8. Bal-Prylypko, L. V., Leonova, B. I. (2020). Features of pate technology. In: Innovative technologies and prospects for the development of the meat processing industry: International Scientific and Practical Conference, Kyiv, 103-105.

9. Peshuk, L. V., Radziievska, I. H., Shtyk, I. I. (2011). Biological value of fatty acids of animal origin. Kharchova promyslovist, 10-11, 42-45.

10. Freitas, A. C., Rodrigues, D, Rocha-Santos, T. A., Gomes, A. M., Duarte A. C. (2012). Marine biotechnology advances towards applications in new functional foods. Biotechnol. Adv., 30, 1506-1515 https://doi.org/10.1016/j.biotechadv.2012.03.006.

Анотація. Функціональні м'ясні продукти призначені для збереження в сировині цінних речовин, заповнення нестачі деяких макроелементів та мікроелементів. Лляне, рисове, кукурудзяне та соняшникове борошно залучається для забезпечення необхідного балансу жирнокислотного складу функціональних м'ясних продуктів. Дослідження рисового та лляного борошна показали значні переваги останнього для забезпечення функціональних властивостей паштетів. Доведено доцільність заміни м'ясної сировини на 15% лляного борошна у рецептурі функціональних м'ясних продуктів. Перспективним напрямом створення функціональних паштетів є комбінування кукурудзяного та лляного борошна, що дозволяє збільшити вміст білка в суміші за рахунок лляного борошна та збагачувати суміш полісахаридами за рахунок кукурудзяного борошна.

Ключові слова: функціональні харчові продукти, нутрієнти, м'ясні продукти, лляне борошно, рисове борошно, амінокислотний склад.

UDC 621.327

RESEARCH OF ULTRAVIOLET RADIATION AS A DISINFECTANT OF AGRICULTURAL PREMISES

Vakhonina L. V., Ph.D. physics and mathematics Sciences, associate professor
e-mail: vakhonina-l@ukr.net
Mykolaiv National Agrarian University

Abstract. Ultraviolet radiation was studied as a disinfectant for agricultural premises, with the determination of the limits of the bactericidal effect of ultraviolet radiation on harmful microorganisms.

Keywords: fumigation, ultraviolet, irradiator, decontamination.

Disinfection of agricultural premises is an urgent issue today, which is due to the use of outdated and dangerous for workers fumigation treatment methods. The optimal method of disinfection for industrial premises is the use of combined methods of lighting with the use of ultraviolet emitters.

Determination of the optimal and modern method of decontamination of agricultural premises.

Of all the existing methods of decontamination of premises, in the process of finding an alternative to existing methods (chemical) and with preservation of efficiency, it is rational to pay attention to decontamination with the help of ultraviolet radiation. The method is used to remove pathogenic microorganisms from the internal environment. Ultraviolet disinfection is often used in combination with other methods,

for example, chlorination, and the treatment of the room with chemicals is carried out after exposure to ultraviolet rays.

The popularity of the method is determined by the absence of the need to treat the room with various reagents that are dangerous for human health. In addition, UV treatment has no effect on chemical, physical and organoleptic properties [1].

Ultraviolet is divided by wavelength into:

–Close in properties to visible light, long-wave/soft/near UVA (400...315 nm);

–Medium hardness - UVB (315...280 nm);

–Short-wave/far/hard – UVC (280...100 nm).

Hard ultraviolet - UVC, and to a lesser extent ultraviolet of medium hardness - UVB has a bactericidal effect. The bactericidal efficiency curve shows that only a narrow range of 230...300 nm has a clear bactericidal effect, that is, approximately a quarter of the range called ultraviolet (Fig. 1).

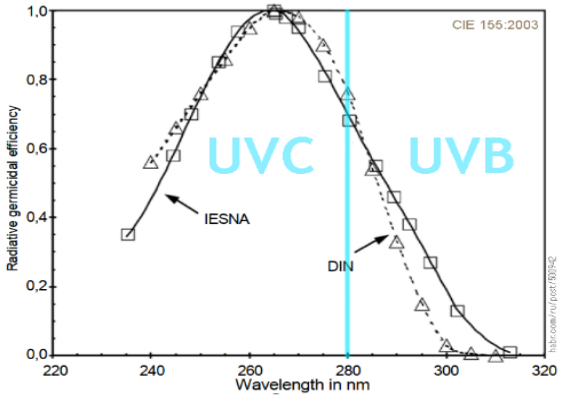

Figure 1. Curved bactericidal effect of ultraviolet

Quantums with wavelengths in this range are absorbed by nucleic acids, which leads to the destruction of the structure of DNA and RNA. In addition to being bactericidal, i.e. killing bacteria, this range has virulicidal (antiviral), fungicidal (antifungal) and sporicidal (killing spores) effects. Comparing the effect of UV with solar radiation, it can be argued that the effect of solar radiation is relatively small. 2. As is known, the strongest solar radiation does not reach the earth's surface, dispersing in the layers of the atmosphere.

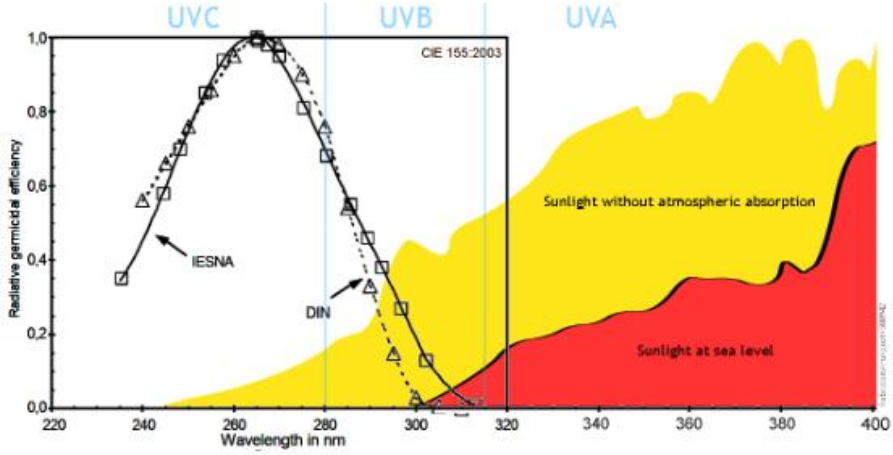

Figure 2. Comparison of the spectrum of bactericidal action and the spectrum of solar radiation

It can be seen that the bactericidal effect of sunlight is insignificant. The part of the spectrum capable of having a bactericidal effect is almost completely absorbed by the atmosphere. At different times of the year and at different latitudes, the situation is slightly different, but qualitatively similar.

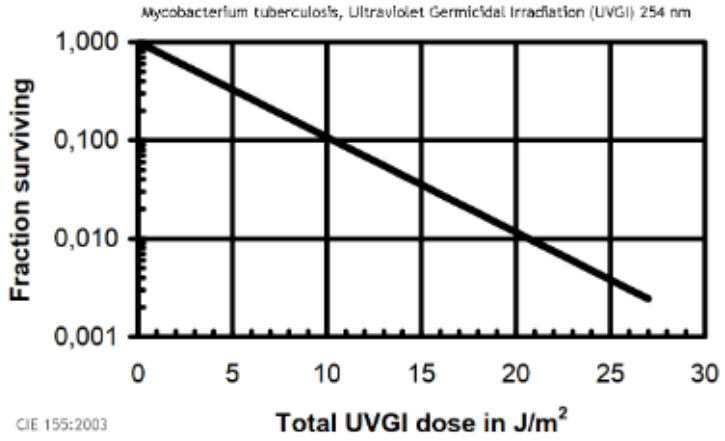

Figure 3. Dependence of survival of microorganisms on UV dose

As a result of the study of optimal methods of disinfection of industrial agricultural premises, the most effective is the use of ultraviolet emitters as part of the normalized lighting of the premises. The limits of the bactericidal effect of ultraviolet light on microorganisms have been established. The number of surviving microorganisms on surfaces and in the air decreases exponentially with an increase in the dose of ultraviolet light. For example, the dose that kills 90% of tuberculosis mycobacteria is 10 J/m2. Two such doses kill 99%, three kill 99.9%.

References:

1. Manuela Buonanno, David Welch, Igor Shurzak, David J. Brenner Far-UVC light efficiently and safely inactivates airborne human coronaviruses / Reseach Square(Reseach Article/Virology) . doi:10.21203/rs.3.rs25728v1 (2020). - [Electronic resource]. – World Wide Web access mode:https://www.resaechsquare.com/article/rs-25728/v1.

2. Malinovsky v. theoretical approaches and practical features of using ultraviolet radiation technology for disinfection of the environment, personal belongings and surfaces in modern conditions of the coronavirus pandemic. biomedical optical-electronic systems and devices. 2021. P. 45–51. url:https://doi.org/10.31649/1681-7893-2020-39-1-45-51.

3. Academic Journals and Conferences. URL:https://science.lpnu.ua/sites/ default/files/journal-paper/2017/jun/3861/vtm74st30.pdf (access date: 03/20/2023).

Анотація. Досліджено ультрафіолетове випромінювання як дезінфікуючий засіб сільськогосподарських приміщень з визначенням меж бактерицидної дії ультрафіолетового випромінювання на шкідливі мікроорганізми.

Ключові слова: фумігація, ультрафіолет, опромінювач, дезактивація.