

Abstract

From 23 European and North American strains *Euastrum humerosum/didelta* species complex (Desmidiales) I have obtained 3 lineages in molecular marker trnG^{ucc} group II intron. I did not acquire significant and homogenous results in SSU intron. It is probable that the lineages of trnG^{ucc} intron are very young. SEM revealed one central pore in cell wall and five bulges. The lineages were significantly different in their shape and dimensions. The lineages differentiated mainly in their length and breadth of the cells. The lineages inside morphotype *E. humerosum* differentiated in shape and dimensions of the polar lobe. The lineages inside morphotype *E. didelta* differentiated in shape and dimensions of the neck. That was ascertained using the geometric morphometrics with the measuring. Linear discriminant analysis of the desmids from literature revealed that is possible to partly discriminate groups of the varieties (*E. humerosum* var. *parallelum* and *E. didelta* in lineage A; two formae *E. didelta* f. *val Piora* and *E. didelta* f. *latior* in lineage B; *E. didelta* var. *inermiforme* and *E. humerosum* var. *affine* in lineage C).

Key words: desmids, species, hidden diversity, molecular phylogenetics, geometric morphometrics, *Euastrum*, scanning electron microscopy