

Influence of the cell wall on cyanide destruction by bacteria in the model of respiratory mechanism

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The research is based on the ideology that the destructive centers of cyanides in living microorganisms are respiratory centers, the destruction of cyanides is investigated. The phenomenological equations are used in the work. These equations are not linear and approximate analytical solutions are found for them. The kinetics of destruction of previously experimentally detected dependencies on the preliminary treatment of a suspension with microorganisms by a pulsed electric field is described. The calculations were carried out taking into account the limited transparency of the bacterial cell wall. It is demonstrated that low permeability of the cell wall contributes to the survival of microorganisms in the aggressive environment. The dependence of the transparency of the cell wall on the influence of a pulsed electric field was found. In particular, the exponential dependence of transparency on the field amplitude is demonstrated. The calculation results are consistent with the experiment at a fixed value of the parameters. The agreement between theory and experiment in the entire range of voltage values for the amplitude of the electric field is available.

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