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Morphology and SSU rRNA gene sequence of the new brackish water ciliate, *Anteholosticha pseudomonilata* n. sp. (Ciliophora, Hypotrichida, Holostichidae) from Korea

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Abstract

The morphology and infraciliature of a hypotrichous ciliate collected from brackish-water biotope (salinity 5 ‰) in South Korea were investigated which indicate this organism should be a new form within the genus *Anteholosticha* Berger, 2003. Careful morphological comparison and SSU rRNA gene sequence alignment with similar species are performed to support the validity of *Anteholosticha pseudomonilata* **n. sp.** The main diagnostic and distinguishing characteristics of the new species include: 1) 8–11 transverse cirri; 2) midventral complex composed of 10–16 pairs of zigzagging midventral cirri, extending posteriorly to slightly ahead of pretransverse cirri; 3) cortical granules colourless and pigment-like, 0.5 μm across, longitudinally arranged in more or less short rows on whole cortex except along dorsal kineties and cirral rows; and 4) 8–12 macronuclear nodules located left of midline.

Key words: *Anteholosticha*, infraciliature, morphology, new species, SSU rRNA gene sequence

Introduction

Morphological identification is always a great challenge for the highly divergent groups of ciliates, especially for the complicated hypotrichs (Berger 2006; Borror 1972; Hemberger 1985; Kahl 1932). This situation has been remarkably improved in virtue of the staining techniques which can reveal the precise infraciliature and argyrome. However, taxonomic difficulties still exist due to the insufficient descriptions and misinterpretations in some of the previous reports. In addition, the subjective weight of characteristics used for determining differentiation of species or variation between populations was largely depended on the experience and authority of the taxonomists (Borror & Hill 1995; Song & Packroff 1997; Song *et al.* 1998; Wilbert & Song 2008). In the recent decades, small subunit rRNA gene sequence has been widely used for the phylogenetic study of ciliates and gradually becomes a conservative diagnostic feature for species definition and circumscription (Chen *et al.* 2010; Elwood *et al.* 1985; Gong *et al.* 2007; Jiang *et al.* 2010; Li *et al.* 2009; Liu *et al.* 2010; Lynn & Small 2002). Nevertheless, many forms in the molecular data were not appropriately identified or lacked corresponding morphological data which in turn may cause further confusion to the morphological and phylogenetic studies.

Anteholosticha was erected by Berger (2003) to include those species previously classified in the rather vaguely defined genus *Holosticha* Wrześniowski, 1877 which lack its apomorphies (i. e. anterior end of left marginal row curved rightwards and proximal-most membranelles widened) and caudal cirri. During the survey of the ciliate fauna inhabiting brackish biotopes in South Korea, one of our isolates was demonstrated to be an unknown form belonging to this genus. In the present work, its diagnosis, morphological description, illustrations and morphometric data are given. In addition, phylogenetic analysis based on SSU rRNA gene sequences alignments was carried out to verify the validity of the new form.

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