

Preparation of Biscuits by Using Lotus Seed, Pearl Millets and Multigrain Wheat for Elderly People

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Abstract: The present study was undertaken to develop flour by blending and lotus seed flours with whole wheat flour in different flour multigrain flour and pearmillets were prepared respectively. Physico-chemical, mineral estimation and functional properties were studied on mixed flour variations. Nutritional evaluation shows that the incorporation of multigrain and lotus seed flour in regular wheat flour increases its quality. The functional properties of composite flours were analyzed. Water absorption capacity and oil absorption capacity was increased while foam capacity, emulsion activity, decreased with increasing the level of incorporation of other flours. The functional properties of composite flours ranged from for water absorption capacity, oil absorption capacity, foaming capacity and emulsion capacity respectively. The mineral content observed in the range of 8.00(±0.06)-9.29(±0.04), 145.5(±0.16)-172.32(±0.01), 0.119-0.144 mg/100gm. Relevant statistical analysis was done to analyze mean and standard deviation for all tested parameters.

Keywords: Wheat flour, Multigrain flour, Lotus seed, Functional properties, Sensory evaluation.

1. Introduction

Lotus (*Nelumbo nucifera*) is an aquatic perennial plant belonging to family Nelumbonaceae. The species is of significance in South East Asia and the seeds and leaves are also eaten in this region. Lotus seeds are edible, medicinally versatile and used as an important raw material of traditional Ayurvedic medicine to treat many ailments such as tissue inflammation, cancer, diuretics, skin diseases and poison antidote. The seeds are sold in shelled and dried form. In recent years there has been an increase in research on Lotus seeds both nationally and internationally, with its edible value, nutritional value, and commodity value beginning to be recognized. However, research into Lotus seeds mainly focuses on the full ripe stage, and includes seed appearance, nutritional and health properties, processing quality, and starch quality. In a study on the nutritional ingredients present in Lotus seeds, it was found that the seeds contain a certain amount of resistant starch. Resistant starch is a type of starch that can not be absorbed and used by a healthy small intestine, but can be fermented or partly

fermented in the colon by coliform bacteria, resulting in decreased blood sugar and insulin levels, which, in turn, may help to prevent diabetes, hyperlipidemia and colon metabolic diseases

Cookies are the largest part of snack item in the bakery products. It is acceptable for both rich and poor person and also for young and elderly people as a snack due to their low price, shelf-life, easy to eat and also for their nutritive value. Cookies are a baked product and it is easy to digestion and it is easy to carry in the traveling as a snacks. According to a statistical study cookies at a 17.3%, are the second most consumed baked food product after bread. Cookies are widely accepted for all profiles of people from many countries and also a good source for nutritional components. At this time food product company produce different types of cookies like sugar free cookies, protein enrich cookies, wheat germ cookies, lotes cookies and multigrain etc. In the production of cookies mainly three major ingredients are used such as refined flour, sugar and fat and some minor ingredients such as flavonoids, additives. The use of synthetic color in cookies for natural color is no harmful for the health but at the present time food industries are focused on the natural color use in their food product on the demand of the public. Natural color is beneficial for human health and have a wide variety of vitamins, minerals, nutritional value and antioxidant property.

Biscuits represent the largest category of snack item among bakery product (pratima et al., 2000). It has become one of the popular snack foods for both young and elderly people due to their affordable price, convenience, shelf-stable, and nutritive value as compared to any other category of foods multigrain Biscuits often refer to a baked product that is generally prepared using three major ingredients: wheat flour, sugar, fats, and some minor ingredients such as additives and emulsifiers. They are widely accepted and consumed by almost all profiles of consumers from many countries (Ramarathinam et al., 2007) and therefore offer a valuable supplementation vehicle for nutritional improvement (Cardello et al., 1992) It provides an excellent means of improving the nutritional quality (protein,

minerals, vitamins, and bioactive compounds) of foods through incorporation of less expensive wheat flour for food product enrichment (Meilgaard et al., 1999) The idea of utilizing Terminalia arjuna in developing of herbal biscuits emerged from the fact that bakery products are relatively low moisture food with long storage life, they are easily available and can be consumed without any mess

Millets are one of the oldest foods known to humans and possibly the first cereal grain to be used for domestic purposes Millets are small-seeded grasses that are hardy and grow well in dry zones as rain-fed crops, under marginal conditions of soil fertility and moisture. Millets share a set of characteristics which make them unique amongst cereals. Millets grow under dry conditions, can cope with relatively poor soils and require few external inputs. They are a staple food with superior nutritional qualities compared to other cereals. India is the biggest producer of millets in the world and millets remain a staple crop for numerous households. When properly stored, whole millets will keep for two or more years. Baked products are foods mainly based on cereal flours which are blended with other ingredients. Millet protein lacks gluten, hence it is unsuitable as the sole material for preparation of bakery products.

"Multigrain" flour simply means that the loaf contains several different types of grains, distinguishing it from whole grain breads. These grains can include oats, barley, cornmeal, wheat, millet, flax and others. However, there is no universal list of grains that a product with this label must contain. Additionally, the product only needs to contain two or more different grains to be deemed "multigrain" Flour. The term also does not mandate anything about how the grains are prepared. This means that "multigrain" is not always going to be synonymous with "whole grain."

Objective of study:

1. To prepare biscuits by using all the above flour.
2. To prepare different types of nutritive flour for biscuits.

2. Methodology

Collection of raw material: Lotus seed and multigrain Flour was purchased from a local wet market of Lucknow city. The Bakery ingredients such as refined flour, sugar, butter, milk or egg, baking powder, sodium chloride salt were procured from local grocery store of the Lucknow city

Preparation of cookies:

The biscuits were prepared after the flour preparation, following a standard formulation, with the addition of three different levels of Lotus seed flour, and Multigrain flour. Table 1 shows the ingredients and their amounts used in the preparation of the biscuits. Dry ingredients (like Lotus seed flour, Multigrain flour, wheat flour, baking powder) were mixed and sieved twice for uniform mixing of leavening agents to the flour. A weighed amount of salt was added in the flour mixture. A weighed amount of unsalted butter was taken in a

bowl and stirred until it melts. Sugar was added and stirred continuously for creaming. Flour mix was added in smaller amounts into the cream and uniformly mixed. The soft dough was prepared by sprinkling a small quantity of water. The dough was rolled and then biscuits were cut into small round shape using a biscuit cutter. Biscuits were kept in an electric oven for 20 to 30 minutes at 125°C for uniform baking.

Preparation of Different Flour Mix for Biscuits:

For the purpose of standardization of flour mix, a number of preliminary trials were conducted. Different combinations of powders of wheat bran, Multigrain flour and Lotus seed flour viz., 25:75:0, 0:50:50, 20:80:0 percent was used to prepare 100g flour mix for biscuits.

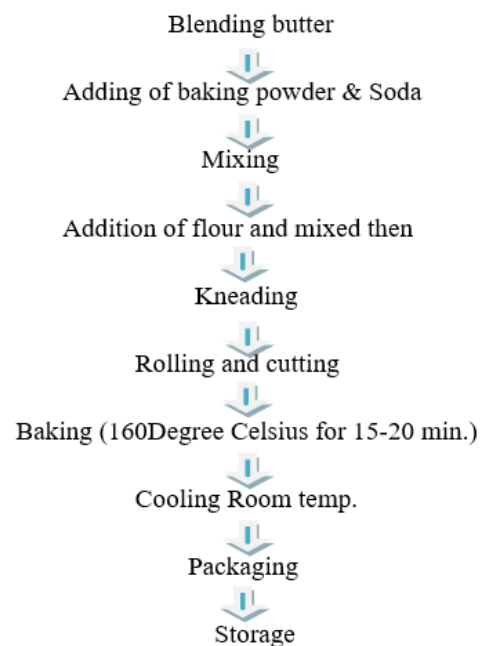


Fig. 1. Flow diagram for preparation of Lotus Seed and multigrain flour cookies

Formulation of Cookies Sample:

Table 1
Formulation of Cookies Sample

Ingredient	Weight in gm
Multigrain Flour	85
Lotus seed Flour	15
Powder Sugar	30
Brown Sugar	20
Butter	50
Almond	5
Baking Powder	0.5
Vanilla Essence	05 Drop
Salt	1.0

3. Method for Evaluation

The prepared product was further evaluated by home members according to certain parameters mentioned in the 9-point taste, texture, color, flavor, mouthfeel and overall acceptance and then marking were given according to them. At

the end of this phase marking of individual products were calculated and the best acceptable product was put forth for the study.

4. Results and Discussions

The experimental Bakery products of refined wheat and lotus seed multigrain pearl, millets wheat flour pigment were characterized as developed product in the present study. The various parameters were incorporated for product development to reach acceptability & edible for human population and elderly people. For that sensory evaluation process was done by set of panelist expertise field of nutrition. For evaluation, a 9-point hedonic scale which is one of the sensory evaluation methods used to evaluate any product. Many parameters were used to analyses the acceptability of developed product these are as taste, texture, appearance, color, flavor, mouth feel, Overall acceptance The total average and standard deviation of individual product was calculated and the best of the one products was for further put forth for the next phase. Individual marking from each of the panel members for different parameters.

5. Conclusion

It was concluded that development and standardization of baked product recipes using millets and lotus seed and multigrain can be popularized and can replaced instead of using refined flour. Can be instilled by introducing them in government food programmes like the mid-day meal scheme. All types of small millet flours can successfully be incorporated for the development of various baked products to benefit consumers. Developed baked products stored in an air tight zip lock plastic bag at room temperature exhibits a good storage stability especially the foxtail millet while pearl millet has less shelf life due to high amount of moisture content.

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