

## Waste Egg Albumin Derived Small Peptides Stimulate Photosynthetic Electron Transport

**Authors :** Seungwon Han, Sung young Yoo, Tae Wan Kim

**Abstract :** The objective of this study was to measure the changes in the photochemical response in the leaves of red pepper (*Capsium annuum* L.) after foliar fertilization of amino acid and small peptides derived from the waste egg. As a nitrogen fertilizer, waste eggs were incubated over one week and then degraded as amino acids and small peptides. The smaller peptides less than 20 kDa were identified by matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF-MS). MALDI-TOF-MS as a rapid analysis method was to show the molecular mass of degraded egg protein. The sequences of peptides were identified as follows;  $\gamma$ -Glu-Cys- $\gamma$ -Glu-Cys- $\gamma$ -Glu-Cys)-Ser and  $\gamma$ -Glu-Cys- $\gamma$ -Glu-Cys- $\gamma$ -Glu-Cys)-Gly. It was clearly illuminated that the parameters related to quantum yields for PSI electron transport ( $\Phi$ RE1O,  $\Psi$ RE1O,  $\delta$ RE1O) and RC/ABS have increased tendency by small peptide application. On the other hand, phenomenological energy fluxes (ABSO/CSM, TRO/CSM, ET2O/CSM, RE1O/CSM, DIO/CSM) have considerably fluctuated with foliar fertilization of small peptides. In conclusion, the small peptides can enhance the photochemical activities from photosystem II to photosystem I. This study was financially supported by RDA Agenda Project PJ 016196012022.

**Keywords :** electron transport, foliar fertilization, small peptide, waste egg

**Conference Title :** ICPSS 2022 : International Conference on Plant and Soil Science

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** August 08-09, 2022