Description of the pseudocryptic species *Conticribra weissflogiopsis* sp. nov. (Thalassiosirales, Bacillariophyta) isolated from brackish waters in Korea, based on its cingulum structure and molecular analysis

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Abstract

We describe the new fultoportulate diatom species, *Conticribra weissflogiopsis*, isolated from brackish waters in Korea, based on morphological characters and molecular data. The new species is characterized by having areolae venation with internal (semi-) continuous cribra, a flat valve face, a single marginal rimoportula replacing a marginal fultoportula, a subcentral ring of the valve face fultoportulae, and a dextral pattern of cingulum structure. The overall valve structure of *C. weissflogiopsis* resembles that of *C. weissflogii*; however, the cingulum structure differs between the two species—*C. weissflogiopsis* has a dextral offset of band opening in the cingulum, whereas *C. weissflogii* has a sinistral offset. Phylogenetic analysis of the nuclear small subunit ribosomal DNA (SSU rDNA) revealed that *C. weissflogiopsis* is located in the *Conticribra* clade. Further, the pairwise genetic distance based on the SSU rDNA and the internal transcribed spacer 2 (ITS2) indicated that *C. weissflogiopsis* is a distinct *Conticribra* species. On the basis of the morphology and molecular phylogeny, we expand the hypothesis regarding the morphological evolution of *Conticribra* species.

Key words: brackish water, cingulum, *Conticribra*, *Conticribra weissflogiopsis*, diatoms, pseudocryptic species

Introduction

The fultoportula-bearing genus *Conticribra* Stachura-Suchoples et Williams (2009: 482) was recently established to accommodate *C. tricircularis* Stachura-Suchoples et Williams (2009: 479) and three species of *Thalassiosira* (Stachura-Suchoples & Williams 2009). The genus is characterized by the presence of loculate areolae with (semi-) continuous cribra; a non-plicate valve face; and the rimoportula located on the valve mantle, replacing a fultoportula (Stachura-Suchoples & Williams 2009). The genus *Conticribra* comprises four species, namely, two fossil species—*C. tricircularis* and *C. nevadica* (Khursevich et VanLandingham) Stachura-Suchoples et Williams (2009: 482; basionym: *Thalassiosira nevadica* Khursevich & VanLandingham 1993: 3902)—and two extant species—*C. guillardii* (Hasle) Stachura-Suchoples et Williams (2009: 482; basionym: *Thalassiosira guillardii* Hasle 1978: 274) and *C. weissflogii* (Grunow) Stachura-Suchoples et Williams (2009: 482; basionym: *Micropodiscus weissflogii* Grunow in Van Heurck 1885: 210).

The presence of valve face fultoportulae constitutes the distinguishing character between living *Conticribra* species and fossil *Conticribra* species. The two living taxa are further distinguished by the number and distribution of the valve face fultoportulae. *Conticribra guillardii* has 0–4 randomly distributed valve face fultoportulae (Hasle 1978), whereas *C. weissflogii* has many valve face fultoportulae arranged in a slightly irregular ring pattern within the subcentral area (Fryxell & Hasle 1977). The number and position of the subcentral fultoportulae in *C. weissflogii* have been shown to vary according to the diameter of valve and salinity (e.g., Johansen & Theriot 1987) and also to various cultural conditions such as deficiency of nutrient (Kang et al. 1996). Nevertheless, the variation of valve face fultoportulae represents a distinguishing character for *C. weissflogii* (Fryxell & Hasle 1977), because no other species shows this pattern of fultoportulae.

Recently, the greater potential diversity of diatoms was recognized by the discovery of cryptic and pseudocryptic species belonging to genera such as *Pseudo-nitzschia* H. Peragallo (in H. & M. Peragallo 1900: 263; see Amato et al. 1

There are nomenclatural problems that require resolution with this genus, but these are beyond the scope of this paper.
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