Photosynthetic adaptation of *Euphorbia fractiflexa* (Euphorbiaceae) and survival in arid regions of the Arabian Peninsula. 

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Arid regions of the Arabian Peninsula are characterized by a short wet season with erratic rainfall, high temperature, and high evaporation. In these arid regions, the leafless stem succulent *Euphorbia fractiflexa* S. Carter & J.R.I. Wood (Euphorbiaceae) is an abundant perennial. Work presented in this paper aimed at investigating crassulacean acid metabolism (CAM) as a physiological adaptation crucial for survival of *E. fractiflexa* in arid regions of the Arabian Peninsula. Work involved investigations of stomatal diffusive conductance, chlorophyll fluorescence, and cell sap titratable acidity. Results represent the first report of obligate CAM in *E. fractiflexa*. Low values of stomatal conductance and dampening of CAM acidification–deacidification cycles during the long dry season also denoted tendency of this species to shift from obligate CAM to CAM-idling. Results also showed water stress-induced reduction in Photosystem II (PSII) activity occurring in concomitance with increased non-photochemical quenching of chlorophyll fluorescence denoting operation of non-photochemical energy dissipation mechanisms that are important for photoprotection of the photosynthetic machinery under stress conditions.