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PARAMETERS OF CHLOROPHYLL FLUORESCENCE INDUCTION CURVES
TO STUDY WHITE SEA PHYTOPLANKTON AND
ITS SENSITIVITY TO H₂S

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The activity of natural phytoplankton in the presence of adverse factors is actively studied using chlorophyll fluorescence. The effect of H₂S at different concentrations on the light-induced photosynthesis of natural cryptophyte microalgae *Rhodomonas* sp. (meromictic waters of the White Sea) was studied using chlorophyll fluorescence induction curves. Fluorescence induction curves (OJIP curves) were recorded using an Aquapen-C 100 fluorometer (Photon System Instruments, Brno, Czech Republic). It was shown that exposure to H₂S (8 mg/L) decreased the relative maximum electron transport rate (ETR_{max}) and the maximum light energy utilization coefficient (α), while non-photochemical fluorescence quenching, associated with a relative increase in the dissipation of excess energy, increased. Analysis of fluorescence induction curves revealed that incubation of microalgae for 10 min with H₂S at concentrations above 2.3 mg/L significantly reduced the functional activity of PSII (PI_{ABS}), expressed as high values of the quantum yield of PSII photochemistry (F_v/F_m), the proportion of active reaction centers (ABS/RC), and the quantum yield of electron transport in PSII (ϕE_0). A decrease in electron transport is accompanied by an increase in the dissipation of unused light energy (DI₀/RC). H₂S at concentrations above 2.3 mg/L reduced the amplitude of all phases, primarily shortening the I-P phase, indicating disruption of electron transport in the plastoquinone-cytochrome b₆f complex between photosystems. Thus, natural *Rhodomonas* sp. microalgae experience stress when exposed to 2.3 mg/L H₂S, which is significantly higher than the concentrations typical for the chemocline and anaerobic zones of water bodies where *Rhodomonas* sp. are found. The use of fluorescence methods is proposed for studying the state of phytoplankton in coastal meromictic water bodies with varying H₂S concentrations.

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Keywords: White Sea, phytoplankton, chlorophyll, sensitivity to H₂S, parameters, fluorescence induction curves.

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