

Response of Enzymes Scavenging Active Oxygen in Chloroplasts and Chlorophyll Fluorescence in Alder (*Alnus hirsuta*) Leaves Exposed to Ozone

Takehito Inaba^{1*†}, Tadashi Ogawa^{1*}, Chisato Takenaka¹
and Takafumi Tezuka²

¹Laboratory of Forest Environment and Resources, Graduate School of Bioagricultural Sciences,
Nagoya University, Nagoya 464-8601, Japan

²Division of Informatics and Natural Sciences, Graduate School of Human Informatics,
Nagoya University, Nagoya 464-8601, Japan

[†]E-mail: n47106a@nucc.cc.nagoya-u.ac.jp

(Received July 25, 2000; accepted January 11, 2001)

Key words: *Alnus hirsuta*, ozone, chloroplast, enzymes scavenging active oxygen, chlorophyll fluorescence

A half-sib family of alder (*Alnus hirsuta*) seedlings was exposed to 460 ppb ozone or filtered air containing less than 2 ppb ozone as the control for 3 h. After exposure, chloroplast fractions were obtained from the leaves. The activities of superoxide dismutase (SOD), ascorbate peroxidase (APX) and glutathione reductase (GR) and the level of chlorophyll fluorescence were measured. The activities of SOD, APX and GR were enhanced by ozone exposure. However, the level of chlorophyll fluorescence was not affected by ozone exposure. The authors speculate that active oxygen scavenging enzymes act to protect chloroplasts from ozone exposure and the change of chlorophyll fluorescence is not observed.