

Nutritional value of sesame seeds and watermelon seeds

№	Name of component	Sesame seeds	Watermelon seeds
1.	Nutritional value	524kcal	601kcal
2.	Ca	1474mg	54 mg
3.	Mg	540 mg	515 mg
4.	Na	75 mg	99 mg
5.	K	497 mg	648 mg
6.	P	720 mg	755 mg
7.	Fe	16 mg	728 mg
8.	Zn	-	10,24 mg
9.	Cu	-	686 mg
10.	Mn	0,36 mg	1,614 mg
11.	B ₁	1,271 mg	0,19 mg
12.	B ₂	-	0,145 mg
13.	B ₃	-	0,346 mg
14.	B ₆	-	0,089 mg
15.	B ₉	-	58mkg
16.	PP	11,1 mg	17,8 mg
17.	protein	19,4 g	28,33 g
18.	fat	48,7 g	47,37 g
19.	carbohydrates	12,2 g	15,31g
20.	Ash content	5,1 g	9,94g
21.	water	9 g	5,05g

From the comparison table 2 shows that the nutritional value of watermelon seeds larger than sesame thus watermelon seeds are excellent products an additive in halvah.

Conclusions: The results of studies on the chemical and physic-chemical composition. The drawback of this study is incomplete account of all influencing factors in the study of metal impurities, because processing is performed at the plant watermelons automatic equipment. In turn, this situation is likely to cause a reduction of prediction accuracy. Therefore, further studies using these parameters are certainly relevant.

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ANTIOXIDANTS IN DAIRY PRODUCTS

Chimikina Alyona I., muster student of M. Auezov South Kazakhstan State University, Republic of Kazakhstan, Shymkent, Tauke-khan av., 5, e-mail: timonovasokolovskaya@mail.ru

Musulmanova Mukarama M., Dr., professor, chief researcher at the Research Institute of Chemistry and Technology at I. Razzakov KSTU, Kyrgyz Republic, 720044, Bishkek, Mir av., 66, e-mail: kantaria06@mail.ru

The purpose of research is to develop of a new formulation of yogurt with added antioxidants, as that will be used watermelon seeds that enrich yogurt not only with antioxidants, but fill with macro- and microelements, vitamins and amino acids, as well as increase food and biological value of the product. Application of watermelon seeds help to reduce the cost of products and to increase the efficiency of non-waste production. Authors considered and analyzed the mineral, and food composition of watermelon seeds.

Keywords: watermelon seeds, dairy products, benefit, herbal supplements

АНТИОКСИДАНТЫ В МОЛОЧНЫХ ПРОДУКТАХ

Чимикина Алёна Ивановна, магистрант Южно-Казахстанского государственного университета им. М. Ауэзова, Республика Казахстан, г. Шымкент, пр. Тауке-хана, 5, e-mail.: timonovasokolovskaya@mail.ru

Мусульманова Мукарама Мухамедовна, д.т.н., проф., главный научный сотрудник Научно-исследовательского химико-технологического института Кыргызского государственного технического университета им. И. Раззакова, Кыргызская Республика, 720044, г. Бишкек, пр. Мира, 66, e-mail: kantaria06@mail.ru

Целью исследования является разработка нового состава йогурта с добавлением источников антиоксидантов, в качестве которых могут быть использованы семена арбуза, которые обогатят йогурт не только антиоксидантами, но и макро- и микроэлементами, витаминами и аминокислотами, а также повысят пищевую и биологическую ценность продукта. Использование арбузных семян позволит снизить стоимость продукта и организовать безотходное производство. Авторами установлен химический состав арбузных семян.

Ключевые слова: арбузные семена, молочные продукты, растительные добавки.

Kazakhstan has highly developed culture of consumption of dairy products. Everyone knows that yogurt – fermented milk – is helpful for digestion and immunity, so the demand for these products will always be high. The most preferred product as a light breakfast rightfully awarded to yogurt. Today, yogurt can be regarded as the most popular dairy products. It included to many diets and even used in cosmetology. However, not all yogurts presented on the shelves, are able to bring real benefits to the body. Most of them pass through additional heat treatment to increase the shelf life, it makes them useless for health. The real benefit to the body can bring only natural yogurt containing live bacteria, which quantity can reach to at least 10^7 CFU (colony forming units) in one gram of product. Yogurt is a fermented milk product with a high content of non-fat milk solids, which is produced by fermentation milk with special cultures of the *Lactobacillus delbrueckii ssp bulgaricum* and *Streptococcus thermophilus* [1]. Lactic acid bacteria of yogurt can maintain the balance of microorganisms in the gut and eliminate dysbiosis [2]. The main functions of the product, entailing positive changes in human health, due to the specific composition of yogurt:

- prevents the spread of bacteria in the gut rot;
- improves the immune system;
- prevents the infectious diseases;
- promotes digestion;
- destroys staphylococcus and typhoid;
- helps to clean the intestines from toxins and impurities;
- facilitates the process of weight loss.

But the properties of the yogurt can be changed, science and technology is developing, and now it is possible to develop a completely new formulation of the classic yogurt by introducing into

it a small amount of antioxidants of plant origin, for example, watermelon seeds. It is found that all anatomic parts of watermelon including rind, pulp and seeds contain citrulline – nonessential amino acid which is converted into L-arginine in the body. Our body is able to synthesize this amino acid yourself. But taking into account the individuality of the body, there may be a deficit of citrulline, so eating watermelon or part of it, could become a kind of donor. You should know that yellow and orange varieties of watermelons contain the maximum amount of citrulline. Citrulline managed to gain popularity, but in alternative medicine circles. It is often added to the diet of athletes, although clinical trials on the effect of sport endurance have not been conducted. In alternative clinical practice citrulline is used for treat of male impotence (6-18 mg of citrulline malate in the day). According to experts from the US Ministry of Agriculture, this amino acid acts as an antioxidant and vasodilator. Citrulline lowers blood pressure, prevents the development of sickle anemia, has a positive influence on the blood glucose concentration. Our body breaks citrulline with the release of ammonia - a waste product that appears in the urine. Since the seeds are used as antioxidants, let's examine their chemical composition. Watermelon seeds have about 35% protein, and thus contain a large number of amino acids (AA), that are used by body for formation and growth of muscle tissue, for long-term energy synthesis, etc. A particularly important role is played by arginine. This AA is useful for heart, the blood pressure and the risk of coronary heart disease depend on its presence in the body. Other useful amino acids of watermelon seeds are: tryptophan, lysine, and glutamic acid. One cup of seeds has 30.6 grams of protein, which is 61% of the recommended daily allowance for an adult. One of the most surprising facts of the nutritional value of watermelon seeds - fat content. One cup of dried product contains 51 grams of fat, including 11 grams of saturated fat, and monounsaturated and polyunsaturated fats, including omega-6. It is known that unsaturated fats reduce blood cholesterol levels, and omega-6 is capable to reduce high blood pressure. Seeds of watermelon contain vitamins of group B. These vitamins are essential for the complex process of converting food into energy and other important physiological processes. Watermelon seeds have a lot of niacin: 1 cup of the product has 3.8 mg of this AA or 19% of the daily value.

Niacin nourishes the nervous system, has a therapeutic effect on the digestive tract, protects the skin health. Other B-complex vitamins present in watermelon seeds are: thiamine, folate, riboflavin, vitamin B6 (pyridoxine) and pantothenic acid. A lot of useful properties of watermelon seeds are conditioned by their rich mineral composition. One cup of dried product contains 556 mg of magnesium or 139% of the recommended daily value. In more detail the chemical composition of watermelon seeds discussed in Table 1.

Table 1

The chemical composition and nutrition value of watermelon seeds

№	Name of component	Watermelon seeds
1.	Nutritional value	601kcal
2.	Ca	54 mg
3.	Mg	515 mg
4.	Na	99 mg
5.	K	648 mg
6.	P	755 mg
7.	Fe	728 mg
8.	Zn	10,24 mg
9.	Cu	686 mg
10.	Mn	1,614 mg
11.	B ₁	0,19 mg
12.	B ₂	0,145 mg
13.	B ₃	0,346 mg
14.	B ₆	0,089 mg
15.	B ₉	58mkg

16.	PP	17,8 mg
17.	citrulline	17,0 mg
18.	protein	28,33 g
19.	fat	47,37 g
20.	carbohydrates	15,31g
21.	Ash content	9,94g
22.	water	5,05g

The table shows that chemical composition and nutritional value of watermelon seeds allow to achieve the task and to introduce them to the yogurt recipe [3].

Conclusions: The results of studies on the chemical composition of watermelon seeds show the possibility of enrichment of fermented milk products with this part of plant raw material.

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РАЗРАБОТКА ТЕХНОЛОГИИ ПОЛУЧЕНИЯ ОРГАНОМИНЕРАЛЬНОГО ЭКСТРУДИРОВАННОГО КОМБИКОРМА С ИСПОЛЬЗОВАНИЕМ НОВООБРАЗУЮЩЕГО ФИЛЬТРАЦИОННОГО ОСАДКА САХАРНЫХ ЗАВОДОВ

Чериков Сатыбалды Турдумаматович, к.т.н., доцент, КГТУ им. И.Раззакова, Кыргызстан, 720044, г.Бишкек, пр. Мира 66, e-mail: scherikov@inbox.ru,

Черикова Динара Сатыбалдыевна, к.э.н., доцент, КНУ им. Дж.Баласагына, Кыргызстан, e-mail: ch_dinara@list.ru,

Шамыралиев Жыргалбек Джумадилович, аспирант АН КР, Кыргызстан, e-mail: j.shamyrallyev@mail.ru,

Сырымбекова Эркина Ибраевна, доцент, КГТУ им. И.Раззакова, Кыргызстан, 720044, г.Бишкек, пр. Мира 66, e-mail: erkina_s@list.ru.

Цель работы является разработкой технологии получения органоминерального экструдированного комбикорма с использованием новообразующегося фильтрационного осадка сахарных заводов (НФО). Авторами рассмотрены составы кормов, изготавливаемые из имеющегося сырья в условиях нашей республики для кормления крупно - рогатого и мелко - рогатого скота (КРС, МРС), свиней и птицы. Отражены, что используемые рационы в комбикормах, как правило, дефицитны минеральными веществами. Также указано, что минеральные и большинство органических добавок привозные и дорогие, поэтому многие производители обходятся без этих компонентов или добавляют их в недостаточном количестве. В результате полученные комбикорма не отвечают требованиям по содержанию к предъявляемым компонентам комбикормов. Предложен один из путей решения данной проблемы: использование в рационах кормов малоиспользуемых органических отходов консервной промышленности и (НФО) сахарного производства, имеющих новизну, поскольку эти вторичные ресурсы позволяют расширить ассортимент ингредиентов, вводимых в состав комбикормов, за счет использования более дешевых сырьевых ресурсов с богатыми микроэлементами. Одновременно, при использовании этих отходов, частично решается проблема сохранения окружающей среды от загрязнения. Также рассмотрены вопросы улучшения усвояемости комбикорма с помощью экструдирования.