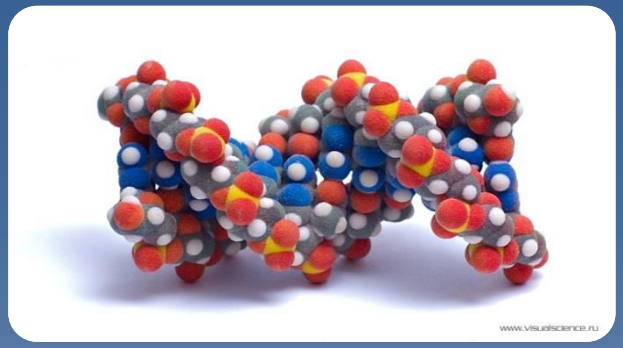
利用具高纖維素有機廢棄物生產高蛋白飼料濃縮物

High-protein fodder concentrate (VKK)
- the source of the new generation protein obtained by Bioconversion of cellulose-containing agricultural waste Economy.

蘇忠楨
國立臺灣大學動物科學技術學系
2017.11.22



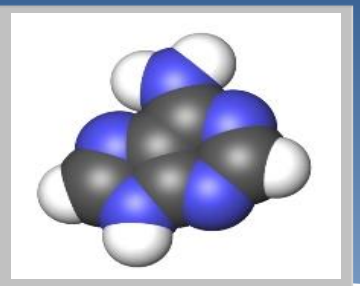
ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ
«НАУЧНО-ПРОИЗВОДСТВЕННОЕ ПРЕДПРИЯТИЕ
« ЭКОБИОСИНТЕЗ»

LIMITED LIABILITY COMPANY

SCIENTIFIC AND PRODUCTION ENTERPRISE
«ECO BIOSYNTHESIS»

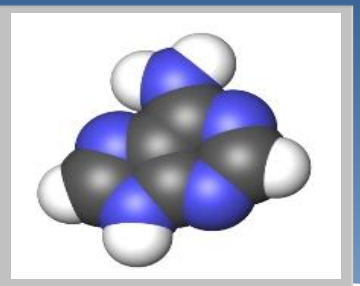
Высокобелковый кормовой концентрат (ВКК)
- источник протеина нового поколения получаемый путем биоконверсии целлюлозосодержащих отходов сельского хозяйства.

High-protein fodder concentrate (VKK)
- the source of the new generation protein obtained by Bioconversion of cellulose-containing agricultural waste Economy.



Общая информация о проекте
General information about the project

The method of growing biomass of the yeasts of the *Saccharomyces* family (industrial *Saccharomyces*), which is used in technology, is not dependent on either the climate or the season, the process of obtaining high-protein forage concentrate was developed by a creative group led by Dr. Orlova VS (Ecological faculty of the PFUR) and worked on the experimental installation.

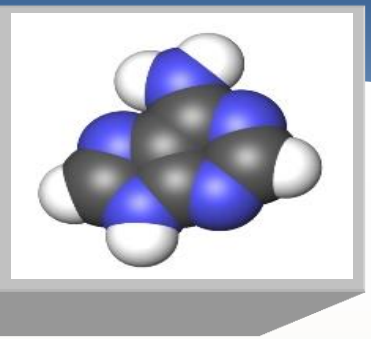


Описание технологического процесса производства

Description of the technological process of production

The basis of the technological process for the production of high-protein feed concentrate is the enzymatic hydrolysis of cellulose to glucose, the preparation of a substrate for growing microorganisms, the cultivation of microorganisms (yeast *Saccharomyces*) in order to obtain a microbiological protein. Applied technology in the patenting stage.

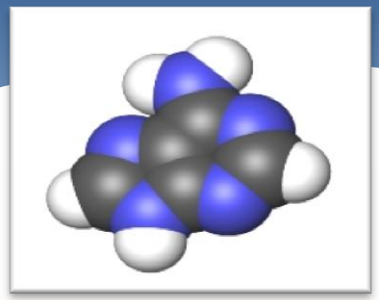
For rapid and deep carrying out of enzymatic hydrolysis, raw materials - cellulose-containing waste (grain wastes, pre-grain, mill-mill waste, beer grains, after alcohol bard, waste from field crops - rice husks, corn cobs, husks and sunflower stalks, straw of any quality, sawdust ie, any agricultural cellulose-containing waste and waste from woodworking enterprises) undergoes various pre-treatment methods, as a result of which the destruction of the original cellulose, hemi-cellulose at the molecular level.



Описание технологического процесса производства

Description of the technological process of production

The pretreated raw material is fed to the fermentation and the resulting glucose solution after sterilization is used to grow the biomass of the yeasts of *Saccharomyces*



Описание технологического процесса производства

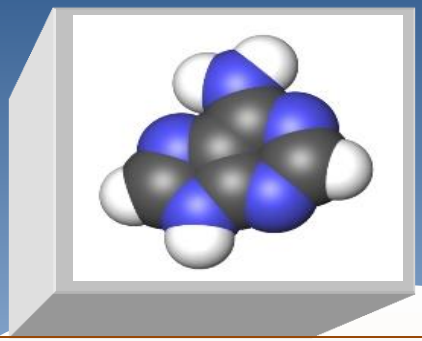
Description of technological process of production

Particular attention in the development of technology was given to environmental protection. The use of unique pretreatment equipment, fermenters, yeast growers allows to reduce operational costs by 9-10 times compared to similar production.

The introduction of a waste solution cleaning system into the process line allowed the use of closed water supply systems, the abandonment of the construction of treatment facilities and the reduction of water consumption to 2 m^3 per 1 ton of the finished product.

The issue of sterilization of equipment and premises was solved, which significantly shortened the period of preventive works (5 hours twice a month).

Emissions to the atmosphere - purified carbon dioxide (CO_2) from devices for growing yeast. The technology of utilization of carbon dioxide by biotechnological method is being developed.



The use of products derived from raw materials and grown biomass yeast *Saccharomyces*

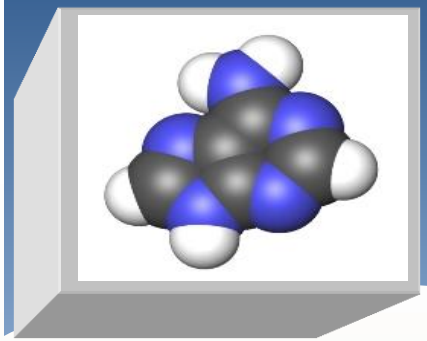
Pre-treated raw materials + enzymatic hydrolysis → Solution of glucose → Glucose Syrup → confectionary industry

Solution of glucose → The grown yeast biomass of *Saccharomyces*

The grown yeast biomass of *Saccharomyces* →

- Preparation of amino acid-peptide products → Food industry; Biomedical drugs; Veterinary preparations; Feed mills (production of feedstuffs)
- Production of high-protein forage concentrate → Feed mills; Farms;
- Production of low molecular weight peptide preparations → Medical preparations; Veterinary preparations; Feed mills (production of feedstuffs)

R.S. The presentation is devoted to the production of high-protein fodder concentrate



Немного
о высокобелковом кормовом концентрате (СТО 46524292-0001-2014)
About high-protein fodder concentrate (STO 46524292-0001-2014)

Experimental lot of high-protein fodder concentrate was developed in an experimental setup.

In the same way autolysis of yeast biomass was carried out and an amino acid analysis was carried out in the Testing Laboratory (Pushchino)

In the process of production of high-protein fodder concentrate, all vitamins contained in yeast are preserved: Vitamins (mg / 100 g):

B1 (thiamine) - 3,4-3,9; B2 (riboflavin) - 9.0-11.4; B3 (pantothenic to-ta) -19.2-20.1; B6 (pyridoxine) "5.2-5.5; Sun (folic acid) -0.23-0.24, B12 (cyanocobalamide) - 0.13-0.14; C (ascorbic acid) - 340.0-348.0; PP (nicotinic acid) -180.0-185.0; H (biotin) -0.18-0.19; inosine-380.1-385.4.

Tests of protein concentrate in the toxicology laboratory of the Cardiology Research Center of the Research Institute of Experimental Cardiology have shown that it does not have mutagenic, embryotoxic, teratogenic, allergenic properties, does not affect reproductive function.

The efficiency of using high-protein forage concentrate was tested by the All-Russian Institute of Animal Husbandry (VIZH) on the Kupriyanov Collective Farm (Kaluga Region). (see annex №1)

Based on these studies, a standard was developed for the organization of the SRT 46524292-0001-2014

(see Annex 2)

Таблица сравнения аминокислотного состава соевого шрота и высокобелкового кормового концентрата

Table of comparison of the amino acid composition of soybean meal and high-protein forage concentrate

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АТТЕСТАТ АККРЕДИТАЦИИ
РОСС RU. 0001.21ПО44
от 28 февраля 2011 г.

УТВЕРЖДАЮ:
Руководитель ИЛ
М.В. Возняк
17 сентября 2013 г.

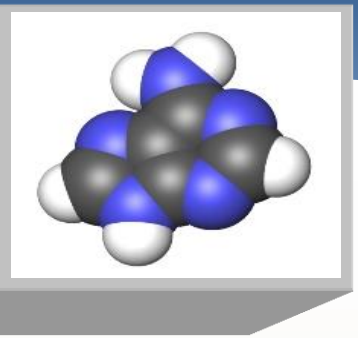
ПРОТОКОЛ № 8914

1. **Заявитель, адрес: Частное лицо Орлова Валентина Сергеевна**
2. **Наименование продукции: Дрожжевой автолизат**
3. **Сопроводительная документация: заявка на проведение испытаний от 09.09. 2013 г**
4. **Дата получения образца: 09.09.13 г.**
5. **Время проведения испытаний: 09.09.-17.09.13 г.**

РЕЗУЛЬТАТЫ АНАЛИЗА

Определяемый показатель	Фактическое содержание	НД на метод испытаний
Масс. доля сырого белка, % **Mass**	46,1	ГОСТ 28178-89
Общий аминокислотный состав, мг/кг: **Common amino acid composition (mg/kg)**		
Аспарагиновая к-та+Аспарагин **aspartic acid**	45010	ISO 13903:2005
Глутаминовая к-та+Глутамин **glutamic acid**	56593	
Гистидин **histidine**	108689	
Серин **serine**	22739	
Аргинин **arginine**	24015	
Глицин **glycine**	29678	
Треонин **threonine**	24541	
Аланин **alanine**	32401	
Тирозин **tyrosine**	32454	
Гидроксипролин **Hydroxy product**	<500	
Валин **valine**	27792	
Метионин **methionine**	9772	
Пролин **proline**	17811	
Изолейцин **isoleucine**	24169	
Фенилаланин **phenylalanine**	22808	
Лейцин **leucine**	36410	
Лизин **lysine**	43861	
Орнитин **ornithine**	<500	
Триптофан **tryptophan**	5708	ISO 13904:2005

Содержание, % Content,%	Соевый шрот (Soybean meal)	ВКК (VKK)
Влага (Moisture)	12,15	10,0
Сырой протеин (Crude protein)	48,56	46,1
Сырой жир (Crude fat)	2,12	2,7
Сырая зола (Crude Ashes)	6,50	6,0
Сырая клетчатка (Crude fiber)	4,26	3,7
Общее количество аминокислот (Common quantity of amino acids)	43,91	45,6
Незаменимые аминокислоты (Essential amino acids)	15,48	18,86
Лизин (lysine)	2,77	4,38
Валин (valine)	2,25	2,78
Метионин (methionine)	0,80	0,98
Изолейцин (isoleucine)	2,22	2,42
Лейцин (leucine)	3,43	3,64
Треонин (threonine)	1,79	2,45
Фенилаланин (phenylalanine)	2,22	2,28
Заменимые аминокислоты (Replaceable amino acids)	28,43	26,74
Аланин (alanine)	2,03	3,24
Цистин (cystine)	0,58	0,2
Гистидин (histidine)	1,36	1,08
Аргинин (arginine)	3,21	2,4
аспарагиновая кислота (aspartic acid)	4,17	4,5
Тирозин (tyrosine)	1,42	3,24
Серин (serine)	2,12	2,27
глутаминовая кислота (glutamic acid)	9,14	5,06
Пролин (proline)	2,62	1,78
Глицин (glycine)	1,78	2,97
Общая токсичность (Total Toxicity)	нетоксично(non-toxic)	Нетоксично(non-toxic)



Инвестиции на создание производства высокобелкового кормового концентрата производительностью 500 кг в час

Investment in production high-protein feed concentrate with a capacity of 500 kg per hour

Directions of investments

The main directions of using the investment in the implementation of the project:

- pre-design and design work;
- construction and installation work in accordance with the technical requirements provided by the equipment manufacturer;
- purchase of standard equipment and manufacturing of non-standard equipment;
- transportation,, insurance of equipment;
- installation and commissioning, pilot operation, production certification;
- training of personnel, "starting" working capital;

Investments are attracted from the calculation of the provision by the Customer (Partner) of industrial premises with the summed up engineering communications.

The functions of the directorate of the building object are assigned to OOO (OJSC) , which performs:

- conclusion of contracts for the supply of equipment, implementation of installation and commissioning works, organization of trial operation;
- conclusion of contracts with design and construction organizations, quality control of work performance;
- control over compliance with work schedules at all stages of project implementation;
- financial management within the project, control over their use;
- Adjustment (if necessary) of the project implementation schedule in accordance with the emerging market conditions.

WHERE? WHERE VKK ?! ? !

And I already tried !!!

Юридическое лицо инициатор реализации проекта
Legal entity initiator of the project

Общество с ограниченной ответственностью
«НАУЧНО – ПРОИЗВОДСТВЕННОЕ ПРЕДПРИЯТИЕ «ЭКОБИОСИНТЕЗ»,
зарегистрированное за ОГРН 1147746547035, ИНН/КПП 7728878900/772801001,
Адрес местонахождения: 117437, Москва, ул. Академика Волгина дом 33
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КОПИЯ

Федеральная налоговая служба

СВИДЕТЕЛЬСТВО

О ПОСТАНОВКЕ НА УЧЕТ РОССИЙСКОЙ ОРГАНИЗАЦИИ В НАЛОГОВОМ ОРГАНЕ ПО МЕСТУ ЕЁ НАХОЖДЕНИЯ

Настоящее свидетельство подтверждает, что российская организация

ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ "НАУЧНО-ПРОИЗВОДСТВЕННОЕ ПРЕДПРИЯТИЕ "ЭКОБИОСИНТЕЗ"

ОГРН 1147746547035

поставлена на учет в соответствии с Налоговым кодексом Российской Федерации 16 мая 2014

в налоговом органе по месту нахождения Инспекция Федеральной налоговой службы № 28 по г.Москве 7728

и ей присвоен ИНН/КПП 7728878900 / 772801001

Старший государственный налоговый инспектор Межрайонной ИФНС России № 46 по г. Москве Е.Н.Кузагина

МП

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