

Abstract

Synura petersenii is a wide-spread heterokont flagellate of the class Synurophyceae. Siliceous scales with a typical delicate structure, which can be observed with electron microscope, cover the cells of this species. The taxonomy of *S. petersenii* and, as a matter of fact, of the whole genus *Synura*, is based exclusively on morphological features of the scales. High variability of the scale morphology, found in this species, has led to establishment of many forms and varieties within this species. Later, molecular variability within this species was discovered as well.

In this study, molecular phylogenetic analysis of ITS1-5,8-ITS2 sequences was performed, using strains of *S. petersenii* from different localities of the Czech Republic, Scotland, North America and other regions. This analysis has discovered eight well-supported clades within this species. The same result - unambiguous delimitation of eight groups - was obtained by the detection of (hemi-)CBCs (compensatory base changes) in the secondary structure of ITS2. The presence of (hemi-)CBCs indicates possible presence of reproduction barriers among the clades. The comparison of silica-scales structure of the new-found clades has shown that each of them can be characterized by unique combination of morphological features. In the light of the perfect congruence of all the species concepts used, it is possible to consider the clades as separate species.

The presented study contains an article for the high-impact journal *Nova Hedwigia*, comprising the preliminary results of the research. In this article, six new-found clades are described as new species. The article is included as an attachment.