657	0.648	0.453	0.563	0.675
CD	0.243	0.365	0.634	0.764	0.754	0.564	0.675	0.777

DISCUSSION:

Chemical Composition of unmalted and malted ragi flour, bengal gram flour, wheat flour, soyflour given in table 2. Thus malting was useful to increase the ash content, crude fibre and carbohydrate of all flours except soybean .It improved the digestibility and bioavailability of nutrients and sensory and nutritional quality. (Nirmala and Subha 2000, Rita etal, 2010).

Table No.3 showed that crude fibre, minerals and protein content of supplemented flour biscuit (C6) was higher than market biscuit . Protein of biscuit sample (C4, C5) was slightly decreased as amount increased (Singh et.al, 2005). Increased in Bengal Gram Flour increased the sensory scores for colour and flavour but crispness decreased. Non significant critical difference also revealed the same thing. 45% wheat flour

and 30% bengal flour, was better for increase in nutritional quality of biscuit. Substitution of soyflour more than 6% resulted into decreased in crispness of the biscuit this might be due to effect of oil in soybean.

CONCLUSION:

The biscuit sample prepared with incorporation of higher amount of malted ragi flour which is rich in minerals, crude fibre. Addition of bengal gram flour increased protein, fibre, fat and mineral, so malting is beneficial. Nutritional addition of bengal gram flour to the biscuits proved to be superior in quality. Sprouted wheat flour made biscuit much easier for children to digest since much of the sugar is vegetable sugar. Thus the biscuit sample prepared with 45% wheat, 30% bengal gram, 15% ragi, & 5% skim milk powder was good in taste, nutritionally balanced & acceptable by the people.

REFERENCES:

- 1) Gopalan C, BV Ramasastri and SC Balasubramanian, (2004). *Nutritive value of Indian Food*. National Institute of Nutrition (NIN). Indian Council of Medical Research, Hyderabad, pp-59-67.
- 2) Hussein, AMS, Amal SA, Amay MH, Abber AA and Gamal HR (2011). *Physicochemical, Sensory and Nutritional Properties of corn-fenugreek flour composite biscuits*. Australian Jr. of basic and applied sciences 5(4): 84-95.
- 3) G Kaletune & K Breslauer, (2003), *Characterization of Cereals and Flours, Properties, Analysis & Applications*. New York Marcel Dekker (Food Science and Technology).
- 4) MO Oluwanakomi, IB Oluwalana, and OF Akinbowale (2011). *Physicochemical and sensory properties of wheat cassava composite biscuit enriched with soyflour* African Journal of Food Science 5(2): 50-56.
- 5) M.J. Moreno-Alvarez, R. Hernandez, DR Belen Camacho, CA Medina-Martinez, (2009) *Making of bakery products using composite flours: Wheat and cactus pear stems*. Jr. Of PACD 11: 78-87.
- 6) Nirmala M., MV Subba Rao and G. Murlikrishna (2000). *Carbohydrates and their degrading enzymes from native and malted finger millet (Ragi, Eleusine coracana, Indaf-15)*. Food Chem., 69: 175-180.
- 7) Nirmala M. and G. Murlikrishna,(2002). *Changes in starch during malting of finger millet and its vitro digestibility studies using purified ragi amylases*. J. Eur Food Res. Technol, 215(4): 327-333.
- 8) Ranganna S., (2009) *Handbook of analysis and quality control for fruit and vegetable products*. Tata McGraw Hill Pub. Co.Ltd., New Delhi.
- 9) Rita E. Sanful, Adiza Sadik and Sophia Darko, (2010) *Nutritional and Sensory Analysis of Soya Bean and Wheat Flour Composite Cake* Pakistan Journal of Nutrition 9(8): 794-796.
- 10) Shakuntala B. Masur, K.C. Tarachand And Uma N. Kulkarni, (2009) *Development of high protein biscuits form bengal gram flour*, Karanataka J. Agric. Sci., 22(4):862-864.
- 11) Singh, G., S. Sehgal and A. Kawatra, (2006). *Sensory and Nutritional evaluation of cake developed from balanced and malted pearl millet*. J. Food Sci. Technol., 43(5):505-508.
- 12) Singh, P., G.Singh S. Srivastava and P. Agarwal, (2005). *Physico-chemical characteristics of wheat flour and millet flour blends*, J. Food Sci. Technol, 42(4):340-353.
- 13) Tahir , A.T., V.D. Pawar and V.M. Ingle (1984) *Nutritional improvement of grain sorghum by germination* Indian J.Nutr. Dietet 21 :168-173.
- 14) Udachan IS, Sahoo AK & Hend GM (2012) *Extraction and characterization of Sorghum (Sorghum bicolor L. Moench) Starch*. Inter Food Res. Jr. 19(1): 315-319.