

## **THE INFLUENCE OF SOME ORGANIC ACIDS ON THE RADICAL SELF-PURIFICATION PROCESS OF THE AQUATIC MEDIUM**

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The concentration of OH-radicals and the inhibition capacity ( $\sum k_i[S_i]$ ), along with concentration of hydrogen peroxide, are considered to be the kinetic parameters of water quality that can adequately describe the dynamics of the physical-chemical-biological processes in the aquatic medium.

The glyoxalic acid and the citric acid are parts of the Krebs cycle, in other words they are characteristic for the natural composition of the aquatic medium. We took interest in the way these substances influence the intensity of radical self-purification processes in natural waters.

The results obtained demonstrate that the influence of these two acids on radical self-purification processes differs. The rise of concentration of the glyoxalic acid (GA) in the system leads to a decrease in the initiation rate and in the permanent concentration of OH radicals ( $(5,95-2,5) \cdot 10^{-16}M$ ), thus giving a rise to the inhibition capacity ( $(4,06-6,64) \cdot 10^5 s^{-1}$ ), values, which are characteristic for waters in normal state, but nevertheless tending towards polluted ones. On the contrary, the presence of the citric acid (CA) leads to an increase in the concentration of OH radicals ( $(2,3-13,5) \cdot 10^{-16}M$ ) and to a decrease in inhibition capacity ( $(6,93-0,99) \cdot 10^5 s^{-1}$ ). The dynamics of kinetic parameters points to the fact that the GA participating in the processes of interaction with OH radicals finally leads to a decrease in their permanent concentration and to a positive increase of the possibility of break in the radical chain being an unfavorable phenomena for the aquatic medium.

Bearing in mind that in the natural aquatic systems, apart from organic substances, there are also present the transitive metals ions, we studied the processes of radical self-purification in the presence of copper ions Cu (II). The simultaneous presence of GA and ions of Cu (II) in aquatic medium decreases the influence of GA, because in this case the inhibition capacity takes lower values and the concentration of OH radicals rises. The same is characteristic for the citric acid. The amelioration of the kinetic parameters in the presence of copper ions Cu (II) takes place owing to their participation in the processes of free radicals' initialization. Thus the contribution of

the highly reactive free radicals is very important for the whole of the radical self-purification processes of the natural waters.