

Developing New Gluten-Free Cracker Formulas Using Various Flour Samples

Halef Dizlek*

Department of Food Engineering, Osmaniye Korkut Ata University, Turkey

***Corresponding author:** Halef Dizlek, Department of Food Engineering, Faculty of Engineering, Osmaniye Korkut Ata University, 80000, Osmaniye, Turkey; Tel: 0090 328 8271000; Email: hdizlek@osmaniye.edu.tr

Mini Review

Volume 4 Issue 3

Received Date: May 17, 2019

Published Date: June 24, 2019

DOI: 10.23880/fsnt-16000184

Abstract

Owing to the change in lifestyle, busy consumers are increasingly purchasing convenient baked goods, such as crackers. Cereal based products particularly crackers are highly appreciated by consumers especially by children because of their crispy texture and characteristic delicious taste. In modern times, people have begun to pay more attention to issues related to healthy food consumption. Nowadays, consumers are more selective and preferring food, not only to taste, but also to take care that they contain more nutritious ingredients in terms of health and this has made it necessary to develop healthy snacks. A very important part of the currently produced crackers is manufactured using soft wheat flour. As is known, wheat flour contains gluten proteins, which hampers the use of food ingredients produced by the component in question by celiac patients. Today, food production for patient groups such as Celiac, Diabetes, Phenylketonuria, Beriberi and Pellagra are among the most important topics that the food industry and the scientists working in this field. Gluten-free cracker studies are not seen in the literature despite the fact that some studies have been carried out scientifically on the cracker which is consumed by being loved and having a long shelf life. Therefore, scientific studies on gluten-free crackers are thought to be useful and necessary. Based on this basic point, the main purpose of the study is; to develop new cracker formulas for celiac patients by using various flour samples (quinoa flour, buckwheat flour, rice flour, corn flour and semolina, almond flour, peanut flour and sesame, chickpea flour and lentil flour) in cracker production. As is known, the main factor affecting the product quality of baked goods is the flour. Because of flour is the main component of many bakery products including crackers. Another aim of the study is to examine the variations in product quality by substituting flour with other flour derivatives in the formula which is the main component of cracker quality.

Keywords: Cracker; Gluten-Free Cracker; Gluten; Celiac Disease; Quinoa Flour; Buckwheat Flour; Rice Flour; Corn Flour And Semolina; Almond Flour; Peanut Flour And Sesame; Chickpea Flour; Lentil Flour; New Product Development; Product Quality

Introduction

Bakery products are well liked by consumers all over the world. The cake, biscuit and crackers, which can be produced with several types and methods, is very important in bakery product industry since the production and the consumption of it increase continuously as a result of the increase in population, urbanization, easement of access and application of new technologies. These products can be produced in wide variety of formulations all over the world. The differences in the formulation of the products make them attractive not only for their pleasing flavors but also for their appearance. Although they contain high levels of calorie, they are preferred because of their sweet taste and easy consumption [1].

Owing to the change in lifestyle, busy consumers are increasingly purchasing convenient baked goods, such as crackers. Cereal based products particularly crackers are highly appreciated by consumers especially by children because of their crispy texture and characteristic delicious taste.

Summary of the Literature

Currently researches have been focused on the development and application of different additives for improving the baking quality and extending the shelf life of baked products such as cake, cracker, and bread [2]. Especially, in the field of cereal-based products, studies have been carried out to replace part of the flour and fat with fibres [3-14].

In modern times, people have begun to pay more attention to issues related to healthy food consumption. Nowadays, consumers are more selective and preferring food, not only to taste, but also to take care that they contain more nutritious ingredients in terms of health and this has made it necessary to develop healthy snacks. The food sector has started to develop new products considering the human health and the nutritional value of the product. The world-wide snack food market continues to grow rapidly. The market of biscuits, cakes, crackers, wafers, corn chips and other snack products has expanded considerably and new products are entering the sector every day. One of these snack products, crackers, are a kind of salted biscuits. Medium strength flour is used and they made from hard dough is a kind of salted biscuits. Diversity, easy/long serviceability and convenient accessibility increase the margin of the crackers.

In Turkey, the consumption of crackers, which are consumed as snack products in our meals, in this sense lead to a meal skipping and have a relatively satisfactory effect, is increasing day by day. A very important part of the currently produced crackers is manufactured using soft wheat flour. As is known, wheat flour contains gluten proteins, which hampers the use of food ingredients produced by the component in question by celiac patients. Today, food production for patient groups such as Celiac, Diabetes, Phenylketonuria, Beriberi and Pellagra are among the most important topics that the food industry and the scientists working in this field.

The Importance and Purpose of the Study

Gluten-free cracker studies are not seen in the literature despite the fact that some studies have been carried out scientifically on the cracker which is consumed by being loved and having a long shelf life. Therefore, scientific studies on gluten-free crackers are thought to be useful and necessary. Based on this basic point, the main purpose of the study is; to develop new cracker formulas for celiac patients by using various flour samples (quinoa flour, buckwheat flour, rice flour, corn flour and semolina, almond flour, peanut flour and sesame, chickpea flour and lentil flour) in cracker production. As is known, the main factor affecting the product quality of baked goods is the flour. Because of flour is the main component of many bakery products including crackers. Another aim of the study is to examine the variations in product quality by substituting flour with other flour derivatives in the formula which is the main component of cracker quality.

Materials and Methods

In the study, the cracker sample to be produced using wheat flour will be considered as a control sample and the other cracker formulas will be evaluated by comparison with the control sample. As a wheat flour substitute, quinoa flour, buckwheat flour, rice flour, corn flour and semolina, almond flour, peanut flour and sesame, chickpea flour and lentil flour will be used as a wheat flour substitute. The other cracker components except the flour will be kept constant in the formula and the effect of the flour type used on cracker quality will be investigated. The following analyzes will be applied to the produced cracker:

- Chemical Analysis; Moisture, ash, crude protein and crude oil content, approximate carbohydrate amount, energy value and pH determination.

- Physical Analysis; Diameter, thickness, volume, specific volume, cooking loss, cracker yield, color values and textural properties.
- Sensory Analysis and
- Statistical Analysis.

Conclusion

When the research is completed, the findings will be discussed in the following articles.

Conflicts of Interest

The author declares that he has no conflict of interest.

Funding

This study was supported by the Scientific Research Projects Unit of Osmaniye Korkut Ata University.

References

1. Kotoki D, Deka SC (2010) Baking loss of bread with special emphasis on increasing water holding capacity. *J Food Sci Tech Mys* 47: 128-131.
2. Dizlek H, Altan A (2015) Determination of sponge cake volume with a mathematical method. *Qual Assur Saf Crop* 7(4): 551-557.
3. Kotoki D, Deka SC (2010) Baking loss of bread with special emphasis on increasing water holding capacity. *J Food Sci Tech Mys* 47: 128-131.
4. Arora A, Camire ME (1994) Performance of potato peels in muffins and cookies. *Food Res Int* 27(1): 15-22.
5. Baixauli R, Salvador A, Hough G, Fiszman SM (2008) How information about fibre (traditional and resistant starch) influences consumer acceptance of muffins. *Food Qual Prefer* 19(7): 628-635.
6. Grigelmo-Miguel N, Carreras-Boladeras E, Martín-Belloso O (1999) Development of high-fruit-dietary-fibre muffins. *Eur Food Res Technol* 210(2): 123-128.
7. Grigelmo-Miguel N, Carreras-Boladeras E, Martín-Belloso O (2001) Influence of the addition of peach dietary fiber in composition, physical properties and acceptability of reduced-fat muffins. *Food Sci Technol Int* 7(5): 425-431.
8. Hudson CA, Chiu MM, Knuckles BE (1992) Development and characteristics of high-fiber muffins with oat bran, rice bran, or barley fiber fractions. *Cereal Food World* 37(5): 373-376, 378.
9. Jung JY, Kim SA, Chung HJ (2005) Quality characteristics of low-fat muffin containing corn bran fiber. *J Korean Soc Food Sci Nutr* 34: 694-699.
10. Kalinga D, Mishra VK (2009) Rheological and physical properties of low fat cakes produced by addition of cereal β -glucan concentrates. *J Food Process Pres* 33: 384-400.
11. Martínez-Cervera S, Salvador A, Muguerza B, Moulay L, Fiszman SM (2011) Cocoa fibre and its application as a fat replacer in chocolate muffins. *Lebensm-Wiss Technol* 44: 729-736.
12. Nasar-Abbas SM, Jayasena V (2012) Effect of lupin flour incorporation on the physical and sensory properties of muffins. *Qual Assur Saf Crop* 4: 41-49.
13. Rupasinghe HPV, Wang L, Huber GM, Pitts NL (2008) Effect of baking on dietary fibre and phenolics of muffins incorporated with apple skin powder. *Food Chem* 107(3): 1217-1224.
14. Shearer AEH, Davies CGA (2005) physicochemical properties of freshly baked and stored whole-wheat muffins with and without flaxseed meal. *J Food Quality* 28: 137-153.
15. Warner K, Inglett GE (1997) Flavor and texture characteristics of foods containing Z-trim corn and oat fibers as fat and flour replacers. *Cereal Food World* 42: 821-825.

