

STUDYING THE PROPERTIES OF THE MICROBIAL CONSORTIUM “KOMBUCHA” AND CREATION NEW PRODUCTS ON THEIR BASIS

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Introduction. Modern human is exposed to stress and environmental hazards, so the problem of a balanced diet based on functional foods and soft drinks is very relevant. Widely publicized imported products can be substituted by creating original recipes non-alcoholic drinks based on *Kombucha*.

The **aim** of this work is to develop cultivation technologies *Kombucha* with the addition of herbal extracts and fruit juices.

Results and discussion. *Kombucha (Medusomyces gisevi)* is a consortium of symbiotic yeast and acetobacters. *Medusomyces gisevi* consists of the microorganisms: yeasts (*Saccharomyces cerevisiae*, *Brettanomyces bruxellensis*, *Candida stellata*, etc.) and acetobacters (*Acetobacter xylinum*, *Gluconobacter oxydans*, etc.). Strains of microorganisms which constitute “mushroom body” can vary depending on the place of origin, and culture conditions. Morphologically *Kombucha* is a mucous amorphous film, floating on the surface of the liquid nutrient medium (sweet tea, juice).

From the biochemical side, yeast ferment sugar with the formation of ethanol and carbon dioxide, and bacteria oxidize ethanol to acetic acid, and then to carbon dioxide and water. The culture fluid (usually 4-9% sugar solution in the infusion of black tea) under the action of enzymes *Kombucha* within 7-10 days turns into a sour-sweet carbonated drink - "tea kvass." Infusion *Kombucha* contains gluconic, citric, lactic, acetic, malic acids, enzymes, ethanol, and vitamin B, vitamin C and PP, caffeine and other physiologically active substances. The main source of metabolic power for the cultivation of tea fungus is black or green tea with sugar. Aromatic, tannic components contained in the tea infusion, hardly used symbiotic microorganisms *Kombucha*. Since the tea infusion is a source of biologically active compounds, it plays an important role in the biosynthesis and influences meduzomitseta antimicrobial properties infusion. Soft drinks based on meduzomitset have antioxidant and tonic properties. Black or green tea and sucrose are the main source of metabolic power for cultivation meduzomitset. Symbiotic microorganisms *Kombucha* didn't consume aromatic, tannic components contained in the tea infusion. Since the tea infusion is a source of biologically active compounds, it plays an important role in the biosynthesis of *Kombucha* and contributes to the antimicrobial properties of infusion.

Cultivation temperature (20-25 °C), light and other environmental factors affect the growth of *Kombucha*. Interestingly, the film *Zoogloea* (symbiotic culture consisting of *Acetobacter xylinum* and yeast) formed on the sixth day of storage at 22-25 °C in the presence of a preservative such as sodium benzoate and sorbic acid. *Kombucha* adapts to the power supply flexibly. Usually *Kombucha* is grown in non-sterile home environment, so that's why there is a possibility of charging a liquid culture of pathogenic microflora. Meantime, the risk of serious infection is small, since *Kombucha* developed a protective mechanism (pH \approx 3, the presence of antibiotic compounds, etc.). To increase the range of drinks as aromatic raw materials for the production of a number of the original drinks with the tonic effect used extracts of wild rose, St. John's wort, lemon balm, lemon peel, blackcurrant, and fruit juice concentrates (apple, orange, cherry, blackcurrant). When we chose the flavor components for the development of functional soft drinks we were accounting for "the principle of compatibility of nutrients".

During the organoleptic studies we determined the optimal ratio of components in fermented beverages. We also developed 7 original recipes drinks on *Kombucha* basis with the addition of the above listed aromatic raw materials:

1. *Kombucha* + the infusion of wild rose + apple concentrate;
2. *Kombucha* + the infusion of St. John's wort + apple concentrate;
3. *Kombucha* + the infusion of lemon balm + orange concentrate;
4. *Kombucha* + blackcurrant extract + blackcurrant concentrate;
5. *Kombucha* + the infusion of St. John's wort + cherry concentrate;
6. *Kombucha* + lemon peel extract + orange concentrate;
7. *Kombucha* + the infusion of lemon balm + apple concentrate.

To take into account the views of potential consumers of functional drinks based on *Kombucha* we conducted tasting event with a group of 20 people.

On the basis of the physic-chemical and organoleptic research as a tech for the production of soft drinks we chose the most favorite samples for the tasters. Thus, the inclusion these drinks in human diet helps protect the body against pathogens, sate vitamins B, C, D, bioflavonoids, enzymes etc. It was preferable to introduce extracts of medicinal plants and fruit juice concentrates to the soft drinks to improve the flavor and aroma characteristics.

Conclusions. Due to modern research medical industry has created medicaments based on the *Kombucha*. One of them is “*Kombuka*”. This drug is made in Germany. It is a concentrate of *Kombucha*, created by vacuum distillation on the basis of fermented *Kombucha* juice (obtained by pressing the young *Zoogloea*) and acid. During production the preparation *Kombucha* keeps all the active substances besides ethyl alcohol and acetic acid. Alcohol is added to the juice to protect them from damage. This drug is widely used for the treatment of senile diseases.