JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

"Studies on development technology for preparation of Nutri Burfi using Oats and Flaxseeds"

Ranjeet chunilal Kokani*[1], Chaitanya Rajesh Farde[1],
Principal*[1], Student[1], Department of Food Process Technology, College of Food Technology, Saralgaon Tq.Murbad Dist. Thane
Affiliated to Dr.B.S.K.K.V.Dapoli (Maharashtra)

Abstract
Burfi is a popular khoa based confection and it's contains considerable amount of milk solids. The manufacture of value added product by using flaxseeds and oats which is rich lignans, antioxidants, fiber, protein and polyunsaturated fatty acids such as alpha-linolenic acid(ALA),or omega-3.Oats contain thiamine, zinc, magnesium, iron, manganese, phosphorus and selenium. The present study was undertaken with the objective of developing Burfi with enhanced nutritional properties and acceptable sensory attributes. The product was prepared by using khoa (6% Fat) and Oats along with flaxseeds in the ratio of 00:00, 30:20, 35:15 and 40:10. Preparation of Burfi khoa taken in pan add oats –flaxseeds and sugar, heating continuous stirring cum scrapping up to desired consistency then spreading on butter paper and cut into rectangular shape. The proximate analysis of prepared Burfi was analyzed Ash content 2.4±0.03, Moisture content 22.40±0.0%, fat content 19.50±0.04%, Protein content was found to be 9.14±0.02%, Carbohydrates 29.04±0.01% and Energy Value was 299.01±0.01kcal. Sensory evaluation T2 received highest scores (9) for colour and appearance, texture (8.5), flavour (8.5) and taste (8) on 9 point Hedonic Scale. It was concluded that the Burfi made from oats and flaxseeds can be store for 20 days in butter paper and aluminum foil at 5^0C Temperature. So the Burfi made from oats and flaxseeds can be satisfy the consumer in accepts and quality.
Keywords- Burfi, Khoa, Oats, flaxseeds, Formulation, Sensory evaluation, proximate analysis, Storage study

Introduction

Milk is the traditional diet has varied greatly in different region of the world. Milk is regarded as a complete food in a human diet. Milk is provided the entire nutrient essential for the nourishment of the human body. Milk is consume as a whole or by converting it into various milk products like concentrated milk product, coagulated, fermented, fat rich and frozen milk product. Milk sweets have been an inseparable part of the socio-cultural life in the Indian sub-continent. The reflect wealth and status of the people. In India khoa is widely as a base material for the preparation of variety of popular indigenous sweets. It contains fairly large quantities of muscle building protein, bone farming minerals and energy giving fat and lactose (Bhutkar et al., 2015).

India is world's largest producer of milk, producing 127.85 million tonnes per annum, that is 15% of world's milk production (Sharma et al., 2014). About 50-55% of the total milk produced in India is converted into traditional milk products such as paneer, dahi, khoa, etc, while share of the khoa is about 7% out of total milk production (Kumar, 2013).

Burfi is one of the most popular khoa based sweet, prepared from cow or buffalo milk. Burfi is prepared by heating the mixture of khoa and sugar to a near homogenous consistency followed by cooling and cutting it into small cuboids (Chetana et al., 2010). It basically has mild caramelized flavor. Its colour may vary from light off white, creamy to light brown. Good quality Burfi is characterized by moderately sweet taste, soft and slightly greasy body and smooth texture with very fine grains. Due to unique adaptability of khoa in terms of its flavor, body and texture to blend with wide variety of food, various forms of Burfi are available with different additives depending on regional preference viz. plain, mawa, chocolate, fig, rawa, cashewnut, coconut, chocolate, etc (Golande et al., 2012; Kamble et al., 2010).

The unique adaptability of khoa in terms of its flavour, body and texture to blend with a wide range of food adjust had permitted development of an impressive array of Burfi varieties. In India for all the classes of people the fruits like papaya, orange, pineapple, fig, Muskmelon, guava etc are popular and regular consumed fruits. The manufacture of value added products like filled dairy products could be a better alternative. From the nutritional point of view Muskmelon fruit is a good source of sugar and various vitamins like A and C it also contains calcium, phosphorus, iron, potassium. Now-a-day local producers are using orange, mango, coconut etc in preparation of Burfi. In present study the Muskmelon used for the Burfi.

Muskmelon (Cucumis melo L.) commonly called as cantaloupe is a member of Cucurbitaceae family. Consumer preference for this fruit is determined largely by its rich source of phytonutrients, sweetness, flavor or aroma and texture. Muskmelon is commercially important fruit cultivated throughout the world, in tropical and sub - tropical countries. In India, muskmelon occupies an area of about 36.70 thousand hectares with an annual production of about 760.81 thousand metric tonnes (Indian Horticulture Database, 2015).

The fruit crop is cultivated widely by farmers in our country particularly during the summer season. The important varieties grown in India are 'Pusa Sarbati', 'Hara Madhu', 'Pusa Madhuras', 'Arka Rajhans', 'Arka Jeet', 'Durgapur Madhu', and 'Narendra Muskmelon-15'. Muskmelon is commonly cultivated in Punjab, Tamil Nadu, Lucknow, Uttar Pradesh, Maharashtra, and Andhra Pradesh.

Muskmelon flesh contains 3.5 g carbohydrates, 0.3 g protein, 0.2 g fat, 3420 IU vitamin A, 26 mg ascorbic acid, 23 mg calcium, 1.4 mg iron, 14 mg, phophorus and 341 mg potassium. Muskmelon is relished as a desert fruit, low in calories and fats or cholesterol and is an excellent source of vitamin A and C and minerals. In melons there are many phytochemicals that may have a vast array of potential health benefits.

The most important genera of melon, cucumuis (muskmelon) and citrullus (water melon), are also known as sweet melons or dessert. Melon is one of the most widely used fruits and stands at 4th in ranking of mostly consumed fruits in the world as source of food. Muskmelon has a high commercial value and is appreciated because of its peculiar sensory and nutritional characteristics.

However, it has a very short postharvest shelf-life exhibiting a sign of quality degradation by excessive softening, flavor deterioration, a decline in sugar content and therefore increased vulnerability to pathogens. Hence transport of the matured fruit to long distance markets increases the risk of quantity and quality loss leading to enormous wastage. Due to look of appropriate storage and trade expertise, producers are enforced to dispose their harvest at minimal rate leading to diminishing returns during the glut season. It is reported that in developing countries producers lose more than 35 % or 32 - 40 billion annually, after the crop is ready to harvest and before it is consumed (Parveen et al., 2014)

Materials and Methods

Procurement of Raw Material

Raw materials required during present investigation were procured from local market of Saralgaon such as Oats, Flaxseeds, sugar, ghee, khoa and cardamom etc. Most of the chemicals and equipments used in this investigation were of analytical grade which are obtained from College of Food Technology Saralgaon, Thane

Physical Properties of Burfi

The colour and shape of Burfi was determined by visual observations, the length, breadth and width of Burfi was measured by vernier caliper. Total Soluble solids determined by using hand refractometer. The weight of Burfi was measured on analytical weighing balance.

Chemical Properties of Burfi

Proximate composition such as moisture, ash, crude fat, crude protein and crude fibre of all the Ingredients and Crackers was determined according to the procedures given in AOAC (2000). For moisture determination samples were dried in oven at 130ºC for 60 minutes. For ash determination samples were placed in muffle furnace at 550ºC to burn out all carbon compounds leaving in

organic part (ash). Fat was determined by fat extraction unit by using Hexane. For fibre determination, samples were treated with 1.25% Sulphuric acid and Sodium Hydroxide solution. After filtration of digested material it was washed with hot water and then ignited. By calculating loss of weight after ignition, crude fibre contents were determined. Protein contents were determined by using Kjeldahls unit.

Sensory Evaluation of Burfi

Prepared product were evaluated for sensory characteristics in terms of appearance, color, flavor, after taste, texture and overall acceptability by 10 semi-trained panel members comprised of academic staff members using 9-point Hedonic scale. Judgments were made through rating the product on a 9 point Hedonic scale with corresponding descriptive terms ranging from 9 'like extremely' to 1 'dislike extremely'. The obtained results were recorded in sensory score card.

Statistical Analysis of Burfi

The analysis of variance of the data obtained was done by using completely randomized design (CRD) for different treatments as per the method given by Panse and Sukhatme (1967). The analysis of variance revealed at significance of $p<0.005$ level S.E and C.D. at 5 percent level is mentioned wherever required.

3.2.1. Formulation of Nutri Burfi

Burfi prepared with incorporation varying levels of Oats with flaxseeds were investigated. The formulation was made by varying levels of Oats, and flaxseeds *viz.*, 00:00, 30:20, 35:15 and 40:10 percent T0, T1, T2 and T3 respectively and data given are illustrated in table 1.

Table 1: Formulation for preparation of Nutri Burfi

Ingredients	Treatments			
	T0	**T1**	**T2**	**T3**
Oats	00	30	**35**	40
Flaxseeds	00	20	**15**	10
Khoa	95	40	**40**	40
Ghee	00	05	**05**	05
Sugar	05	05	**05**	05

Where, T0- 00 g Oats + 00 g Flaxseeds
T1- 30 g Oats + 20g Flaxseeds
T2- 35 g Oats + 15g Flaxseeds
T3- 40 g Oats + 10g Flaxseeds

Sugar and khoa were used at 5g and 40percent in each formulation of Burfi. Sample T2 of Nutri Burfi was organoleptically acceptable and used for further study.

Preparation of muskmelon Burfi

Flow sheet for Preparation of muskmelon Burfi incorporated with stevia

Grinded oats and flaxseeds and Khoa were mixed with different variation as per Table 1 with other ingredients such as sugar. Then all ingredients mix proper and heated continuously to desired consistency. The detail procedure used for preparation of Nutri Burfi is presented below in Flow sheet. 2.

Flow sheet No. 2. Preparation of Nutri Burfi

(Mete *et.al*, 2017)

Khoa 35g (30% Moisture Content)
↓
Addition of Sugar and Grinded oats and flaxseeds
↓
Slight heating till dissolve and solid mass stage to get desired consistency
↓
Spreading on butter paper and allow to cool and setting of solid mass
↓
Cutting into rectangular blocks (3cm×2cm×1cm)
↓
Packaging in Butter Paper and Aluminum Foil
↓
Storage at room temperature

Results and discussion

Chemical Properties flaxseeds:-

Parameter	Units
Moisture Content	6.99%
Ash	4 %
Protein	21.76%
Fat	42.4%

The chemical parameters of Flaxseeds were found out to be moisture content (6.99%), ash (4%), Protein (21.76%) and fat (42.4%) respectively according to AOAC methods.

Chemical Properties Oats:-

Parameter	Units
Moisture Content	7.29%
Ash	3.5%
Protein	15-17%
Fat	4.5%

The chemical parameters of oats were found out to be moisture content (7.29%).The Ash content is about (3.5%). Protein content was (15-17%) and fat was about (4.5%) respectively according to AOAC methods.

Physical and Chemical properties Nutri Burfi

Physical Properties of Nutri Burfi

Physical properties	Nutri Burfi
Colour	Brown
Shape	Rectangular
Weight	10gm
Dimension	3cm×2cm×1cm
TSS	75.5^0Brix

Physical Properties of Nutri Burfi were carried out each parameter colour, shape, weight, dimension and TSS which shows value are Brown, rectangular, 10gm, 3cm×2cm×1cm and 75.5^0Brix respectively.

Chemical Properties of Nutri Burfi

Chemical Parameter	Selected Sample
Ash	2.4±0.03
Moisture	22.40±0.0
Fat	19.50±0.04
Protein	9.14±0.02
Carbohydrates	29.04±0.01
Energy Value	299.01±0.01kcal

Chemical Properties of Nutri Burfi carried out and value such as Ash content 2.4±0.03, Moisture content 22.40±0.0%, fat content 19.50±0.04%, Protein content was found to be 9.14±0.02%, Carbohydrates 29.04±0.01% and Energy Value was 299.01±0.01kcal. This result similar or approximately to Mete *et.al.*,2017, Navale *et.al.*,2014, Patil *et.al.*,2015, Chetana *et.al.*,2010 and Nilanjana *et.al.*,(2017) respectively.

Sensory Evaluation of Nutri Burfi

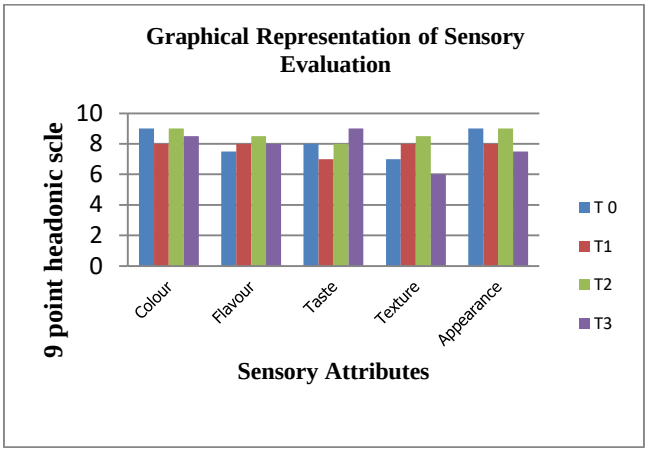
Table of Sensory Evaluation of Nutri Burfi

	T0	T1	**T2**	T3
Colour	9	8	**9**	8.5
Flavour	7.5	8	**8.5**	8
Taste	8	7	**8**	9
Texture	7	8	**8.5**	6
Appearance	9	8	**9**	7.5

The study was undertaken to evaluate the preparation of Nutri Burfi. The Nutri Burfi was prepared by adding various levels of Oats and flaxseeds as per the formulation represented in Table 1and sensory score obtained for the present study is described in Table 5.

Burfi sample blended with 40% oats and flaxseeds scored the highest score 9 (T2) for colour also get similar score for control sample (T0) where as lowest score was 8 (T1). The score recorded for flavor highest score 8.5 (T2) and similar score get for T1 and T3 was 8 and lowest score for T0. The highest scored get 9 (T3) for taste also get similar score for T0 and T3 was 8 and lowest score for T1. The score recorded for texture highest score 8.5 (T2) and lowest score was 6 (T3). For appearance highest score 9 for (T2) and lowest score was 7.5 for (T3)

Graphical Representation of Sensory Evaluation



Conclusion

In the present study finally it is concluded that Nutri Burfi prepared from different Variations of oats and flaxseeds has high Nutrition quality and also it is rich in Protein, carbohydrates and some vital minerals such as calcium and iron in proper amount and has great health benefits. The present investigation carried out for information of Burfi in which T2 sample found more superior than sample T1 and T3 so, T2 sample is more acceptable on its sensory attributes.

Literature Cited

- Aparna A.Shrivas (2017) Asian J.Home sci . (2) Dec, 2017 522-530
- Anon 2001 . Shelf life enhancement of coconut Burfi.
- Anurag ,Chawla R, Khatkar SK and Bhaskar D. Effect of temp. on physicochemical and sensory attributes of sottle gourd.
- Chandra Shekhar Singh and Vinod Kumar Paswan (2017). The potential of Gardencress seed for development of functional foods . *Advances in seed Biology Jose.C. Jimenezpez, zn tech open. DOI.*
- Gopalan C., Rama Shastri BV & Bala Subramanian SC (2004). Nutritive value of Indian foods (National Institute of Nutrition , Indian council of median Research Hydrabad. Indian).
- Lahankar S.G. Narwade & M.S. Kamble. Preparation of burfi blended with green peas : Int J. curr. Microbial App sci. (2018) special issue 6 : 2320-2325.
- Lyeson J. B. , Kovaes N. &Laurie W. 1964. An improved method of isolating salmonellae from contaiminated desiccated coconut J. clin Pthol . 17 (1) , 75-78.
- Kapila Kamble, P.A. Kahate, S.D.. Chavan and V.M. Thakare.(2010) effect of pine apple pulp on sensory and chemical properties of burfi 2(7).329-331
- Kaur T& Sharma M. (2016) "Enrichmentt of traditional Indian food preparation with Gardencress seeds ." Int J food nutr . sci. vol. 4, pp 157-162.
- Khetarpaul . N, Grewal .R and Jood .S.,(2005), Bakery Science And Cereal Technology. *Daya Publishing House*.
- Mete BS ,Shere DM, Sodowar SK Studies on preparation of khajooor (phoemix dactyeifera) Burfi trends in Bioscience. 2017; 10(22)
- Mohd. Sharique Khan , Anil Dutt Semwal, Gopal Kumar Sharma , Deep N. Yadav .(2007) studies on the development & storage stability of groundnut burfi : Jornal of food quality 31 (5) ; 612-626.
- Narasimhacharv S. Vijayalakshimi , A.R. Indiramma , Prema Viswanath, Anupama Dattatreya (2005). Extension of the shelf life burfi by [packaging. Journal of food quality 28(2) : 121-136.
- Razavi S., Phillips G. and Behrouzian F (2014). Cress Seed (Lepidium Sativum) Mucilage, an 30. Singh C. and Paswan V. (2017). The Potential of Garden Cress (Lepidium Sativum L.) Seeds for Development of Functional Foods, *Advances in Seed Biology*, 280-294. Overview, *Bioactive Carbohydrates and Dietary Fibre* 3:17-28
- Ramakrishna Chetana , Ramasamy Ravi , S. Yella Reddy. Effect of processing variables on quality of milk burfi prepared with & without sugar. 2010. *Journal food science & Technology-Mysore-47(1) : 114-8.*
- R. Patil, P. Sawant & Schin Rajaram Todkar (2015) .Physicochemial analysis & sensory evalution of Burfi Enriched with dried dates.
- Rathore T., Singh R., Kamble D., Upadhya A., Thangalakshmi S. *The Pharma Innovation Journal. (2019), 8(4):283-291.*
- S.S. Bhutkar , Jadhau D.H. & Tungar N.M. (2015). Effects of elephant foot yam pulpon sensory & chemical properties of Burfi. IOSR journal of Agriculture & Veterinaey sci. Volume 8. Issue 4 ver. 1(Apr.2015) pp.22-24.
- Sharma G.K.,Saraswat D.S. & Sharma S.D. 1992. Studies on Bacteria Quality of khoa. Ind. Dairy sci. 25, 300-321.
- Sharma S. and Agarwal N. (2011). Nourishing and Healing Prowess of Garden Cress (Lepidium Sativum L.) – A Review, *Indian Journal of Natural Products and Resources* 2(3):292- 297.
- Tiwar P.N., Kulmi G.S. 2004. Performance of chandrasur (lepidium sativum) under different levels of nitrogen & phosphorus . J. med Arom Pj sci. 26 : 479-481.
- Venkata S. Kchi , J. Kabir , F.K. Bouri, Rajesh Gupta & R.S.Dhua . influence of packaging material on quality of Banana Burfi during storage . International journal of Current microbiology & applied science ISSN: 2319-7706 Volume 6 no. 7 (2017) pp. 118-127.
- A.O.A.C. 2000 Official Methods of Analysis 17th ed. Association of Official Analytical Chemists International. Washington, DC, USA.
- Baisya, R. K. (1980). Fruits and Vegetables processing industry in India. Its Problems and Prospects. Indian Food Packer 34(6): 29.
- Bose, T. K. and Som, M. G. 1986. Vegetables crops in India. Department of
- Horticulture. Bidhan Chandra Krishi Viswavidyalaya, Kalyani 741235 India. Naya Prokash, Calcutta- Six. 352-409 pp.
- Chopra, R. N. 1933. Indigenous drugs of India, The Art press, Calcutta.
- Gopalan C, Ramasastry BV, Balasubramanium SC. Nutritive value of Indian foods. Hyderabad: National Institute of Nutrition; 1991. P.47.
- V. G. Panse and P. V. Sukhatme, " Statistical Methods for Agricultural Workers ," 2nd Edition, Indian Council of Agricultural Research, New Delhi, 1967.
- Ranganna, s., 1977, Manual of Analysis of Fruits and Vegetables products. Tata McGraw-Hill publishing Co. Ltd., New Delhi. Pp. 634.
- Richard, D. (1981). 'A Carrot a day keeps cancer away'. The Times of India, February 10, 9 p. d.
- Katare C, Saxena S, Agrawal S, Prasad GBKS, Bisen PS (2012) Flax Seed: A Potential Medicinal Food. J Nutr Food Sci 2:120.
- Seema Sangwan1 , Rameshwar Singh2*, Sudhir Kumar Tomar1 *et. Al.*,(2014) Nutritional and Functional Properties of Oats: An Update
- N.N. Desai and V.M.Modi *et. Al.*,(2019).Physical properties of Date fruits. *Int.J.Curr.Mirobial.App.Sci*(2019)5(4):1243-1249
- C. Aydin / Journal of food Engineering 60 (2003)315-320 Physical Properties of almond nut and kernel
- S. Mohan Jain Department of Agricultural Sciences, University of Helsinki, PL-27, Helsinki, Health Benefits of date palm: phytochemicals and their functions, 2011
- Robin G. Allaby, Georgy W. Peterson, David Andrew Merriwether, Yong-Bi Fu *et.al.*, (2005). Evidence of the domestication history of flax,2005.
- Ladizinsky G, Genetic Resources and Crop Evaluation 01Apr 1999, 46(2):143-147
- Pola Sudhakar , Priyanka K , Angelena E. Peter , B. V. Sandeep , M Rameshwari , B. Ganga Rao *et. Al.*, (2018) A Study on the proximate composition and nutritive value of local tree almond, *Prunus amygdalus*
- Singh J, Solomon S, Kumar D (2013) Manufacturing Jaggery, a Product of Sugarcane, As Health Food. Agrotechnol S11: 007. doi:10.4172/2168-9881.S11-007
- Physical and chemical characteristics of cashew nut flour stored and packaged with different packages Bruna Carolina, GADANI Kelly, Márcia Lazarotto, MILÉSKI Lucas, Silva PEIXOTO Juliana da Silva AGOSTINI Food Sci. Technol vol.37 no.4 Campinas Oct./Dec. 2017 Epub May 02, 2017
- Nejo, R, Oloko, S.A. Determination of Some Physical Properties of Cashew Nut IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 3 Issue 10, October 2016
- Elina L, Vijay G. Incorporation of ground flaxseed into bakery products and its effect on sensory and nutritional characteristics – a pilot study. J Foodserv. 2009.
- Oomah BD, Sitter L. Characteristics of flaxseed hull oil. Food Chem. 2009.
- .