



MINISTRY OF EDUCATION  
AND SCIENCE OF UKRAINE  
NATIONAL UNIVERSITY  
OF FOOD TECHNOLOGIES  
NATIONAL ERASMUS+ OFFICE IN UKRAINE  
EUROPEAN STUDIES PLATFORM



PROCEEDINGS  
VI INTERNATIONAL CONFERENCE  
EUROPEAN DIMENSIONS OF  
SUSTAINABLE DEVELOPMENT



MAY 15-17, 2024, KYIV

<i>Svitlana Bazhay-Zhezherun, Ludmyla Bereza-Kindzerska, Alla Bashta, Tetiana Fedorenko</i> ENRICHMENT OF WHOLE GRAIN BREAD WITH HERBAL ADDITIVES .....	102
<i>Daria Syniavska, Natalia Gregirchak</i> INNOVATIVE PROBIOTICS, ENRICHED WITH SELENIUM NANOPARTICLES: A STEP TOWARDS SUSTAINABLE DEVELOPMENT IN NUTRITION AND HEALTHCARE .....	103
<i>Hanna Dekusha, Lesia Avdieieva, Mykola Kozak</i> RESEARCH OF THE PROCESS OF ENZYMATIC HYDROLYSIS OF MILK WHEY PROTEINS AND SOY PROTEINS .....	104
<i>Vitaly Polishchuk, Elena Yakhnovska, Svitlana Polishchuk, Svitlana Tsekhmistrenko</i> NANOTECHNOLOGY AS A COMPONENT OF ADVANCED TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT .....	105
<i>Marija Zheplinska, Volodymyr Vasylyv, Larisa Bal-Prylypko, Mikhailo Mushtruk, Nataliia Slobodianiuk, Konstantyn Gorenkov</i> EVALUATION OF THE INFLUENCE OF THE AMINO ACID COMPOSITION OF WHEAT GERM AS ADDITIVE TO MEAT PRODUCTS .....	106
<i>Oksana Hrebelnyk, Liudmyla Zahorui</i> COMPARATIVE CHARACTERISTICS OF SUSTAINABLE DEVELOPMENT STRATEGIES IN FOOD INDUSTRY ENTERPRISES .....	107
<i>Oleksandr Platonov, Yevhenii Shapovalov, Tetiana Rudakova, Viktor Shapovalov</i> CONCEPTUAL PRINCIPLES OF THE CREATION OF THE NATIONAL ELECTRONIC SCIENTIFIC INFORMATION PLATFORM OF ACADEMIC EVENTS .....	108
<i>Maryna Hryshchenko, Svitlana Starovoitova</i> ENVIRONMENTAL FRIENDLINESS OF THE PRODUCTION OF GLYCOSAMINOGLYCANS BY BIOTECHNOLOGICAL MEANS .....	109
<i>Oleksandr Zholobko, Maria Protsenko, Oksana Skrotska</i> TOXICITY OF SODIUM SELENITE AND INTRACELLULAR BIOSYNTHESIS OF SELENIUM NANOPARTICLES USING <i>SACCHAROMYCES CEREVISIAE</i> M437 FOR THEIR FURTHER USE IN DETOXIFICATION OF THE BODY .....	110
<i>Tetiana Suleiko, Olena Semenova</i> INTENSIFICATION OF WASTEWATER TREATMENT BIOTECHNOLOGY USING YELLOW SAPONITE .....	111

## INTENSIFICATION OF WASTEWATER TREATMENT BIOTECHNOLOGY USING YELLOW SAPONITE

**Tetiana Suleiko\*, Olena Semenova**

*National University of Food Technologies, Kyiv, Ukraine*

*\*Speaker: [tata\\_t2008@ukr.net](mailto:tata_t2008@ukr.net)*

Water is the basis of life on Earth. The properties of water are very diverse, so it was able to find the widest application on our planet. Despite this, people in the course of their activities mercilessly pollute it with chemical and radioactive substances, pesticides, synthetic fertilizers, domestic and industrial wastewater. This is the cause of the global environmental problem of today (Khvesyuk, & Levkovska, 2019).

Modern methods of wastewater treatment are called upon to solve this problem, the most traditional of which is called the biotechnological method through anaerobic and aerobic fermentation of wastewater.

Depending on the concentration of pollutants in the wastewater, anaerobic stage (methane fermentation), aerobic fermentation, or a complex combination of these two stages are recommended as the main treatment step. If the chemical oxygen consumption (COC) doesn't exceed 2000 mg O<sub>2</sub>/dm<sup>3</sup>, it is necessary to use aerobic fermentation (Tkachenko, Semenova, Bubliencko, & Levandovsky, 2011), but if it exceeds, then it is advisable to use methane fermentation as the main stage, and the aerobic method for post-treatment.

The aerobic stage of wastewater treatment is an integral part of the technological scheme of neutralization of polluting substances of the specified effluents. That is why one of the primary tasks of improving the cleaning process is the intensification of the aeration tank, which, for example, can be carried out by the following methods: increasing the concentration of activated sludge; improvement of methods of aeration of the mixture of sludge and water; increasing the enzymatic activity of activated sludge organisms; by influencing the activity of microbial cells by physical factors, for example, electrostatic or electrodynamic fields; by sorption of pollutants on, mainly, solid carriers, etc.

Studies were conducted on the use of crushed yellow saponite. It was established that the quality and speed of the cleaning process can be regulated by the ratio of the amount of filler to the amount of activated sludge. The optimal ratio is 1:2. These conditions of aerobic fermentation make it possible to carry out the process of cleaning effluents of medium concentration (approximately 2000 mg O<sub>2</sub>/dm<sup>3</sup> by COC) to the standards of discharge into natural water bodies in 36 hours, which is almost 2 times faster than under standard conditions.

### *References:*

- Khvesyuk, M., & Levkovska, L. (2019) Managing water resources: the euro-integrated vector. *Economics of nature use and sustainable development*, 5(24), 6-13 [in Ukrainian].
- Tkachenko, T., Semenova, O., Bubliencko, N., & Levandovsky L. (2011) Justification of the choice of wastewater treatment technology of milk processing enterprises, *Materials of the III All-Ukrainian Congress of Ecologists with International Participation (Ecology-2011)* (Vinnytsia, 21 - 24.09.2011). Vinnytsia: VNTU [in Ukrainian].