

## *Microsphaeropsis rugospora*, a new species from Japanese soil

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A new species of *Microsphaeropsis* (Sphaeropsidales, Coelomycetes), *M. rugospora*, is described and illustrated. This fungus is characterized by its rapid growth on common media such as oatmeal and potato-carrot agars; semi-immersed to immersed, nearly globose, papillate pycnidia; pale yellowish brown, translucent, membranaceous peridium; monophialidic, ampulliform conidiogenous cells; and one-celled, dark brown, globose conidia ornamented with distinct tubercles. The holotype was isolated from the cultivated soil in Tanegashima Island, southern Japan.

Key Words—coelomycete; Japan; *Microsphaeropsis rugospora*; soil fungus; taxonomy.

In an exploratory survey of soil-borne mitosporic fungi as producers of secondary metabolites useful to the pharmaceutical industry, a pale yellow pycnidial coelomycete was encountered and isolated on potato-dextrose agar. The fungus was characterized as follows: rapid growth on common media, conidiomata which are non-pulvinate, semi-immersed to immersed, nearly globose, glabrous, with a slightly papillate ostiole; pale yellowish brown, translucent, membranaceous peridium; discrete, ampulliform, monophialidic conidiogenous cells; and one-celled, dark brown, globose, thick-walled, rugose conidia which germinate very easily. In accordance with this profile, our isolate is included in the genus *Microsphaeropsis* Höhnelt. (Morgan-Jones, 1974a, b; Sutton, 1977, 1980; Morgan-Jones and White, 1987; Heiny et al., 1992; Katamoto, 1992). However, it proved to be sufficiently different from all described species of *Microsphaeropsis* to warrant its description as a new species.

### Taxonomy

*Microsphaeropsis rugospora* Someya, Yaguchi et Udagawa, sp. nov. Figs. 1–9

Coloniae in agaro farinae avenaceae mixto (OA) effusae, funiculosae, planae, ex mycelio basali coacto interdum tenuiter constantes, conidiomatibus fuscis abundantibus formantes, cum hyphis aeriis albis obtectae, griseae vel brunneo-aurantiacae vel avellanae; reversum griseo-brunneum vel griseo-aurantiacum vel ochraceum.

Coloniae in agarum cum decocto tuberorum et carotarum (PCA) effusae, planae, tenues, ex mycelio vegetativo submerso constantes, cum hyphis aeriis laxae obtectae, griseae; conidiomata dispersa; reversum incoloratum.

Conidiomata pycnidialia, semiimmersa vel immersa,

globosa vel subglobosa, 140–320  $\mu\text{m}$  diam, pallide flavo-brunnea, glabra; ostium singulum, circulare, 32–40  $\mu\text{m}$  diam, obtuse papillatum; peridium tenue, 6–20  $\mu\text{m}$  crassum, primo dilute flavo-brunneum, translucens, deinde flavo-brunneum vel dilute brunneum, membranaceum, ex “textura angularis” compositum. Cellulae conidiogenae discretae, monophialidicae, ampulliformes vel breviter lageniformes, 6.5–9.5  $\times$  4.5–7  $\mu\text{m}$ , hyalinae, leves, simplices, ex cellulis interioribus convexi formantae. Conidia aseptata, primo hyalina vel flavo-brunnea, deinde atrobrunnea, globosa vel subglobosa, (6–)8–9.5  $\mu\text{m}$  diam, incrassata, rugosa vel reticulata cum retibus lobatis (sub SEM).

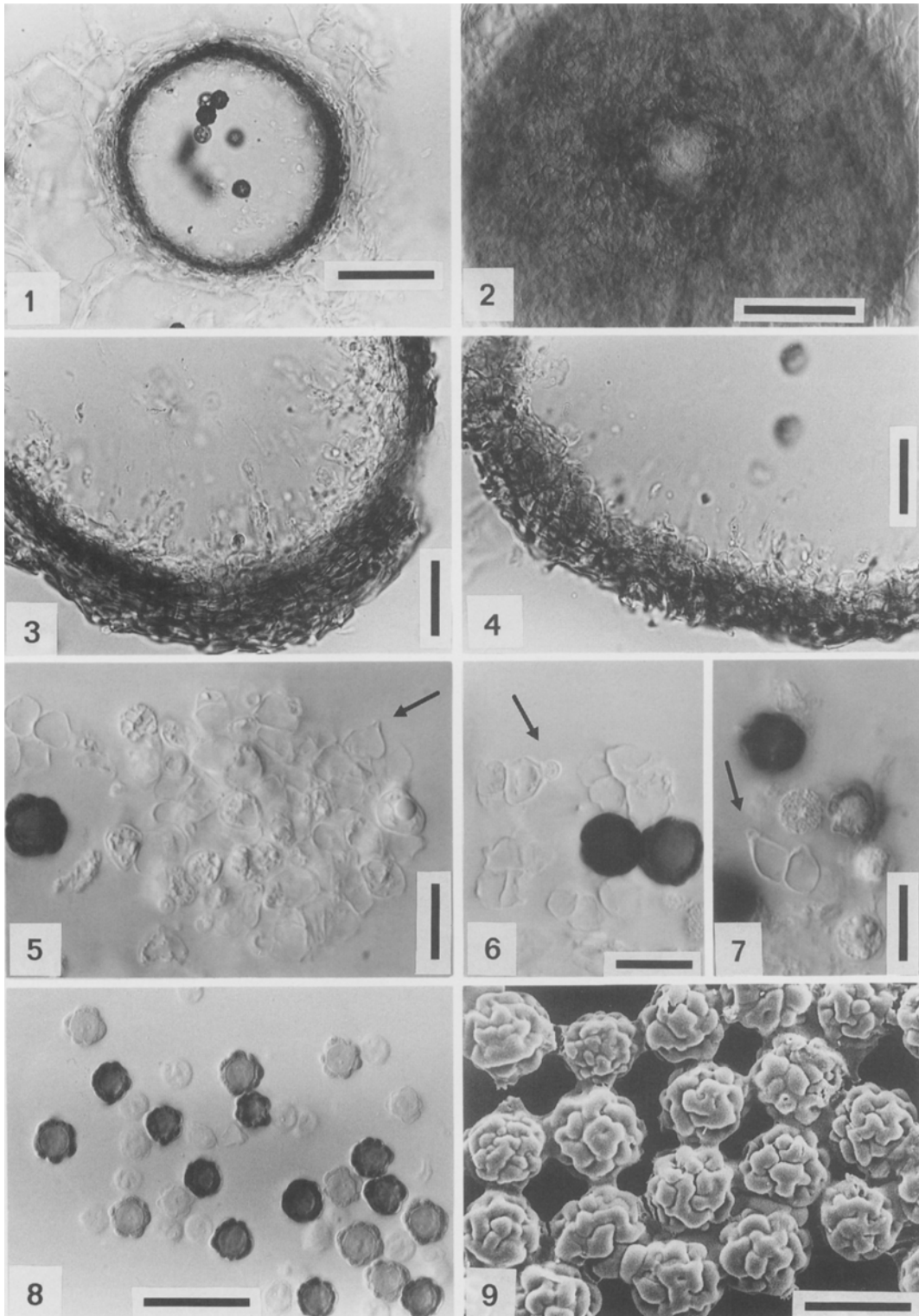
Mycelio vegetativo ex hyphis hyalinis vel pallide flavis, ramosis, septatis, levibus vel parum asperatis, interdum anastomosantibus, 1–5  $\mu\text{m}$  diam composito.

Holotypus: PF1197, colonia exsiccata in cultura ex solo sativo, Tanegashima insula, in Japonia, 21. iii. 1997, a A. Someya isolata et ea collectione fungorum Musei et Instituti Historiae Naturalis Chiba (CBM) conservata. Isotypus: TRTC.

Etymology: from Latin, *rugosus*=wrinkled and *-sporus*=spored, referring the conidium ornamentation.

Colonies on OA spreading broadly, attaining a diameter of 60–70 mm in 7 d at 25°C, funiculose, plane, consisting of a comparatively thin basal felt, producing abundant dark-colored conidiomata into the felt, with dense development of white to pale colored aerial hyphae often obscuring the individual conidiomata, Grey to Brownish Orange (M. 1D1-5C4, after Kornerup and Wanschler, 1978) or Hazel (Rayner, 1970); exudate small, clear, scattered; reverse Greyish Brown to Greyish Orange (M. 5E3-B4) or Ochreous (R).

Colonies on PCA growing rapidly, attaining a diameter of 65 mm in 7 d at 25°C, plane, thin, consisting



Figs. 1–9. *Microsphaeropsis rugospora*.

1. Vertical section of young conidioma. 2. Top view of conidioma, showing an ostiolum. 3, 4. Cross section of conidiomatal walls. 5–7. Conidiogenous cells (arrows). 8. Various stages of conidia (LM). 9. Conidia, showing rugose surface (SEM). Bars: 1, 2=50  $\mu\text{m}$ ; 3, 4=20  $\mu\text{m}$ ; 5–7=10  $\mu\text{m}$ ; 8=20  $\mu\text{m}$ ; 9=10  $\mu\text{m}$ .

of a spreading, submerged vegetative mycelium, becoming gray shades due to the development of scattered conidiomata in the agar, with sparse development of loose aerial hyphae throughout the colony area but not affecting the overall appearance of the culture; reverse uncolored.

Conidiomata pycnidial, semi-immersed or immersed, separate, globose to subglobose, 140–320  $\mu\text{m}$  in diam, pale yellowish brown but superficially black due to the dark brown conidial masses, glabrous; ostiole single, circular, central, 32–40  $\mu\text{m}$  in diam, inconspicuously papillate, protruding up to 25  $\mu\text{m}$  long; peridium thin, 6–20  $\mu\text{m}$  thick, at first pale yellowish brown and translucent, becoming yellowish brown to pale brown, membranaceous, composed of "textura angularis" with a few layered cells measuring 4–8  $\mu\text{m}$  in diam. Conidiogenous cells enteroblastic, determinate, discrete, monophialidic, ampulliform to slightly lageniform, 6.5–9.5  $\times$  4.5–7  $\mu\text{m}$ , hyaline, smooth-walled, simple, with a very minute colarlette, formed from inner cells of the pycnidial peridium. Conidia 1-celled, at first hyaline, soon becoming yellowish brown, dark brown in age, globose to subglobose, (6–)8–9.5  $\mu\text{m}$  in diam, thick-walled, rugose with distinct tubercles, lobate-reticulate (under SEM).

Vegetative mycelium composed of hyaline to pale yellow, branched, septate, smooth or slightly roughened, sometimes anastomosed, 1–5  $\mu\text{m}$  diam hyphae; frequently aggregated into closely appressed strands.

At 37°C, growth is nil.

Specimen examined: PF1197 (holotype), a dried culture derived from an isolate of cultivated soil, Tanegashima island, Nakatane-machi, Kumage-gun, Kagoshima Pref., Japan, isolated by A. Someya, March 21, 1997. The holotype has been deposited with the Natural History Museum and Institute, Chiba, Japan (CBM). Isotype: TRTC.

The genus *Microsphaeropsis*, based on the type species *M. olivacea* (Bonord.) Höhnelt, was recently redefined by Sutton (1971) and restricted to pycnidial species with small pigmented unicellular conidia produced from phialides. Sutton transferred two species previously classified in *Coniothyrium* Corda to *Microsphaeropsis* on this basis. At the same time, Sutton recognized that *Coniothyrium* cannot be used to accommodate possibly the majority of the species previously classified in it, because the conidiogenous cells of *C. palmarum* Corda (lectotype species of *Coniothyrium*) proliferate percurrently in a manner reminiscent of anellophores and are sufficiently different in nature to be of use in distinguishing *Coniothyrium* sensu stricto from most species previously placed in the genus. Morgan-Jones et al. (1972), in a consideration of *Coniothyrium* and *Microsphaeropsis*, also pointed out that conidiogene-

ous cells of *C. palmarum* to be phialidic but showing successive percurrent proliferation at the apex. Thus, *Microsphaeropsis* has been adopted for species possessing enteroblastic conidiogenous cells in which successive conidia secede at the same level (Morgan-Jones, 1974a; Sutton, 1980; Morgan-Jones and White, 1987).

The conidia of several *Microsphaeropsis* species have surface ornamentation, though *M. olivacea* produces conidia with smooth walls (Morgan-Jones, 1974b). In *M. concentrica* (Desm.) Morgan-Jones, the conidia were found to have an outer granular layer with large protuberances giving the surface a verrucose appearance (Morgan-Jones and White, 1987). The globose and rugose conidia of *M. rugospora* are somewhat similar to those of *M. concentrica*, but the conidia of that species are smaller (3–5.5  $\times$  3–4.5  $\mu\text{m}$  after Morgan-Jones and White), and in addition the SEM examination shows them to be quite distinct. The conidium ornamentation of *M. rugospora* (Fig. 9) is rather reminiscent of that of *Aspergillus ostianus* Wehmer (Kozakiewicz, 1989).

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