
The study of micro DBD Plasma with the seedling growth and antioxidant activity in *Panax ginseng* C. A. Meyer

Ji Sang Hye ¹, Yoo Seungryul ¹, Kim Seong Bong ¹, Yoo Suk Jae ¹, and Jaesung Oh ¹

¹National Fusion Research Institute, Korea, Republic of

We confirmed that micro DBD plasma enhanced the seedling growth and some metabolites after treatment in *Panax ginseng* C. A. Meyer seedling. The growth rate of ginseng seedlings was compared through the monitoring of height and weight of each treatment. The growth rate of seedling treated with N₂ plasma for 3 min was relatively higher than untreated control and 10 min treatment. Chlorophyll and total phenolic contents (TPC) contents were also increased in plasma treated ginseng seedling compared to untreated control. Especially, the chlorophyll and TPC contents of seedling were higher in upper part (stem and leaves) than lower part (root). The radical scavenging activity was also significantly increased in 3 min plasma treated ginseng seedling. In particular, the upper part showed higher radical scavenging activity than the lower part, and was higher in 3 min plasma-treated ginseng than 10 min plasma-treated ginseng. We also demonstrated that the physicochemical modification of ginseng seedling after the plasma treatment using FTIR (Fourier Transform InfraRed spectroscopy). The changes of ginsenoside content and atypically useful metabolite in of ginseng would be measured by HPLC (High Performance Liquid Chromatography). Taken together, our results suggest that plasma would be able to enhance the seedling growth and increase of useful metabolites in ginseng as a metabolic trigger.

This work was supported by R&D Program of 'Plasma Advanced Technology for Agriculture and Food (Plasma Farming)' through the National Fusion Research Institute of Korea (NFRI) funded by the Government.