Міністерство освіти та науки, молоді та спорту України
Міністерство охорони здоров'я
Сумський державний університет
Медичний інституту

АКТУАЛЬНІ ПИТАННЯ ТЕРЕТИЧНОЇ ТА ПРАКТИЧНОЇ МЕДИЦИНИ

Topical Issues of Clinical and Theoretical Medicine

Збірник тез доповідей
III Міжнародної науково-практичної конференції
Студентів та молодих вчених
(Суми, 23-24 квітня 2015 року)

Суми
Сумський державний університет
2015

Humanity needs an alternative to traditional sources of protein. Such a source can be found in technical microbiology. The use of biomass of microorganisms by man would be possible only after the effective modification of the organic producers. The simplest modification technology of organic substances industrially produced biomass of microorganisms can be livestock, poultry, and fish farming. The experience of the former Soviet Union has convincingly proved the promising way in addressing the problem of protein nutrition.

The goal of our work was to analyze the results of research studies on protein and amino acid composition of various biomass producers, growing on different culture media. We analyzed four types of biomasses yeast (yeast grown on diesel oil fractions (DDFN) purified from yeast n-paraffins (DOnP) , yeast obtained in Synthesis methanol (MPA) , yeast derived synthetic ethanol (LTO)) , and three type of biomass of bacteria (bacterial biomass produced by natural gas (BBPG) , bacterial biomass produced on synthetic methanol (BBSM) , bacterial biomass obtained in purified n-paraffins (BBOnP)). The amount of protein in various types of yeast biomass was variable and ranged from 53.6 % (536 g / kg) in DCM , 67.7 % (676 g / kg) DDFN . Also there was a varying concentration of essential amino acids in yeast biomass (from 210.6 g / kg DOnP to 276 g / kg DDFN). The quality of the protein product is usually judged, not only on the amount of essential amino acids in them, but also on the concentration of biomass - lysine. The higher lysine biomasses were DDFN (45.1 g / kg) and DCE (45.0 g / kg). The protein content within bacterial biomass was higher than the yeast biomass - BBSM - 694.0 g / kg, BBOnP - 674.0 g / kg , BBPG - 634.0 g / kg. In bacterial biomass there was a higher concentration of the amount of essential amino acids and lysine compared with yeast products (the amount of essential amino acids in BBSM - 322,2g / kg, BBOnP - 261.5 g / kg, BBPG - 249.7 g / kg concentration of lysine at BBSM - 45.6 g / kg, BBOnP - 38.4 g / kg, BBPG - 36.0 g / kg).

These research results indicate that the products of technical microbiology are a promising source of protein and essential amino acids.

PROSPECTS OF MECHANICAL DISINTEGRATION AS PRETREATMENT METHOD OF NATURAL RAW MATERIAL FOR PRODUCING CAROTENOID PIGMENTS

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In Food Chemistry for coloring food products, synthetic and natural dyes are often used. The experience in the using of synthetic dyes raises a number of issues that affect their usefulness to humans, so the problem of research and development of technological schemes for the production of natural dyes is very important. Several food products stayed physiologically inactive carotenoid - bixin (derived from annatto seeds tropical plant), although for this purpose it can be used effectively in the preparations of carotene concentrates from cheaper raw materials. In particular, many local vegetable objects contain significant amounts of dietary carotenoids. The use of microorganisms for producing carotenoid products is also promising. Choosing raw materials usually takes into account; not only the quantitative content of biologically active substances, but also their availability, ease and efficiency of extraction, and the duration of the process. As a result, many potential sources of carotenoids do not find practical application. It is possible to solve this problem by using the method of mechanical disintegration.

The aim of our study was to investigate the effect of pre-disintegration of raw materials (plant facilities, biomass Blakeslea trispora) on the yield of carotenoids and extraction conditions. We used samples of corn leaves, Jerusalem artichoke, raspberries, grapes and biomass samples Blakeslea trispora. Carotenoid content was determined spectrophotometrically after complete extraction with acetone. Also taken into account was the amount of extractant used. Disintegration was carried out in dispersant original design that ensures the impact force on the object under study. The concentration of total carotenoids in the biomass Blakeslea trispora before the disintegration was 3600,00 ± 12,00

mg%, the amount of acetone used for the extraction of the pigments was 490,00 ± 10,00 ml. After the disintegration of the biomass increased yield of carotenoids, which was 3920,00 ± 20,00 mg% and decreased the amount of extractant used to 250,00 ± 15,00 ml. Therefore mechanical disintegration Blakeslea trispora biomass yield increased carotenoid pigments to 8.80% and reduced costs extracting almost doubled. Similar results were obtained with corn leaf disintegration, Jerusalem artichoke, grape and raspberry (before disintegration amount of carotenoids in the leaves of Jerusalem artichoke - 63,50 ± 5,50 mg% in the leaves of corn- 54,00 ± 3,40 mg% in the leaves raspberry - 43,40 ± 1,00 mg% in the leaves of grape - 49,70 ± 1,20 mg% and after disintegration - Jerusalem artichoke - 70,30 ± 6,00 mg%, corn - 64,50 ± 7,00 mg%, 57.80 mg% raspberries, grapes - 53,00 ± 1,00 mg%). The disintegration of plant facilities to increase the yield of carotenoids from 6.60% (grape leaves) to 33.20% (raspberry leaves). As a result, consumption and reduced disintegration extractant 35,00 ± 3,00 ml (raspberry leaves) to 11,50 ± 1,0 ml (corn leaves).

The refore mechanical disintegration of natural objects containing carotenoid pigments shows promise for the pre-processing of raw materials.

A DEVELOPMENT OF STANDARD CONTENT OF THE MAIN CHEMICAL COMPOUNDS FOR THE PRODUCTION OF WHOLE MILK SUBSTITUTE (WMS) WITH THE INCLUSION OF BIOTECH PRODUCTS

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Modern technologies of milk production focus primarily on meeting the nutritional needs of people. A population's consumption of Milk is one of the indicators of the level the life and economic development of a country. People drink so much milk that it ranks second after the consumption of water, while not being a natural resource of Nature.

Nature has created the best food for newborn mammals - mammary secretion (colostrum, milk). Milk is a complex product; not only because of the fact that it contains about 250 individual chemical components, but also due to the content variation created during lactation. It is well known that Lactation to some extent is a "continuation" of pregnancy; the chemical composition of milk changes to meet the needs of a growing newborn.

The purpose of the developing technology to produce WMS is to release natural milk for human consumption and process it in other foods. WMS should best meet the chemical composition of milk and contain its basic properties. While producing WMS it is essential to remember that natural milk contains unique natural components such as casein proteins, lactalbumin and lactose. These components of solid milk occur naturally in such amounts only in mammary secretions and it is not possible to replace them 100%

Casein proteins - complete animal proteins, containing a complete set of amino acids necessary for intensive protein synthesis for growing tissues. Casein proteins from milk, under certain conditions (such as in the stomach of newborns) can easily form a clot of food, which is subjected to "attack" digestive enzymes, normalizes the process of digestion of the newborn. Lactose - a unique disaccharide milk. The primary purpose of lactose is being transformed to the gastrointestinal tract to create conditions for symbiotic microflora, which in turn should provide a smooth transition from the milk supply to the adult diet.

Our calculations show that dry milk substitute should contain from 244.58 g / kg to 250.60 g / kg protein. The amino acid composition of this protein would be as follows (%) - methionine + cystine - 3.67 lysine - 8.57, threonine - 5.03, tryptophan - 1.55, valine - 7.54. The amount of fat in milk substitute should be between 296.46 to 303.74 g / kg, and the amount of lactose - 370.57 - 379.70 g / kg. Ratio is very important for nutrients and minerals in milk substitute: protein - fat - 1: 1.21; protein - lactose - 1: 1.52; fat - lactose - 1: 1.25; calcium - phosphorus - 1: 0.75.

Promising sources of micronutrients, antioxidants, vitamins and other biologically active substances can be products of disintegration biokar, biolava, milk and soy beans.