Taisuke Ohtsuka, Misako Hanada and Yusuke Nakamura : SEM observation and morphometry of *Encyonema leei* (Krammer) nov. comb.

Abstract

Encyonopsis leei krammer 2003, probably a common freshwater diatom in East Asia but so far very little known, is taxonomically examined by using both scanning electron microscopy (SEM) and light microscopy (LM). SEM reveals that this species has ultrastructures which is typical of *Encyonema*, and therefore we propose a new combination, *Encyonema leei* (Krammer) Ohtsuka, Hanada et Yus.Nakam. nov. comb. Although it is similar to *Encyonema lacustre* (C.Agardh) Mills in LM, they are apparently different from each other in the raphe structures. In total 102 specimens collected from four localities in Japan are morphometrically examined based on LM photographs. Four morphometric measurements, i.e. length, width, striae- and areolae densities, are significantly correlated with each other except the combination of striae- and areolae densities. Analysis of scores produced by principal component analysis (PCA) shows as a whole the measures approximately follow multivariate lognormal distribution irrespective of the heterogeneity between localities. The extrapolated PC scores of *E. leei* var. *leei's* type specimens are within the 99% interval of those of Japanese specimens with one exception of PC1 which might shift with the size reduction after the initial cell formation. In contract, the extrapolated scores of *E. leei* var. *sinensis'* type specimens are in total out of the 99% boundary of the multivariate lognormal distribution mainly because of their wider valve in proportion to the length. Therefore, this variety can still be separated from *E.* var. *leei* in spite of the fact that areolae density, which is the chief criterion for their separation suggested in Krammer (2003), is in fact not much different between the two varieties' type specimens.

Key index words : *Encyonema leei*, *Encyonopsis leei* var. *leei*, *Encyonopsis leei* var. *sinensis*, new combination, principal component analysis, ultrastructure