

Abstract Submitted
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Redox Characteristics of Thiol of Plants Using Radicals Produced by RF Discharge AKARI NAKAHIGASHI, Saga University, YUSUKE AKIYOSHI, NOBUYA HAYASHI, Saga University, SATOSHI KITAZAKI, KAZUNORI KOGA, MASAHARU SHIRATANI, Kyushu University, SAGA UNIVERSITY TEAM, KYUSHU UNIVERSITY TEAM — The stress reaction of plants has been observed, when the water vapor or nitrogen plasma is irradiated to the seeds or stem, leaf of plants such as radish sprout. The redox reaction of thiol in plants using radicals produced by RF discharge is studied as one of candidates of the growth control mechanism of plants utilizing plasmas. The thiol in the seeds of radish sprout increases with the treatment time when the nitrogen plasma irradiates to the radish sprout at the pressure of 60 Pa. Nitrogen radicals would affect the seed of radish sprout. As a basic study, the treatment effect of thiol compounds, cystine and cystein, is investigated from the major peak of FTIR spectra around 1036 cm^{-1} of cystein thiol and 525 cm^{-1} of cystine disulphide bond. The water vapor plasma irradiated to the cystine sample, the broadband peak around 1060 cm^{-1} appeared on the FTIR spectrum. This peak indicates the generation of the cystein acid, which is the intermediate substance when the cystine has oxidized into cystein by the OH radicals. Above oxidation and reduction characteristics of thiol compounds by the plasmas are roughly coincide with the growth stimulation of plants using plasmas.

Akari Nakahigashi
Saga University

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