

Structural aspects of the chlorenchyma cells in grouping of purslanes

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The foliar ultrastructure of the chlorenchymatous tissues around the vascular bundles of several purslanes were studied in order to assess the patterns of variation and to evaluate the relationships in the genus. The organization of bundle sheath and mesophyll cells around minor vein was mainly examined with emphasis upon various features of their chloroplasts and mitochondria. Purslanes can be distinguished into two types not only by their leaf shape, but also by the various structural aspects compared in the present study. Anatomically, the broad-leaved group showed a typical C-4 foliar structure and exhibited strikingly different mitochondria in their bundle sheath and mesophyll cells. Numerous, darkly-stained bundle sheath mitochondria were large and quite irregular in shape equipped with well-developed cristae, whereas the mesophyll mitochondria were normal. No major structural differences were encountered in the chloroplasts of the two cell types, except their size and starch grains. In contrast, the cylindrical-leaved group having a variation of C-4 foliar structure demonstrated significant structural differences in their chloroplasts. The bundle sheath chloroplasts of this group showed an agranal to rudimentary thylakoidal membrane system along with very well-developed peripheral reticulum either at the periphery of the chloroplast stroma or in the inner portion of stroma. Normal grana formation and peripheral reticulum were observed in the mesophyll chloroplasts. Such structural diversity is also discussed in relation to the structural characteristics known from the two C-4 subtypes, *viz.* NAD-ME subtype and NADP-ME subtype.

Key Words: purslanes, bundle sheath cells, mesophyll cells, chloroplasts, mitochondria