KIMYO

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BUG‘DOY KEPAGI ASOSIDA BIOPARCHALANUVCHAN IDISHLAR TAYYORLASH

ПРИГОТОВЛЕНИЕ БИОРАЗЛАГАЕМЫХ ПОСУД НА ОСНОВЕ ПШЕНИЧНЫХ ОТРУБЕЙ

PREPARATION OF BIODEGRADABLE WARE BASED ON WHEAT BRAN

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Annotatsiya

Bugungi kunda kundalik ehtiyojlarimizning asosiy qismini etilen, stirol va vinil attsetat asosidagi polimerlar mahsulotlari tashkil qiladi. Shunga qaramay ularning atrof muhit va inson organizmiga yetkizadigan zararlari ham o‘z isbotini topgani ma’lum. Ushbu maqolada plastik idishlar o‘rniga foydalanish mumkin bo‘lgan kepak asosidagi bir martalik, bioparchalunuvchan, ekologik toza idishlar ularni tayyorlash usullari bo‘yicha ma’lumotlar keltirilgan. Qolaversa, tayyorlash jarayoni va kepak asosidagi kompozitsiyaning kimyoviy tarkibi turli na’munalar asosida solishtirma tahlil qilingan.

Аннотация

Сегодня полимерные изделия на основе этилена, стирола и винилацетата составляют основную часть наших повседневных потребностей. Тем не менее известно, что их вред для окружающей среды и организма человека доказан. В этой статье представлена информация о том, как сделать одноразовые, биоразлагаемые, экологически чистые контейнеры на основе отрубей, которые можно использовать вместо пластиковых контейнеров. Кроме того, сравнивали процесс приготовления и химический состав композиции на основе отрубей на основе разных образцов.

Abstract

Today, polymer products based on ethylene, styrene and vinyl acetate constitute the main part of our daily needs. Nevertheless, it is known that their damage to the environment and human body has been proven. This article provides information on how to make bran-based disposable, biodegradable, environmentally friendly containers that can be used instead of plastic containers. In addition, the preparation process and the chemical composition of the bran-based composition were compared on the basis of different samples.

Kalit so‘zlar. *Plastmassa, kimyoviy xossalari, fizik xossalari, bug’doy kepagi, kepak kompozitsiyalari, ekoidishlar*

Ключевые слова. *Пластмассы, химические свойства, физические свойства, пшеничные отруби, композиты отрубей, экопродукты*

Key words. *Plastics, chemical properties, physical properties, wheat bran, bran composites, eco-tools.*

INTRODUCTION

President Sh.M. In Mirziyoyev's Address to the Oliy Majlis dated December 29, 2020, the priority is to increase the income from each hectare of land from the current average of 2,000 dollars to at least 5,000 dollars. it was determined that we should introduce it widely. [1]

Most of the products made of plastic are used for our daily and economic needs, and it should be noted that there is only one area where plastic products have not entered. Including building materials, medicine and pharmaceutical industry, production enterprises, food industry, etc. Their main tasks are containers of different sizes, packaging materials and sheets that act as molds, which are very convenient to use and have a low price.

LITERATUREANALYSISANDMETHODS

In the last ten years, the demand for plastic in our country has increased more than 10 times, and more than 30% of polymer materials are used for the production of plastic containers and packaging products. Consumers actively use plastic bags and disposable containers in our daily lives. However, after their use, it has been proven that they turn into waste that is dangerous for the environment, damages the environment, and the duration of the decay period is almost 500 years. [2]

In this article, we would like to analyze the process of preparing biodegradable eco-dishes at home based on the requirements for the production of biodegradable containers, raw materials and technical conditions, which were highlighted in our previous scientific works.

RESULTSANDDISCUSSION

Today, there are samples of biodegradable dishes made on the basis of completely organic compounds, they are called eco-dishes. This category of products, which is developing rapidly, is important not only because it is biodegradable, environmentally friendly, and because some of its samples are made from secondary, that is, waste products (in particular, the pulp and inner shells of fruits and vegetables, fruit peels, leaves, stems, roots, etc.).

For this purpose, we use bran raw materials, which are considered as waste of grain products grown in our local conditions. [3]

The reason why we choose wheat bran is that it can be isolated in our local conditions, it is not expensive, and its chemical composition. [4]

Wheat bran, first of all, is an excellent source of fiber, important macro and micro elements, B vitamins, E and A vitamins. Fiber is especially important for the good functioning of the intestines and the normal functioning of the digestive system in general. The complex of group B vitamins, which is also rich in wheat bran, performs a number of important functions in the human body, in particular: actively participates in carbohydrate, energy, protein, fat, water-salt metabolism, as well as in the process of hematopoiesis (vitamins B2, B3, B6 and B9 are a part of red blood is necessary for the synthesis of the hemoglobin protein of which it is a part)

It regulates the functions of the nervous, digestive, cardiovascular and muscular systems

Helps maintain normal hormonal balance in the human body (vitamins B3 and B6 play an important role in the production of sex hormones by the body, in addition, vitamin B6 is involved in the synthesis of hormones of the adrenal glands, thyroid gland, pancreas). [5]

Vitamins of group B, as well as vitamins E and A contained in wheat bran, contribute to the rapid recovery of tissues, improve the condition of the skin, nails and hair, and are important because they preserve the necessary components for maintaining perfect immunity and good vision throughout a person's life.

There are various raw material compositions intended for the production of ecological dishes at home, among which we used bran samples isolated from varieties of wheat grown in Andijan region.

Before starting the sample preparation process, we will follow the sequence of processes below. [6]

1. Analytical analysis of the literature
2. Choosing an object and method for research
3. To determine the quality and quantity indicators of the chemical composition of horseradish, which is the object of research
4. Variants of the experiment (the composition of the compositions)
5. Study of physicochemical parameters and organoleptic composition of biodegradable disposable containers
6. Introduction of technologies for the production of biodegradable containers

We prepared samples with 5 different mass ratios, using wheat bran (we used unsifted ordinary farm bran) and corn starch for bran compositions from the above line:

1. The proportions of the composition are bran 80% and corn starch 20%;
2. The proportions of the composition are bran 70% and corn starch 30%;
3. The proportions of the composition are bran 65% and corn starch 35%;
4. The proportions of the composition are bran 60% and corn starch 40%;
5. The proportions of the composition are bran 50% and corn starch 50%;

We have prepared our ecopolymer compositions. The procedure was performed at home. At the first stage, we measured the products for the components of the samples in the proportions indicated above using an electronic kitchen scale (error level -0.1g).

At the next stage, we prepared mixtures based on the mass samples taken on the scale. For this, we prepared a starch paste based on corn starch and vegetable gelatin, and together with

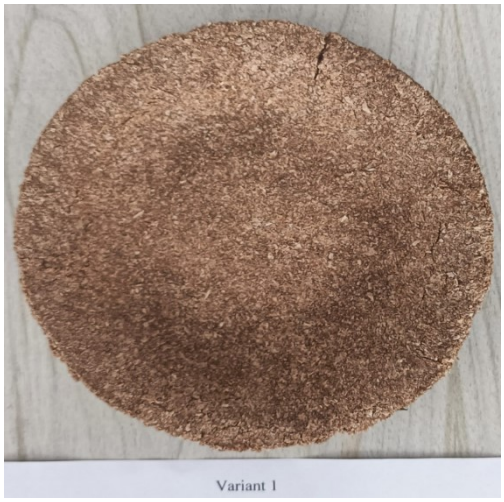
the separated bran mass, we prepared the necessary mixture. As a result, 3 different samples with the above content were ready.

The mixture we have prepared is malleable, and we bring it to the thickness we need. For this, you can use household items that are used to spread the dough in the farm. To prepare eco-dishes, we can start the molding process using ready-made porcelain or glass containers of any diameter. This is a very important stage. The reason is that the alternatives of our household eco-tools that we make are made by pressing on production lines at an average temperature above 120 ° C and under pressure in the range of 1-10 MPa, so the physical parameters of the finished product are very robust. [7]

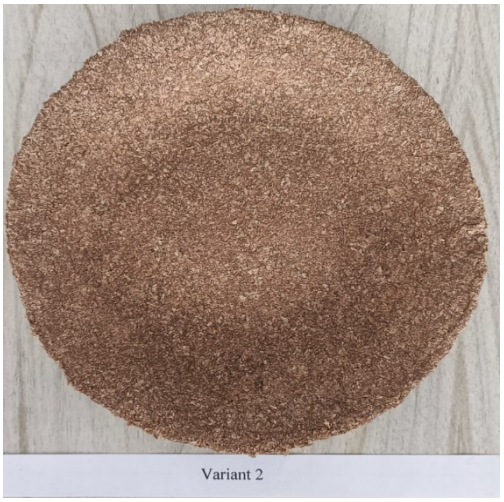
It can be seen that one of the important factors of the product preparation process, apart from the raw chemical composition, is the high accuracy of physical effects. [8]

When our eco-dishes in the necessary molds are ready, they need to be kept in the mold for several hours so that they can be suspended in the given form. When the containers are dry, they can be removed from the mold.

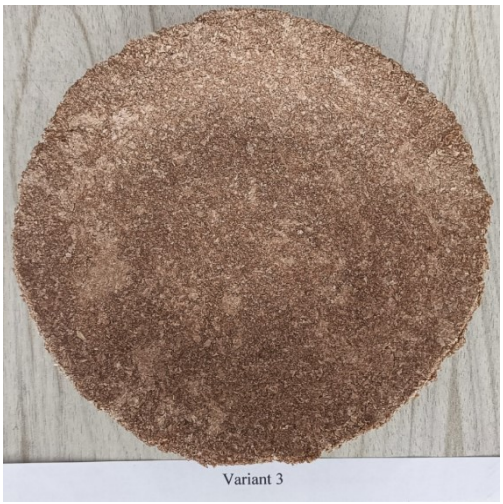
We can see the finished samples in the pictures below.



Variant 1



Variant 2



Variant 3



Variant 4



Among the above samples, the fifth sample showed the highest stability, dried in the shortest period of time during the drying process, and showed priority properties in terms of organoleptic parameters.

CONCLUSION

After calculating the economic efficiency of the production of biodegradable disposable dishes based on plant components on the basis of the above theoretical and technical data for the production of eco-dishes at home (the article provides facts about wheat bran), the following conclusions were drawn:

the raw material for the preparation of the above-mentioned compositions is the waste product of wheat flour, the price of which today is 3000 soums, and on the basis of the above calculations, 20 plates with a diameter of 14 cm can be prepared on the basis of 1 kg of wheat bran;

- The sample presented in the fifth option has the best organoleptic assessment compared to other samples, and also has an advantage over other options in terms of physico-chemical indicators.

- This option can be a competitive model despite the fact that biodegradable disposable containers are made at home.

Summing up on the basis of all the listed data, we can say biodegradable containers made on the basis of bran raw material, which is waste wheat flour, as a competitive alternative to disposable containers made on the basis of plastic products. The advantages of these containers are not only the fact that they are waste products, but also their low cost, organoleptically useful chemical composition, and complete decomposition using the natural resources of the soil.

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