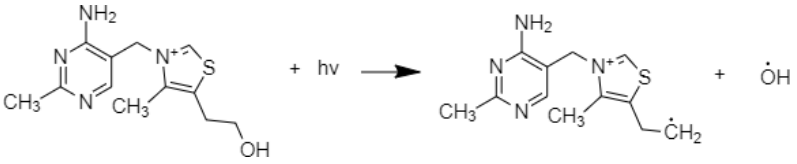
CZU: 628.16:665:615.35

PARTICIPATION OF THE VITAMIN B COMPLEX IN PROCESSES OF CHEMICAL SELF-PURIFICATION OF THE AQUATIC ENVIRONMENT

Gladchi Viorica*, Blonschi Vladislav
Moldova State University, Chisinau, Republic of Moldova
*E-mail**:** viorica.gladchi@gmail.com

The product sold in pharmacies under the name Vitamin B complex after use can enter surface waters and can participate in various processes of self-purification of water. Photochemical degradation of dissolved substances takes place in the upper layers of water in case of intensive sunlight irradiation. The experimental data obtained indicate that the Vitamin B complex undergoes direct photolysis, so that it is destroyed under the influence of UV rays, with the removal of OH radicals, ensuring increased speeds in the process of photochemical destruction. The effective constant of the direct photolysis has a value $k=12\cdot10^{-4}$ s^{-1} and the half-life τ=1h 42 min 41s. In other words, the studied substrate is very labile and rapidly decomposes photochemically. During photodegradation, the components of the vitamin B complex contribute to the generation of OH radicals in the environment, which is a favorable factor for the development of degradation processes. For example, in the case of direct photolysis of vitamin B_1, which is a component part of the complex, the reaction proceeds as follows:



It has been found that the rate of the induced photochemical oxidation reaction of vitamin B complex increases with increasing H_2O_2 concentration, the cause being H_2O_2 photolysis and the generation of additional amounts of OH radicals which actively participate in the destruction of Vitamin B complex. The effective constant of the induced photolysis $k=1.27\cdot10^{-4}$ s^{-1} and the half-life τ=1h 30 min 33 s, which is 12 minutes less compared to the direct photolysis of the complex.

When Cu^{2+} ions are present in the modeling system, they negatively influence the process of destroying the Vitamin B complex, so that the substance stabilizes to form a complex compound with metal ions that are more difficult to destroy. The presence of Cu(II) ions leads to two undesirable consequences: they form a complex compound that is difficult to degrade with the Vitamin B complex; by the formation of these complexes Cu(II) ions are removed from the aquatic environment and thereby diminish the intensity of the photochemical self-purification process.

Therefore, the results obtained indicate that the vitamin B complex actually participates in photochemical self-purification processes of the aquatic environment.

Keywords: Cu (II) ions, OH radicals, photolysis, vitamin B, water self-purification.