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Three species of *Sordaria*, and *Eudarluca biconica* from cherry seeds

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Key Words——*Prunus* seeds; *Eudarluca biconica*; *Sordaria fimicola*; *S. nodulifera*; *S. tamaensis*.

Summary

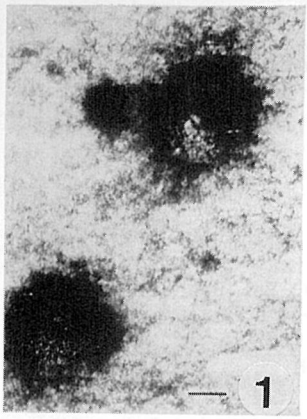
Three species of *Sordaria*, *S. fimicola*, *S. nodulifera*, sp. nov. and *S. tamaensis*, sp. nov., and one species of *Eudarluca*, *E. biconica* are described. All of these species were isolated from cherry seeds collected at the cherry tree preservation forest at Asakawa, Tokyo, Japan.

During a survey of seed-borne plant pathogenic fungi associated with forest tree seeds, a total of 1064 fungal isolates belonging to 31 genera were obtained from 1000 seeds of two species of cherry collected at the cherry tree preservation forest at Tama Forest Science Garden (formerly the Asakawa Experimental Forest, Forestry and Forest Products Research Institute) (Watanabe et al., 1987). Of the 44 ascomycetous isolates, 21 belonging to three species of *Sordaria*, *S. fimicola* (Rob.) Ces. & De Not., *S. nodulifera* T. Watanabe, sp. nov., and *S. tamaensis* T. Watanabe, sp. nov.; four to *Eudarluca biconica* Katumoto; and 19 to *Chaetomium dolichotrichum* Ames. *Melanospora* sp. was only detected on the agar plates without pure isolation. From these Ascomycetes, three species of *Sordaria*, and *Eudarluca biconica* are described herein.

Eudarluca biconica Katumoto, Trans. Mycol. Soc. Japan **27**: 14. 1986. Figs. 1–3

Colonies on PDA dark green, velvety. Ascocarps subglobose or ampulliform, black, 115–210 μm in diam.; peridium brown, pseudoparenchymatous. Asci 8-spored, cylindro-clavate, bitunicate, stipitate, 50–75 $\times$ 7–8 μm. Pseudoparaphyses present. Ascospores biseriate, elliptical, hyaline, 2-celled, constricted at the septum, guttulate, 15–20 $\times$ 3.5–4.5 μm, with a gelatinous appendage at each end; appendages subglobose, hyaline, 2.5–3.8 μm in diam. Anamorph unknown.

Hab.: On seeds of *P. lannesiana* (Carr.) Wilson var. *speciosa* (Koidzumi) Makino, Asakawa, Tokyo, Japan.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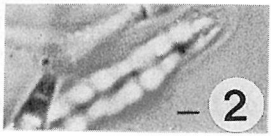
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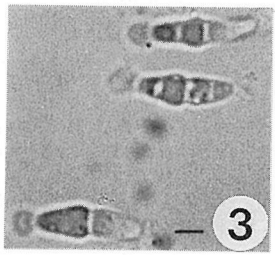
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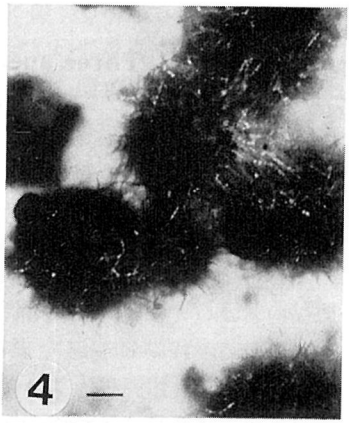
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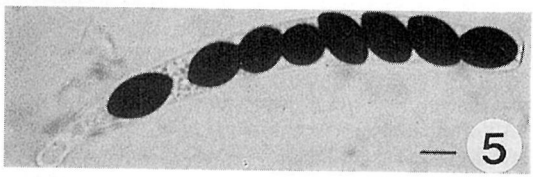
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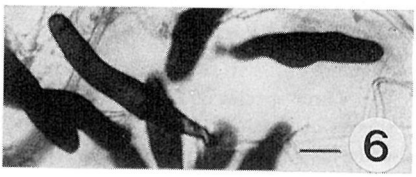
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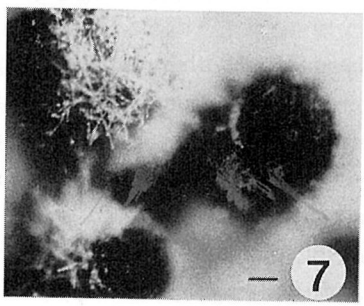
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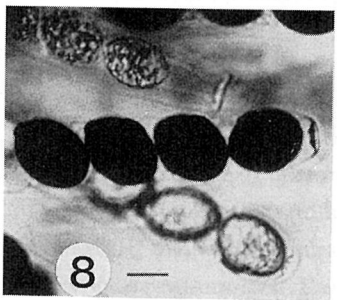
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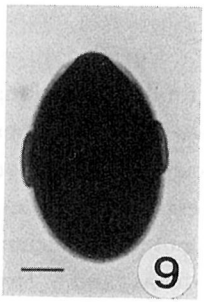
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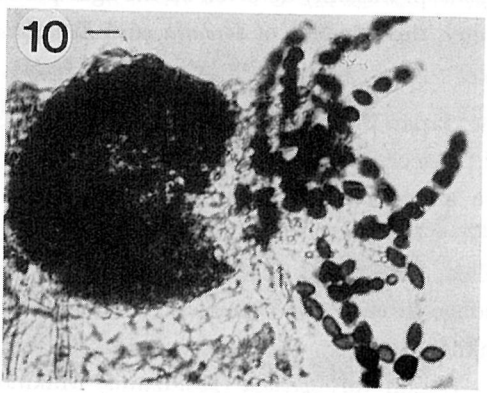
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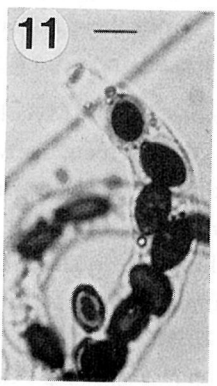
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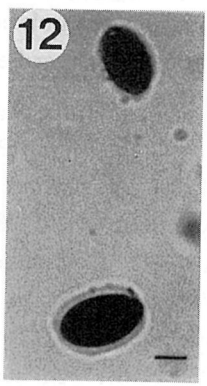
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Materials: Cultures from seeds of *P. lannesiana* (Carr.) Wilson var. *speciosa* (Koidzumi) Makino, Asakawa, Tokyo, Japan, Jan. 20, 1985, T. Watanabe, TW (85–100; 85–101; 85–102; 85–99) (dried and living) deposited in the Herbarium, Forestry and Forest Products Research Institute (FFPRI).

This fungus was described by Katumoto (1986) without living culture. This must be the first record of the culture of this fungus.

Sordaria fimicola (Rob.) Ces. & De Not., Comm. Soc. Crit. Ital. **1**: 226. 1863.

Figs. 4–6

The four isolates studied are almost identical morphologically with the description of *S. fimicola* by the previous workers (Boedijn, 1962; Cain & Groves, 1948; Domsch et al., 1980). The dimensions of the fruiting structures of these isolates are as follows: perithecia, 291.5–550 × (185–)200–425 μm; neck, 90–125 × 60–100 μm; peridial cells, 15–21.3 μm in diam.; asci, 127.5–202.5 × 13.7–17.5(–22.5) μm; ascospores, 15–20 × 10–12.5 μm.

Hab.: On seeds of *P. jamasakura* Sieb. ex Koidzumi, Asakawa, Tokyo, Japan.

Materials: Cultures from seeds of *P. jamasakura* Sieb. ex Koidzumi, Asakawa, Tokyo, Japan, Jan. 20, 1985, T. Watanabe, TW (85–84; 85–85; 85–86; 85–87) (dried and living), FFPRI.

According to Cain and Groves (1948), *S. fimicola* has been isolated from various seeds including beans (*Phaseolus vulgaris* L.) and wheat (*Triticum aestivum* L.), and ascospores in their cultures measured 19–27 × 11–15 (mostly 23–24 × 12–14) μm. This is larger than those in this and another report (Domsch et al., 1980). Furthermore, it is interesting to note that abnormal dark brown empty asci (75–120 × 17.5–22.5 μm) were often observed as scattered masses around the perithecia (Fig. 6) in more than one month old potato-dextrose broth culture.

Sordaria nodulifera T. Watanabe, sp. nov. Figs. 7–9, 13

Peritheciis superficialibus vel immersis, separatis vel gregariis, ovatis vel piriformibus, (350–)447–605 × (200–)315–421 μm, ostiolatis 40–65.8 μm crassis, cum collo conico, nigris, pilis longis hyalinis vestitis, saepe denudatis apicaliter; peridiis pseudoparenchymaticis, atro-brunneis, texturam angularem formantibus, 15–20 μm crassis. Ascis octosporis, cylindraceis, 195–275 × 17.5–22.5 μm, apice truncatis distincte perforatis,

Figs. 1–3. *Eudarluca biconica* (Isolate TW 85–100). 1. Perithecia. 2. Part of ascus and ascospores. 3. Ascospores.

Figs. 4–6. *Sordaria fimicola* (Isolate TW 85–84). 4. Perithecia. 5. Ascus and ascospores. 6. Abnormal dark brown empty asci.

Figs. 7–9. *Sordaria nodulifera*, sp. nov. (Isolate TW 85–72). 7. Perithecia. 8. Part of asci and ascospores. 9. Ascospore.

Figs. 10–12. *Sordaria tamaensis*, sp. nov. (Isolate TW 85–89). 10. Crushed perithecium with discharged asci and ascospores. 11. Asci and ascospores. 12. Ascospores.

Scale bars: 1=50 μm; 2, 3, 9, 12=5 μm; 4, 7=100 μm; 5, 8, 11=10 μm; 6=25 μm; 10=20 μm.

brevi-stipitatis. Ascosporis oblique monostichis, ellipsoidibus, (17.5–)20–23.8×(13.7–)15–16.3(–21.3) μm, saepe cum mono -vel tetra-nodulis, 5–7.5×1.2–1.3 μm, initio subhyalinis, dein atroviridibus vel nigris, st rato mucoso circumdatis, cum foramine germinali orbiculato praeditis. Conidiis incognitis.

Holotypus: TW 85–72 (dried culture) (FFPRI).

Perithecia superficial or immersed, scattered or aggregated, ovate or pyriform, (350–)447–605×(200–)315–421 μm, ostiolate 40–65.8 μm, covered with white hairs, often bare apically; neck conical, black; peridium pseudoparenchymatous, dark brown, consisting of somewhat angular cells (textura angularis), 15–20 μm in diam. Asci 8-spored, cylindrical, truncate apically, with a distinct apical ring-like thickening, stipitate, 195–275×17.5–22.5 μm. Ascospores obliquely uniseriate, ellipsoidal, black, (17.5–)20–23.8×(13.7–)15–16.3(–21.3) μm, often with one to four nodules measuring 5–7.5×1.2–1.3 μm, apiculate, usually with a single basal germ pore and surrounded by a gelatinous sheath. Conidial state unknown.

Colonies on PDA dark brown, spreading, producing abundant perithecia distributed all over the agar surface.

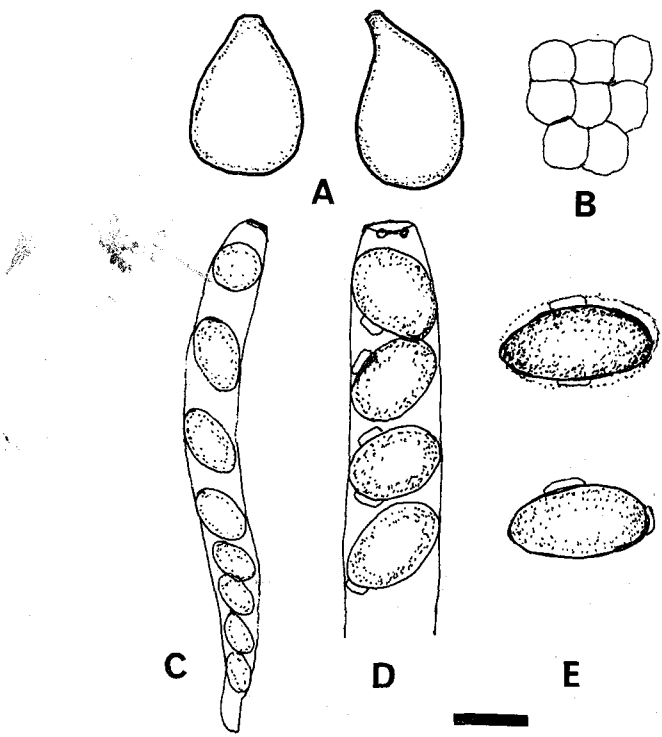

Fig. 13. *Sordaria nodulifera*, sp. nov. (Isolate TW 85–72). A. Perithecia. B. Peridium. C, D. Part of asci and ascospores. E. Ascospores.
Scale bar: A=250 μm; B=30 μm; C=20 μm; D=15 μm; E=10 μm.

Hab.: On seeds of *P. jamasakura* Sieb. ex Koidzumi, Asakawa, Tokyo, Japan.

Material: Culture from seeds of *P. jamasakura* Sieb. ex Koidzumi, Asakawa, Tokyo, Japan, Jan. 20, 1985, T. Watanabe, TW (85–72) (dried and living) deposited in the Herbarium, FFPRI.

This fungus is unique in having nodules on ascospores, to which the specific epithet refers. No previous description that fits this fungus is available; therefore, it is described as new.

Sordaria tamaensis T. Watanabe, sp. nov. Figs. 10–12, 14

Peritheciis superficialibus vel immersis, separatis, globosis vel subglobosis, brunneis vel atro-brunneis, 50–130(–150) μm in diam, ostiolatis, circum ostiolum atro-brunneis, saepe conjunctis cum hyphis crassitunicatis; peridiis pseudoparenchymaticis, atro-brunneis, texturam angularem formantibus, 15–20 μm crassis. Ascis octosporis, cylindraceis, saepe valde curvatis, 87.5–130(–150) $\times$ 10–20 μm, apice truncatis distincte perforatis, brevi-stipitatis. Ascosporis incomposite oblique monostichis, ellipsoidibus, atro-brunneis vel atro-viridibus, strato mucoso circumdatis, cum foramine germinali orbiculato praeditis, 15–20 $\times$ 7.2–12.5 μm. Conidiis incognitis.

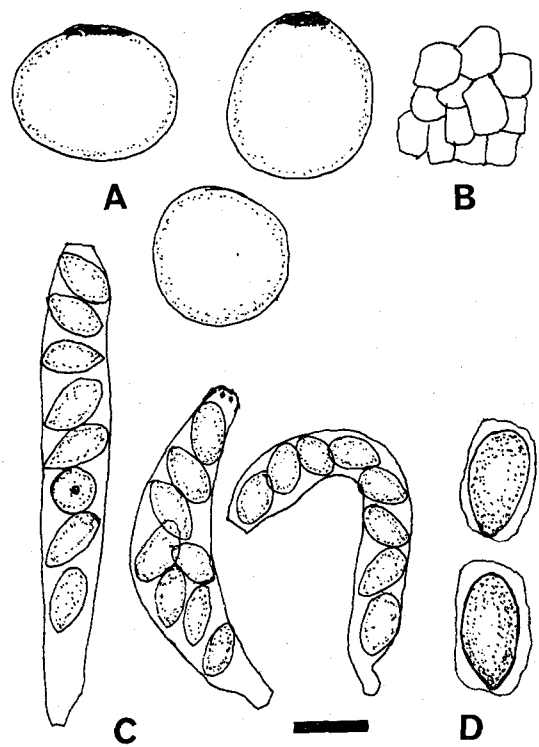

Fig. 14. *Sordaria tamaensis*, sp. nov. (Isolate TW 85–89). A. Perithecia. B. Peridium. C. Asci and ascospores. D. Ascospores.
Scale bar: A=50 μm; B=30 μm; C=17.5 μm; D=12 μm.

Holotypus: TW 85–89 (dried culture) (FFPRI). Isotypus: TW 85–88 (dried culture) (FFPRI).

Perithecia superficial or immersed, single or aggregated, occasionally interconnected to one another with dark brown thick-walled hyphae, subglobose or pyriform, pale brown, often dark brown around the ostiole, 50–130(–150) μm in diam; peridium brown, composed of angular cells (textura angularis), 15–20 μm. Asci 8-spored, cylindrical, truncate apically, with a distinct ring-like apical thickening, stipitate, 87.5–130(–150) × 10–20 μm. Ascospores obliquely uniseriate or occasionally biseriate, dark brown, 15–20 × 7.2–12.5 μm, surrounded by a gelatinous sheath, apiculate and/or with a germ pore at one end.

Colonies on PDA dark greenish brown, spreading. Perithecia formed rather sparsely.

Hab.: On seeds of *P. jamasakura* Sieb. ex Koidzumi, Asakawa, Tokyo, Japan.

Materials: Culture from seeds of *P. jamasakura* Sieb. ex Koidzumi, Asakawa, Tokyo, Japan, Jan. 20, 1985, T. Watanabe, [Holotype: TW (85–89); Isotype TW (85–88)] (dried and living) deposited in the Herbarium, FFPRI.

This fungus is differentiated from the previously described species with small globose perithecia and asci. The specific epithet is based on the collected site of seeds.

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摘　　要

サクラ種子から分離された *Sordaria* 属菌3種と *Eudarluca biconica*

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多摩森林科学園（旧林業試験場，浅川実験林）産のサクラ種子から分離した44菌株の子嚢菌の中から，*Eudarluca biconica*, *Sordaria fimicola*, *S. nodulifera*, sp. nov., *S. tamaensis*, sp. nov. の4種を報告した．*S. nodulifera* は，子嚢胞子に1-4個の瘤を形成し，*S. tamaensis* は子嚢殻が球形で小さく，子嚢や子嚢胞子の大きさも既知種とは異なる．