

Міністерство освіти і науки України

Національний університет харчових технологій

85
Ювілейна Міжнародна
наукова конференція молодих
учених, аспірантів і студентів

"Наукові здобутки молоді –
вирішенню проблем
харчування людства у ХХІ
столітті"

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Частина 1

Київ НУХТ 2019

85 Anniversary International scientific conference of young scientist and students "Youth scientific achievements to the 21st century nutrition problem solution", dedicated to the 135th anniversary of the National University of Food Technologies, April 11-12, 2019. Book of abstract. Part 1. NUFT, Kyiv.

The publication contains materials of 85 Anniversary International scientific conference of young scientists and students "Youth scientific achievements to the 21st century Nutrition problem solution".

It was considered the problems of improving existing and creating new energy and resource saving technologies for food production based on modern physical and chemical methods, the use of unconventional raw materials, modern technological and energy saving equipment, improve of efficiency of the enterprises, and also the students research work results for improve quality training of future professionals of the food industry.

The publication is intended for young scientists and researchers who are engaged in definite problems in the food science and industry.

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Матеріали 85 Ювілейної Міжнародної наукової конференції молодих учених, аспірантів і студентів "Наукові здобутки молоді – вирішенню проблем харчування людства у ХХІ столітті", присвяченої 135-річчю Національного університету харчових технологій, 11–12 квітня 2019 р. – К.: НУХТ, 2019 р. – Ч.1. – 527 с.

Видання містить матеріали 85 Ювілейної Міжнародної наукової конференції молодих учених, аспірантів і студентів.

Розглянуто проблеми удосконалення існуючих та створення нових енерго- та ресурсощадних технологій для виробництва харчових продуктів на основі сучасних фізико-хімічних методів, використання нетрадиційної сировини, новітнього технологічного та енергозберігаючого обладнання, підвищення ефективності діяльності підприємств, а також результати науково-дослідних робіт студентів з метою підвищення якості підготовки майбутніх фахівців харчової промисловості.

Розраховано на молодих науковців і дослідників, які займаються означеними проблемами у харчовій науці та промисловості.

Рекомендовано вченою радою Національного університету харчових технологій. Протокол № 8 від 28 березня 2019 р.

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8. Reducing the glycemic index of bakery products by using non-bakery flour

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Introduction. Human health largely depends on diet. The bakery products are main part of the nutrition population. In addition, the structure of nutrition is characterized by reduced consumption of most dietary products, while the use of a large number of simple carbohydrates increases with each passing year.

Materials and methods. The dough was made from whole grain rye flour, wheat flour, dry leave of Stevie, margarine, water extract of Stevie. To optimized recipe formula due to the glycemic index of bakery products, the central composite design was used in the study where three independent variables were selected. GI were calculated by formula. Sensor evaluation was made by experts. Analysis, optimization and response surface graph preparations were conducted with Design Expert 11 Software.

Results and discussion. Preparation of dough from whole grain rye flour is a demanding process since the protein substances of rye differ in their properties from wheat proteins. Recipe formula was improved by adding non-bakery flour (buckwheat, lentil and chickpea) in the range 5...20 %, dry gluten – 5...15 % and bran 1...6 %. Addition of dry wheat gluten to the recipe helped to reduce the glycemic index of products and increase protein content, and on the other hand to smooth the effect of pentosans, which resulted in the porosity of rusk plate increasing from 52 to 60% with an increase in dry gluten. At the same time, an increase in the dosage of whole grain rye flour increased the viscosity of the test.

Results showed that in case the dosage of flour of buckwheat, gluten, and bran was increased, the glycemic index was the lowest. In content of 12.5%, 18.4% and 3%, respectively above average taste scores - 7.4. In this case, the best for the sensor characteristic «taste» was a sample containing - 20%, 15%, 5%, with a calculated glycemic index in range 55...65.

As a result of studies and analyzed the obtained data, it was found that non-bakery flour such as flour of buckwheat, chickpea, and lentil can be used in the amount of 20%, 13.9%, 12.5% for the optimum ratio "glycemic index-taste" in bakery products with low moisture content.

It was found that the exclusion of the sugar formulation leads to a decrease in color intensity of rusks plates, indicating low level of Millard's reaction. However, this drawback leveled out when the rusk had been dried.

Conclusions. It is shown that due to lentil flour it is possible to reduce the glycemic index to a greater extent, but according to the taste characteristics, these products were less attractive compared with the products for which the flour of the other two crops was used. As a result of optimization, recipe compositions were identified, which further research will be conducted. At the same time when calculating the results with the help of software could be chosen more desirable criteria.

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