

# Light-Dependent Changes in the Leaflet Movement Rhythm of the Plant

## *Desmodium gyrans*

Vijay Kumar Sharma<sup>a</sup>, Tom Kristian Bardal<sup>b</sup>, and Anders Johnsson<sup>b\*</sup>

<sup>a</sup> Chronobiology Laboratory, Evolutionary and Organismal Biology Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore- 560 064, Karnataka, India

<sup>b</sup> Department of Physics, Norwegian University of Science and Technology, N-7491 Trondheim, Norway. Fax: +47 73 59 77 10. E-mail: Anders.Johnsson@phys.ntnu.no

\* Author for correspondence and reprint requests

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The movements of the lateral leaflets of the Indian telegraph plant *Desmodium gyrans* (L. F.) DC, have earlier been studied in detail with regards to the effects of chemicals, DC currents, and static magnetic fields. In the present paper we have discussed the oscillation of the lateral leaflets under the influence of white light of various light levels ( $0\text{--}75\ \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ ), produced by an array of LEDs (light emitting diodes). LEDs were used in contrast to fluorescence tubes as in earlier studies in order to minimize changes of wavelength when light intensity was decreased or increased. Furthermore, care was taken to ensure that the temperature in the experimental chamber was constant.

When the oscillations were first monitored in bright light, the oscillations were found to be very rapid and with decreasing light intensity the oscillations slowed down. For light levels lower than about  $20\ \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$  the period of the oscillation of the lateral leaflets was almost constant (or even decreased slightly towards complete darkness). We also show that the oscillations could completely stop under prolonged darkness (for longer than about 6 h) and that such halted oscillations could be restarted in most of the leaflets when the light was turned back on. Such stopping of the oscillation of the lateral leaflets in prolonged darkness suggests that these short period oscillations of the lateral leaflets could have a daily component and in natural environment these oscillations could serve the purpose of optimising the amount of light falling on the leaflets or/and facilitating transpiration of water through stomata. Such a finding could have an implication for the answer to the long standing question of adaptive significance of short period oscillation of the Indian telegraph plant *Desmodium gyrans* (L. F.) DC.

*Key words:* Ultradian Rhythms, Leaflets, *Desmodium*