Pleosporales in Japan (3). The genus Massarina

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Abstract Twelve species of the genus Massarina collected from Japan are reported in this article. Among them, 4 new species, M. constricta, M. japonica, M. submediana, and M. uniserialis, are described, illustrated, and compared to similar species. Two species, M. scirpina and M. ryukyuensis, are described as new combination, and 4 species, M. arundinariae, M. fluviatilis, M. peerallyi, and M. rubi, are reported from Japan for the first time. One bambusicolous species, Metasphaeria tuberculosa, is considered to be a synonym of Massarina bambusina.

Key words Lophiostomataceae · Massarina · Metasphaeria · Pleosporales

Introduction

In this third report on the Pleosporales in Japan, the genus Massarina is discussed. We describe here 12 species of the genus that were collected mainly from riverside environments or bamboo host plants. The aim of this article is to renew information on the Japanese mycoflora of Massarina, which has been poorly known until now.

Materials and methods

Methods for microscopic observation, single ascospore isolation, and cultivation were described in our previous paper (Tanaka and Harada 2003). The textura types of ascomal wall in surface view are as in Korf (1958). All specimens and isolates, except for some borrowed materials from YAM, are maintained at the Herbarium of Hirosaki University, Fungi (HHUF).

Taxonomy


The genus Massarina was established by Saccardo in 1883 to segregate fungi with typically hyaline ascospores, which had previously been placed under the genus Massaria De Not. (Bose 1961). Massarina includes saprophytes and endophytes of woody plants and a few plant pathogens such as M. walkeri Shoemaker, C.E. Babc. & J.A.G. Irwin occurring on Medicago sativa L. (Hyde 1995c; Shoemaker et al. 1991). Most species of the genus are saprophytes, with a terrestrial, freshwater, or marine habitat (Aptroot 1998; Hyde 1995c).

This genus belongs in the Lophiostomataceae, Pleosporales (Kirk et al. 2001), and it is characterized as having single or aggregated, immersed to erumpent, spherical to hemispherical, pseudothecioid ascomata; cellular pseudoparaphyses; bitunicate, cylindrical to clavate or obpyriform ascii; and hyaline, 1–3(–7)-septate, fusiform to long ellipsoid ascospores that mostly have a mucilaginous sheath or appendages (Aptroot 1998; Hyde and Aptroot 1997).

In 1961, the genus Massarina was reviewed in part by Bose (1961), who studied mostly European species. Barr (1992) discussed 16 species of Massarina from North America. Recently, Aptroot (1998) published “A world revision of Massarina,” providing a list of 160 species that had been placed in the genus. Among these, 43 species were...
accepted in the genus by Aptroot (1998). Since then, several species have been added to the genus (Ahn and Shearer 1999; Aptroot et al. 2000; Hyde and Goh 1998; Poon and Hyde 1998; Poonyth et al. 1999; Scheuer 1999; Tsui et al. 1999; Van Ryckegem and Aptroot 2001). At present, it has been estimated that the genus consists of about 125 species (Kirk et al. 2001). In Japan, however, only 6 species of the genus Massarina have been known so far, viz., *M. arundinacea* (Sowerby: Fr.) Leuchtm. (Katumoto 1968), *M. oplismeni* Katum. & Y. Harada (1979), *M. papulosa* (Durieu & Mont.) S.K. Bose [≡*Oletheriostrigula papulosa* (Durieu & Mont.) Huhndorf & R.C. Harris; Otani and Mikawa 1971], *M. pustulata* I. Hino & Katum. (1955), *M. ramunculicola* K.D. Hyde (Nakagiri 1993), and *M. yezoensis* I. Hino & Katum. (Hino 1961).

To date, the genus *Lophiostoma* Ces. & De Not., which is morphologically similar to *Massarina*, has mainly been distinguished by the presence of siltlike ostioles and “lophiostomatoid” peridium structure of ascomata. Recently, Liew et al. (2002) carried out a phylogenetic analysis of both genera based on molecular data. They concluded that these characters are very variable and cannot be applied to distinguish the genera because several *Massarina* species with narrowly fusiform ascospores [e.g., *M. armatispora* K.D. Hyde, Vrijmoed, Chinnaraj & E.B.G. Jones, *M. bipolaris* K.D. Hyde, *M. corticola* (Fuckel) L. Holm, *M. fronsisubmersa* K.D. Hyde, and *M. rubi* (Fuckel) Sacc.] formed a monophyletic clade with the genus *Lophiostoma*. Some fungi (e.g., *M. japonica* and *M. uniserialis*) in this article that are similar to *M. bipolaris* or *M. fronsisubmersa* may have affinities with *Lophiostoma*. However, we follow the generic concept of *Massarina sensu lato* proposed by Aptroot (1998) until the definition of both genera is further clarified.


   For other synonyms, see Aptroot (1998).

   Ascii 70–131.5 × 9.5–15.5 μm. Ascospores 23–40.5 × 3.5–6 μm. For further descriptions, see Katumoto (1968) and Shoemaker and Babcock (1989).

   Cultural characteristics. Colonies on potato dextrose agar (PDA) 7.5 cm in diameter after 4 weeks, Hair Brown (5E4; Kornerup and Wanscher 1978) with irregular margin, arachnoid; reverse similar; no pigment is produced. On rice straw agar (RSA), ascomata were formed on the surface of rice straws within 1 month. Ascospores resemble those found in nature, measuring 29.5–36 × 4.5–5.5 μm (mean = 32.4 × 5.0 μm, n = 20).

   Materials examined. On culms of *Phragmites australis* (Cav.) Trin. ex Steud.: Toyohira River, riverbank, Sapporo, Hokkaido, 141°21′ E, 43°02′ N, June 23, 2000, KT. 366 (HHUF 27542); Sanpinai, Hirosaki, Aomori, 140°30′ E, 40°34′ N, July 1, 2001, KT. 552 (HHUF 27543, culture 4317); Oowasawa River, riverbank, Kadoke, Hirosaki, Aomori, 140°30.532′ E, 40°34.276′ N, July 29, 2001, KT. 600 (HHUF 27544, culture 4318); Akaiwa, Funadomari, Isl.


   Notes. This common species on *P. australis* has been described many times (Dennis 1978; Ellis and Ellis 1985; Eriksson 1967; Hedjaroude 1968; Leuchtmann 1984; Müller 1950; Shoemaker and Babcock 1989). It has already been recorded in Japan, as *Leptosphaeria arundinacea* (Katumoto 1968; Shirai and Hara 1927).


   Ascomata 250–280 μm high, 550–800 μm diameter (including the rim), with single locule of 350–450 μm diameter. Beak 60–70 μm long, 100–125 μm wide, composed of dark brown subglobose 2–8 μm diameter cells, with hyaline periphyses. Ascomal wall composed of vertically orientated arachnoid; reverse similar; no pigment is produced. On rice straw agar (RSA), ascomata were formed on the surface of rice straws within 1 month. Ascospores resemble those found in nature, measuring 29.5–36 × 4.5–5.5 μm (mean = 32.4 × 5.0 μm, n = 20).

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