

SHORT COMMUNICATION

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Scleroderma laeve (Gasteromycetes, Sclerodermatales), new to Japan

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Abstract A *Scleroderma* species collected on sandy soil under trees of *Lithocarpus edulis* in Saitama Prefecture, central Japan, is identified as *Scleroderma laeve*, a new record for Japan. Macroscopic and microscopic features are given.

Key words Distribution · Japan · New record · *Scleroderma*

The genus *Scleroderma* Pers.: Fr. (Gasteromycetes, Sclerodermatales), which has been intensively studied and monographed (Guzmán 1970), comprises 26 species worldwide. So far, 12 species of *Scleroderma* have been recorded in Japan (Ito 1959; Guzmán 1970; Yoshimi and Hongo 1989; Yoshimi 2000, 2002). During a study on the Gasteromycetes flora of Saitama Prefecture, central Japan, from 1997 to 2001, many specimens of *Scleroderma* were collected, and we identified 5 species of this genus: *S. areolatum* Ehrenb., *S. cepa* Pers.: Pers., *S. laeve* Lloyd emend. Guzmán, *S. reae* Guzmán, and *S. verrucosum* Pers. Among these species, the present article gives an illustrated account of *S. laeve*. This species is recorded here for the first time from Japan. A key to these 5 species of *Scleroderma* is also given.

The collections were deposited in the Herbarium of the Natural History Museum and Institute, Chiba (CBM-FB). Microscopic characters were based on dried specimens. KOH as used both in microscopic slides and in reactions on the peridium was an aqueous solution, 5%.

Scleroderma laeve Lloyd emend. Guzmán, Darwiniana 16:301, 1970. Fig. 1

Basidiomata globose to subglobose, (8.5–) 10.0–15.0 mm diameter, pseudostipe lacking. Rhizomorphs well developed, white, firmly attaching the fruit-body to the substratum. Peridium thin, (0.6–) 1.0–1.5 mm thick, drying fragile, buff to pale yellowish-brown when young, finally reddish-brown at maturity, smooth to warty due to irregular cracking, with minute squamules. Gleba compact and pale amethysteous or griseous when young, becoming pulverulent and grayish-brown at maturity, with whitish to pale-yellowish scattered filaments. The KOH reaction on the peridium is yellow to reddish-brown, and the context is nonreactive.

Basidiospores globose to subglobose, (9.6–) 10.5–13.0 (–14.5) μm in diameter including ornaments or (8.0–) 8.5–12.0 (–13.0) μm in diameter excluding ornaments, buff to yellowish-brown, with a surface ornamentation of isolated pyramidal warts, 1.0–2.0 μm high. Basidia not observed. Peridium comprising two zones: outer light brown to yellowish-brown, textura subintricata, 80–100 μm thick; inner whitish, textura intricata, 250–300 μm thick. Clamp connections absent.

Habitat: Subhypogeous, gregarious or cespitose, growing on sandy soil in broad-leaved forests, especially with *Lithocarpus edulis*, June to October.

Specimens examined: Japan, Saitama Prefecture, Ina, Obari, under *Lithocarpus edulis* (Nakai) Makino, July 30, 1998, T. Kato, CBM-FB 30943; August 21, 1998, T. Kato, CBM-FB 30944; September 30, 1998, A. Kimura, CBM-FB 30945; July 15, 1999, T. Kasuya, CBM-FB 30946; June 19, 2000, T. Uchida, CBM-FB 30947; July 15, 2000, T. Matsuyama, CBM-FB 30948.

Japanese name: Tsubu-nise-syouro.

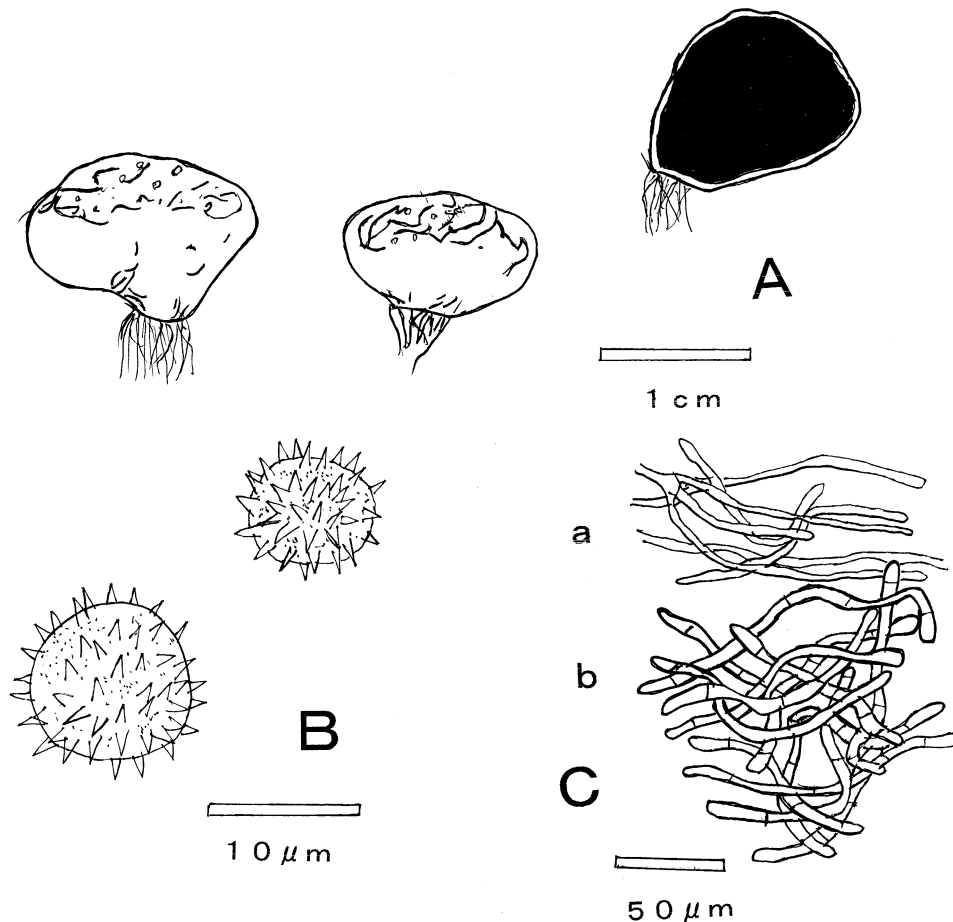
Discussion: Although the basidiomata and basidiospores of the Japanese material of *S. laeve* are smaller than Guzmán's report (1970), the studied herbarium material agrees well with Guzmán (1970). *Scleroderma albidum* Pat. et Trab. emend. Guzmán, recorded from North and South America, central Europe, Africa, and Australia (Guzmán 1970) is related to *S. laeve*, but its basidiospores are larger

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Fig. 1. *Scleroderma laeve*. **A** Basidiomata. **B** Basidiospores. **C** Peridium. *a*, Outer zone; *b*, inner zone. Bars **A** 1 cm; **B** 10 μ m; **C** 50 μ m



[(8–) 10–12 (–13) μ m] than the latter. *S. cepa* is also similar to *S. laeve*, but it has larger fruit-bodies and a thick peridium. *Scleroderma laeve*, distributed in Africa, Australia, North America, and Japan (new record), is considered to have a worldwide distribution.

**Key to the five *Scleroderma* species
collected from Saitama Prefecture, Central Japan,
1997–2001**

1. Basidiospores echinulate, not reticulate; clamp connections very rare or absent 2
- 1'. Basidiospores subreticulate or reticulate, 7–10 (–13) μ m in diameter; peridium 1 mm thick, brown to dark brown; clamp connections present *S. reae*
2. Peridium less than 1 mm thick 3
- 2'. Peridium more than 1 mm thick 4
3. Basidiospores (10–) 11–15 μ m in diameter, with slender spines 1.5–2 μ m high *S. areolatum*
- 3'. Basidiospores (8–) 9–13 μ m in diameter, with slender spines 1–1.5 μ m high *S. verrucosum*
4. Basidiospores 10–12 μ m in diameter; peridium 2–2.5 mm thick, cream-yellow to reddish-brown *S. cepa*
- 4'. Basidiospores (8–) 8.5–12 (–13) μ m in diameter; peridium (0.6–) 1–1.5 mm thick, yellowish- to reddish-brown *S. laeve*

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