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NANO-FOOD – A HEALTHY LIFE STYLE OR A HARMFUL TREND?

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Paradoxically, in an age of high technology and progress, hunger remains the world's largest problem. According to the UN commission, by 2050, 9 billion people will already live in the world, to feed them all, 70 % more products will be required than now. Mankind hopes for the solution of this problem with new scientific developments. These include food, in which nanoparticles are added to improve its quality and environmental friendliness. Such food is called nano-food. The attitude towards such food is ambiguous, since the exact effect of nanoparticles on the human body has not been identified. Many manufacturers even try to keep silent that the product was made using nanotechnology. You will not find the difference between regular food and nano-food, as there will be no special marks on the packaging. You may have tried a nano-food before, but you didn't know about it. Scientists are actively studying the properties of nanoparticles and thinking about their safety, but laboratory experiments on animals have not given a general picture of the effect of nanoparticles on the body. Should we change our usual food into nano-food with the help of new technologies? Is the nano-food dangerous for the human body? [1–3]

The promising direction of nano-food study emerged at the intersection of the nanotechnology and the food industry. Industry is taking advantage of the fact that physics and chemistry are changing at the nanoscale, and ordinary substances behave differently – thus, many metals and chemicals take on amazing new properties. Therefore, to obtain any product with desired properties, scientists manipulate individual atoms and molecules and arrange them into a specific atomic structure. Such innovations should be taken very seriously, because they are directly related to the human health. However, many scientists argue that in the future we will not do without nano-food. As the number of people on the planet grows, they will help solve the problem of hunger, that is, provide people with the quality food which is rich in nutrients. The large food manufacturers, such as Nestle, Heinz, Unilever, have been actively researching the effects of nanoparticles on the human body in the recent years.

What is a nanoparticle? A nanoparticle is a very small substance with the size of a bacterium. Just one blood cell can hold thousands of nanoparticles. In the course of research, it was found that nanoparticles from food are absorbed into the blood and move throughout the body, entering the organs, organ systems, tissues and bones. In that way, by adding nanoparticles, food can be made healthier and more nutritious. After all, these tiny particles can enter the body at the cellular level, which means they can “deliver” a large amount of the necessary vitamins. Such nanoparticles can be added to everyday food. For example, there is already milk with the nanoparticles that improves the calcium absorption.

The use of the nanotechnology in the food industry will make it possible to produce products with a low fat content while maintaining the usual taste. For example, mayonnaise is made by combining microparticles of the water and the oil. But if the usual such sauce contains 70 % fat, then using nanotechnology it is possible to reduce it to 40%, preserving the previous the texture and the taste [5; 6].

On the shelves of Dutch stores appeared wine Nano Wine. At different temperatures, wine has its own taste and smell. This happens due to changes in the properties of molecular compounds that give the wine its properties. So, you can give a one bottle of wine all guests

with the different preferences. There are also prospects for the covering fruits and the vegetables with the nanofilm, which will repel the dirt.

One of the safest uses of nanotechnology today is packaging that keeps food fresh for a long time. Also, after the expiration date, the packaging changes its color. Due to better storage, the amount of food thrown away will decrease by 30–40%.

Nowadays, the biggest problem is that the effect of nanoparticles on the human body has not yet been studied, especially their delayed effect. The nanoparticles are able to penetrate living cells, and their further effect is not yet known. Although the production of nanoproducts improves the quality, the functionality, the productivity and the profitability of the food products, in no case should these advantages be allowed to force manufacturers to turn a blind eye to the possible negative consequences? In recent years, the world's food industry giants have used various scientific innovations in their production. Some of them went unnoticed, the use of others turned into scandals and failed miserably. In 2006, Germany experienced the first mass case of poisoning with silicate microparticles contained in a plumbing cleaner. As a result, consumers are beginning to fear any innovation in the food industry, even those that can help reduce the use of the earth's non-renewable resources.

This article provides a comparative analysis of the pros and cons of using nanotechnology in the food production. As a result of all of the above, I came to the conclusion that, in general, under the condition of nature and humans safety, the use of nanotechnology in the food industry has significant advantages and potential. It is difficult to overestimate the prospects of using nano-food. Despite all the shortcomings, scientists around the world continue to work on the technologies for its creation. At the same time, scientists have formulated a number of recommendations, following which it is possible to avoid the consequences of the risks and introduce innovations under the strict control. It is necessary to organize the production process of such products especially carefully and it is mandatory to carry out a scientific analysis of the all planned innovations.

References

1. URL: <https://www.theguardian.com/what-is-nano/what-you-need-know-about-nano-food>.
2. URL: https://zen.yandex.ru/media/zdorovyi_interes/-nanoeda-chto-eto-takoe-5aee270d256d5cf5602bf64b.
3. URL: <https://www.informationliberation.com/?id=18893>.
4. URL: <https://www.nanonewsnet.ru/blog/nikst/top-7-produktov-budushchego-nanomoloko-zavtrak-iz-printera>.
5. URL: https://www.topograph.ru/news/index.php?ELEMENT_ID=8974.
6. URL: https://otherreferats.allbest.ru/manufacture/00843457_0.html.