Light Stress Is Not Effective to Enhanced Crassulacean Acid Metabolism

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Clusia minor L., a C_3-CAM intermediate, and *Clusia multiflora* H. B. K., a C_3 obligate, present two physiotypes of a similar morphotype occurring sympatrically in the field. Both species, exposed 2 days to high light, show similar responses to this kind of stress: (i) the level of xanthophyll pigments in tested plants during the daycourse adapts to stress, (ii) the levels of antheraxanthin and zeaxanthin clearly increase during the afternoon showing increased de-epoxidation, (iii) the changes in the xanthophyll cycle are similar. Exposure to high light increases the malate levels in *C. minor* during the afternoon while decreases the day/night changes of the malate levels, and hence the Crassulacean Acid Metabolism (CAM) expression. It can be concluded that strong light applied as a single stress factor to well-watered plants is not effective in strengthing the CAM metabolism in a C_3-CAM intermediate plant but rather suppresses the CAM activity despite exposure to high light energy. It is suggested that, when water supply is not limiting and other stresses do not prevail, C_3 allows to use up the citrate pool, especially in the afternoon and enables a superior daily photon utilization.

Key words: Oxidative Stress, Xanthophyll Cycle, *Clusia*