Thermostability and Photostability of Photosystem II of the Resurrection Plant *Haberlea rhodopensis* Studied by Chlorophyll Fluorescence

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The stability of PSII in leaves of the resurrection plant *Haberlea rhodopensis* to high temperature and high light intensities was studied by means of chlorophyll fluorescence measurements. The photochemical efficiency of PSII in well-hydrated *Haberlea* leaves was not significantly influenced by temperatures up to 40 °C. *F₀* reached a maximum at 50 °C, which is connected with blocking of electron transport in reaction center II. The intrinsic efficiency of PSII photochemistry, monitored as *Fᵥ/Fₘ* was less vulnerable to heat stress than the quantum yield of PSII electron transport under illumination (ΦPSII). The reduction of ΦPSII values was mainly due to a decrease in the proportion of open PSII centers (qP). *Haberlea rhodopensis* was very sensitive to photoinhibition. The light intensity of 120 µmol m⁻² s⁻¹ sharply decreased the quantum yield of PSII photochemistry and it was almost fully inhibited at 350 µmol m⁻² s⁻¹. As could be expected decreased photochemical efficiency of PSII was accompanied by increased proportion of thermal energy dissipation, which is considered as a protective effect regulating the light energy distribution in PSII. When differentiating between the three components of qN it was evident that the energy-dependent quenching, qE, was prevailing over photoinhibitory quenching, qI, and the quenching related to state 1-state 2 transitions, qT, at all light intensities at 25 °C. However, the qE values declined with increasing temperature and light intensities. The qI was higher than qE at 40 °C and it was the major part of qN at 45 °C, indicating a progressing photoinhibition of the photosynthetic apparatus.

**Key words:** PSII Photochemistry, Chlorophyll Fluorescence, High Temperature Stress, Photoinhibition