

PA-020

**Effect of Different Concentration of Melatonin in Mustard Green (*Brassica juncea*(L.) Czern) under Salt Stress**Hee-Soon Park<sup>1</sup>, Sang-Mo Kang<sup>1</sup>, Lee-Rang Kim<sup>1</sup>, Ko-Eun Lee<sup>1</sup>, Arjun Adhikari<sup>1</sup>, In Jung Lee<sup>1\*</sup><sup>1</sup>Division of Plant Biosciences, Kyungpook National University, Daegu 41566, Korea**[Introduction]**

Salt stress is one of the non-biological stresses that reduce crop productivity. Salt stress suppresses various physiological reactions in plant. Salt stress also inhibits photosynthesis. In the long term, the growth of plants is restricted by ionic toxicity. Melatonin is a hormone that is biosynthesis in the pineal glands of animals. In 1995, the presence of melatonin was proved in plants. Melatonin promotes plant growth. Moreover, melatonin not only decreases biotic stress but also reduces abiotic stress. Melatonin increase photosynthesis rate and Antioxidative activities to relieve abiotic stress. Accordingly, this study was performed to examine growth changes and physiological reactions when melatonin was treated in salt-damaged plants by concentration.

**[Materials and Methods]**

The experiment was conducted in a Greenhouse of Kyungpook national university, Daegu, South Korea. Mustard greens were divided into two groups (1) Control (delivered 100ml Distilled water), (2) Salt stress (delivered 150mM NaCl in 100ml Distilled water). Each group got treatment for 7days. Afterwards, Salt-stressed mustard greens were treated with melatonin (0 $\mu$ M, 0.1 $\mu$ M, 1 $\mu$ M, 5 $\mu$ M, 10 $\mu$ M) in 100ml distilled water for 16 days. After 0days (before melatonin treatment), 4, 8, 12, and 16days after treatment, plant height, leaf length and leaf width were determined as plant growth parameters. Photosynthesis rate was carried out using portable photosynthesis system. sampling was conducted at 16day after melatonin treatment for ABA analysis.

**[Results and Discussion]**

In the 7 days after salt stress experiment, the salt stress group was significantly decreased in height, leaf length, and leaf width compared to control group. After melatonin treatment, growth was generally increased in melatonin treatment compared to salt+D.W. As compared with salt+D.W, it was confirmed that 1 $\mu$ M melatonin treatment showed significant increases in leaf length and leaf width. Photosynthesis rate was increased significantly in salt+1 $\mu$ M melatonin treatment as compared with salt+D.W. Moreover, ABA content of plants in the salt+1 $\mu$ M was lower as much as that of control plants. As a result of this experiment, the growth inhibition by salt stress was recovered with melatonin.

**[Acknowledgement]**

This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2017R1D1A1B04035601).

\*Corresponding author: Tel. +82-950-5708, E-mail. ijlee@knu.ac.kr