

K. Davidovskaya

Belarusian State University, ISEI BSU,

Minsk, Republic of Belarus

katyadavidovskaya92@gmail.com

Medicines — this means that consist of pharmacologically active substances and serve for the prevention, diagnosis and treatment of diseases. Medicines, having pharmacological activity, have the properties to change the functional state of the body. As a rule, in toxicological studies, before introducing medicines into medical practice, their side effects on human and animal health are carefully investigated.

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Nevertheless, the potential environmental consequences of pharmaceutical production and use of medicines have only recently become a topic of scientific interest. This is due to the fact that there is intense contamination of the Earth with medical products, 300 kg of medical waste per capita has already been accumulated in the world. More than 150 medical and veterinary pharmaceuticals have been found in many ecosystems around the globe, even in the Arctic.

According to experts, the situation in Belarus is also critical. Every year in the Republic formed 29, 8 thousand. tons of medical waste, part of which ends up in household waste and deposited in landfills. But in most cases, excreted from the human urine and faeces medicines fall into the waste water, and then to the treatment facilities. Treatment facilities eliminate organic components that contain proteins, carbohydrates and lipids. However, these facilities are not able to remove metabolites of medicines, because medicines themselves are biologically active elements in the human body. Pharmaceuticals can be resistant in the external environment, and they are not always absorbed or destroyed completely in the body. Currently, there are no treatment facilities that are aimed at the removal of metabolites of pharmaceuticals. Six pharmaceuticals (carbamazepine, diclofenac, clofibric acid, ofloxacin, sulfamethoxazole and propranolol) present in wastewater have been found to be resistant to abiotic photodegradation. Thus, in Minsk wastewater contains 1.45 µg / l diclofenac, in Grodno -5.46 µg / l. in a particularly high concentration was found ibuprofen, which is an anti-inflammatory and analgesic and is widely used in medicine. Antibiotics, psychotropic and contraceptive medicines were found in drinking water. These figures are the result of ill-considered use of medicines.

Surface water contains approximately 2 mg/liter of estrogen. The fact is that 0.5 mg / liter of this substance in water for 6 months transforms male fish into females and reduces fertility by 90 %. There was a link between estrogen in drinking water and decreased sex drive in men, as well as increased testicular cancer. Moreover, medicines waste has negative effects on wildlife. They are able to disrupt the reproductive ability of the younger generation and even reproduce unadapted offspring. While the development and use of medicines play a key role in ensuring the health and well-being of society, it is necessary to comply with the requirement to reduce the environmental impact of pharmaceutical ingredients. It is also important to explore ways to create environmentally friendly pharmaceuticals. It is not excluded, what this process can give positive economic results in health care in general.

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