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Effects of turbulence motion on the growth and physiology of aquatic plants

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Abstract

Growth, stem morphology and some biochemical parameters were studied of one completely submerged (*Myriophyllum spicatum*) and two floating leaved macrophytes (*Nymphoides peltata* and *Trapa japonica*) under different turbulence velocities. The root mean square velocities of the high, medium and low amount of turbulence that was generated for the experiment were 2.18 ± 0.66 , 1.48 ± 0.26 and 0.70 ± 0.07 cm s⁻¹, respectively, in the microcosm. All three experimental plants survived exposed to all turbulence conditions provided, although a decrease in shoot elongation rate was associated with an increase in turbulence. Acceleration of tissue H₂O₂ generation and MDA content increased during the study period in all plant species. Oxidative enzymatic activities (POD, IAA and CKX) increased with time in plants under medium and high turbulence velocities. The shoot elongation rate, stem and leaf diameter, chlorophyll content and carbohydrate fractionations were found to be affected by this abiotic stress. It is evident from this study that high turbulence velocity inhibits normal metabolic activities of all three

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