

Three New Combinations of Japanese Planktonic Cyanobacteria Species

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(Received 24 November 2011; accepted 28 December 2011)

Abstract Three new combinations of Japanese planktonic cyanobacteria species, *Sphaerospermopsis oumiana*, *Dolichospermum minisporum* and *D. ucrainicum* are proposed.

Kew words: *Anabaena*, *Dolichospermum minisporum* comb. nov., *Dolichospermum ucrainicum* comb. et stat. nov., *Sphaerospermopsis oumiana* comb. nov.

Planktonic *Anabaena sensu lato* taxa have been dividing to several new genera and many new combinations have been proposed (e.g. Wacklin *et al.*, 2009; Zapomělová *et al.*, 2009). In this paper, we propose additional three new combinations for Japanese planktonic cyanobacteria species of *Anabaena*.

1. *Sphaerospermum oumianum* (M.Watan.) Tuji et Niiyama 2010

Since the genus *Sphaerospermum* Zapomělová *et al.* is illegitimate as it is a later homonym of *Sphaerospermum* Cleve (Zapomělová *et al.*, 2010), the new nomenclatural proposal for *Sphaerospermum oumianum* (M.Watan.) Tuji et Niiyama 2010 becomes necessary. Zapomělová *et al.* (2009) also mentioned the relegation of this species in this genus.

Sphaerospermopsis oumiana (M.Watan.) Tuji et Niiyama, comb. nov.

Basionym: *Anabaena oumiana* M.Watan., Bull. Nat. Sci. Mus., Ser. B. 22: 3, f. 5–7, 14, 15, 19, 21. 1996.

Synonym: *Sphaerospermum oumianum* (M. Watan.) Tuji et Niiyama, Bull. Nat. Sci. Mus., Ser. B. 36: 79, 2010.

2. *Anabaena minispora* M.Watan. and *A. spiroides* Kleb. var. *ucrainica* Schkorb.

Tuji and Niiyama (2010) demonstrated that *Anabaena minispora* and *A. ucrainica* are included in the cluster A' in 16S rRNA phylogenetic tree, which corresponds to the genus *Dolichospermum*. The morphological characters of both taxa, such as, trichomes isopolar, vegetative cells obligatory with gas vesicles, apical cells similar to vegetative cells, heterocytes intercalary and solitary, akinetes in small distance from heterocytes, also agree with the genus *Dolichospermum* (Watanabe, 1996, 1998; Watanabe *et al.*, 2004; Wacklin *et al.*, 2009). Komárek & Zapomělová (2007) treats *Anabaena ucrainica* (Schkorb.) M. Watan. as a synonym of *Anabaena mucosa* Komárek-Legn. et Eloranta. However, they are considered to be different species according to the different sizes of vegetative cells and akinetes, and the regularity and diameter of trichome coils (Komarková-Legnerová and Eloranta, 1992; Watanabe, 1996).

Dolichospermum minisporum (M.Watan.) Tuji et Niiyama, comb. nov.

Basionym: *Anabaena minispora* M.Watan., Bull. Nat. Sci. Mus., Ser. B. 24: 5–6, f. 11, 12, 28. 1998.

Dolichospermum ucrainicum (Schkorb.) Tuji et

Niiyama, comb. et stat. nov.

Basionym: *Anabaena spiroides* Kleb. var. *ucrainica* Schkorb., Not. Syst. Inst. Crypt. Hort. Bot. Petropol. 2: 88. 1923.

Synonym: *Anabaena ucrainica* (Schkorb.) M.Watan., Bull. Nat. Sci. Mus., Ser. B. 22: 3. 1996.

Acknowledgments

We thank Dr. E. Zapomělová for reading the manuscript and fruitful discussion.

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