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Time course of pH change in plant epidermis using microscopic pH imaging system RISAKO DAN, International Christian University, MEGUMI SHIMIZU, Duke University, HARUKO KAZAMA, International Christian University, HIROTAKA SAKAUE, Japan Aerospace Exploration Agency — We established a microscopic pH imaging system to track the time course of pH change in plant epidermis *in vivo*. In the previous research, we have found out that anthocyanin containing cells have higher pH. However, it was not clear whether the anthocyanin increased the pH or anthocyanin was synthesized result from the higher pH. Therefore, we further investigated the relationship between anthocyanin and pH change. To track the time course of pH change in plant epidermis, we established a system using luminescent imaging technique. We used HPTS (8-Hydroxypyrene-1,3,6-Trisulfonate) as pH indicator and applied excitation ratio imaging method. Luminescent image was converted to a pH distribution by obtained *in vitro* calibration using known pH solution. Cellular level observation was enabled by merging microscopic color picture of the same region to the pH change image. The established system was applied to epidermal cells of red-tip leaf lettuce, *Lactuca Sativa L.* and the time course was tracked in the growth process. We would discuss about the relationship between anthocyanin and pH change in plant epidermis.

Risako Dan
International Christian University

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