

# Nocturnal Uptake and Assimilation of Nitrogen Dioxide by C3 and CAM Plants

Misa Takahashi<sup>a,b,\*</sup>, Daisuke Konaka<sup>a</sup>, Atsushi Sakamoto<sup>a,b</sup>, and  
Hiromichi Morikawa<sup>a,b</sup>

<sup>a</sup> Department of Mathematical and Life Science, Graduate School of Science, Hiroshima University, Higashi-Hiroshima 739-8526, Japan. Fax: +81-82-424-0749.  
E-mail: mtakahas@sci.hiroshima-u.ac.jp

<sup>b</sup> Core Research for Evolutional Science and Technology (CREST), Japan Science and Technology Agency (JST), Kawaguchi 332-0012, Japan

\* Author for correspondence and reprint requests

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In order to investigate nocturnal uptake and assimilation of NO<sub>2</sub> by C3 and crassulacean acid metabolism (CAM) plants, they were fumigated with 4 μl l<sup>-1</sup> <sup>15</sup>N-labeled nitrogen dioxide (NO<sub>2</sub>) for 8 h. The amount of NO<sub>2</sub> and assimilation of NO<sub>2</sub> by plants were determined by mass spectrometry and Kjeldahl-nitrogen based mass spectrometry, respectively. C3 plants such as kenaf (*Hibiscus cannabinus*), tobacco (*Nicotiana tabacum*) and ground cherry (*Physalis alkekengi*) showed a high uptake and assimilation during daytime as high as 1100 to 2700 ng N mg<sup>-1</sup> dry weight. While tobacco and ground cherry strongly reduced uptake and assimilation of NO<sub>2</sub> during nighttime, kenaf kept high nocturnal uptake and assimilation of NO<sub>2</sub> as high as about 1500 ng N mg<sup>-1</sup> dry weight. Stomatal conductance measurements indicated that there were no significant differences to account for the differences in the uptake of NO<sub>2</sub> by tobacco and kenaf during nighttime. CAM plants such as *Sedum* sp., *Kalanchoe blossfeldiana* (kalanchoe) and *Aloe arborescens* exhibited nocturnal uptake and assimilation of NO<sub>2</sub>. However, the values of uptake and assimilation of NO<sub>2</sub> both during daytime and nighttime was very low (at most about 500 ng N mg<sup>-1</sup> dry weight) as compared with those of above mentioned C3 plants. The present findings indicate that kenaf is an efficient phytoremediator of NO<sub>2</sub> both during daytime and nighttime.

**Key words:** Assimilation of NO<sub>2</sub>, CAM Plant, Kenaf, Stomatal Conductance