

SHORT COMMUNICATION

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## Correct name for “nameko”

Received: May 21, 2007 / Accepted: September 29, 2007

**Abstract** The Japanese common edible mushroom called “nameko” at present is a species belonging to *Pholiota*. This species has been identified as *P. nameko* (T. Ito) S. Ito & Imai (= *Collybia nameko* T. Ito, 1929). The type specimens of *C. nameko* are not traced in herbaria. The plate of the original description is designated as the lectotype of *C. nameko* T. Ito. The Himalayan species *P. microspora* (Berk.) Sacc. (= *Agaricus microsporus* Berk., 1850) is identical with “nameko.” The author concludes *P. nameko* is a synonym of *P. microspora*.

**Key words** *Agaricus microsporus* · *Collybia nameko* · Nameko · *Pholiota microspora* · *Pholiota nameko*

At present, the Japanese common name “nameko” is applied to a species of *Pholiota* with glutinous and brown pileus, membranous annulus, brown and smooth basidiospores, and no pleurocystidia. This species is one of the most popular edible mushrooms and is widely cultivated in Japan. The scientific name *Pholiota nameko* (T. Ito) S. Ito & S. Imai, which is based on *Collybia nameko* T. Ito, is widely accepted for it in modern literature. However, Ito (1929) originally described *C. nameko* as a species allied to *Collybia velutipes* Curtis: Fr. (= *Flammulina velutipes* (Curtis: Fr.) Singer). Furthermore, Kawamura (1930) and Hiroe (1977), who observed the type specimen of *C. nameko*, identified it as *C. velutipes*. This article addresses what species *C. nameko* represents and what name should be applied to the present “nameko.”

### Taxonomic history of “nameko”

The name “nameko” first appeared in taxonomic literature as a synonymous Japanese name of *Collybia velutipes* Curtis: Fr., “enokitake” (Kawamura 1914). In the 1930s, “nameko” did not represent a single species. The name was applied to several edible mushrooms with glutinous pileus (Kawamura 1930, 1931). Kawamura (1930, 1931) mentioned that “nameko” was a name for *C. velutipes*, *Pholiota mutabilis* Schaeff.: Fr. (= *Kuehneromyces mutabilis* (Schaeff.: Fr.) Singer), and *Pholiota adiposa* (Fr.) P. Kumm.

Ito (1929) regarded “nameko” as a single species and described it as a new species, *Collybia nameko* T. Ito. According to the original description, *C. nameko* has white spores and is most nearly allied to *C. velutipes*, but the former has a glabrous and yellowish-brown stipe whereas the latter has a velutinous stipe. Matsuura (1932) regarded “nameko” as a species related to *C. velutipes* and reported “nameko” was cultivated and sold in northeastern Japan.

Kawamura (1930, 1954a,b) examined the type specimen of *C. nameko* and found that it has velvety hairs on the lower part of the stipe. Therefore, he identified it as *C. velutipes*. Hiroe (1977), who also had examined the type specimen in 1931, supported Kawamura’s conclusion. He mentioned *C. velutipes* was sold in a market and called “nameko” at that time in Sendai, where T. Ito lived. Kawamura (1954b) suggested that the present “nameko” is distinct from *C. nameko*, and proposed a new name, *Pholiota glutinosa*, for the species. However, this name is invalid because the original description lacks a Latin diagnosis (Art. 36.1, ICBN Vienna Code). Additionally, the combination *Pholiota glutinosa* is already occupied by *Pholiota glutinosa* (Masse) E. Horak (1970).

Imai (1933) listed the following seven species that had been called “nameko” at that time: they were *C. velutipes*, *C. nameko*, *P. adiposa*, *P. mutabilis* [referred to Kawamura (1930)], *Flammula lubrica* (Pers.: Fr.) P. Kumm., *F. lenta* (Pers.: Fr.) P. Kumm., and a species belonging to *Pholiota*. His description of the last *Pholiota* species is identical to the present “nameko.” He suggested there is a clear differ-

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ence between *C. nameko* and the last-named *Pholiota* species in the color of basidiospores, consistency of stipe, and lack of annulus. However, he finally concluded that the last *Pholiota* species is identical to *C. nameko* with similar characteristics of pileus, lamellae, size of basidiospores, and habitat. Then, he proposed the combination *Pholiota nameko* (T. Ito) S. Ito & S. Imai. He also mentioned that *Pholiota microspora* (Berk.) Sacc. in Saccardo's (1887) *Sylloge Fungorum* looks like the *Pholiota* sp. However, Berkeley's description of *P. microspora* was not sufficient for him to determine the difference between the two species. Imai (1938) reported *P. nameko* distributed in Hokkaido. Imai (1941) examined the type specimen of *C. nameko* and confirmed the present "nameko" is identical to *C. nameko*. However, he did not describe the character of the type specimen.

Imazeki and Hongo (1957) mentioned that the original colored illustration of *C. nameko* represents a sketch of the present "nameko." Ito (1959) regarded the present "nameko" as a species of *Kuehneromyces* and proposed the combination *Kuehneromyces nameko* (T. Ito) S. Ito.

### What species does *Collybia nameko* represent?

The type specimen of *C. nameko* was deposited in The Herbarium of Tohoku University, Sendai (TUS). However, the holotype and other type specimens of *C. nameko* cannot be traced in TUS and other major Japanese herbaria at present. The plate of the original description is the only remained original material. Therefore, I designate the plate as the lectotype of *Collybia nameko* T. Ito (Art. 9.2., Art. 9.9., and Art. 9.10., ICBN Vienna Code).

The original plate (Fig. 1) contains seven figures of the fungus, which show its habit, a longitudinal section of the fruit body, gills, flat subulate hairs at the base of stipe, the spores, a young fruit body enclosed within a mucilaginous sac, and a longitudinal section of a young fruit body, respectively. The figures of the plate clearly show that the stipe base is not colored dark (Fig. 1-1), the gills are closely arranged (Fig. 1-3), the spores are not hyaline but colored and with thick walls (Fig. 1-5), and the pileus is strongly glutinous when young (Figs. 1-6,7). These characters agree well with those of *P. nameko*, not those of *F. velutipes*. Therefore, I conclude *C. nameko* represents the present *P. nameko*, agreeing with Imai's (1933) treatment of it. The original drawings and the block copy of the original illustrations of *C. nameko* are kept in the Kanagawa Prefectural Museum of Natural History.

### What name should be applied to the present "nameko"?

*Pholiota nameko* belongs to the subgenus *Hemipholiota* sect. *Myxannulatae* (Singer, 1986). Singer (1986) placed two species, *P. nameko* and *P. olivaceodisca* A.H. Sm. & Hesler,

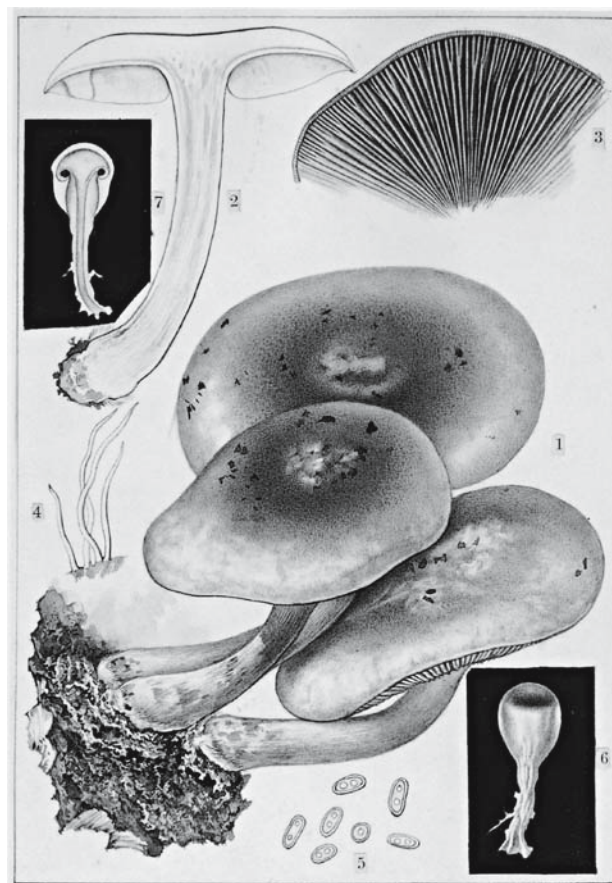


Fig. 1. Block copy of the original illustration of *Collybia nameko* (kept in Kanagawa Prefectural Museum of Natural History, Odawara)

in this section. *Pholiota olivaceodisca* is different from *P. nameko* in the deep olive-buff to olive-buff pileus, the serrulate lamellae, fibrillose to floccose-scaly and not viscid stipe, the Isabella-colored (olive-yellow) spore deposit, and the larger spores (Smith and Hesler 1968). *Pholiota mucigera* Holec & Niemelä recently described from Finland (Holec and Niemelä 2000) also looks like *P. nameko* with a strongly glutinous pileus covered with a thick layer of hyaline slime, in the absence of any cystidia, and in the presence of small spores having no germ pore (Holec and Niemelä 2000; Holec 2001). However, *Pholiota mucigera* differs in the white to yellow-ochraceous pileus, the slightly larger ovoid spores, and the habit of growing on wood of *Populus tremula* L. Holec (2001) did not refer to its relationship to *P. nameko* and placed *P. mucigera* in species of unclear position. Matsumoto et al. (2003) analyzed ribosomal DNA of *Pholiota* species and recognized *P. nameko* is clustered with *P. adiposa*, *P. limonea*, and *P. aurivella* of the subgenus *Pholiota* (section *Adioposae*).

As pointed out by Imai (1933), the Himalayan species *Pholiota microspora* (= *Agaricus microsporus* Berk. 1850) is very similar to *P. nameko* in having a viscid fruit body and small spores. However, it has not been recorded since Berkeley's report (1850), and the type has not been not reexamined. The type specimen of *Agaricus microsporus*

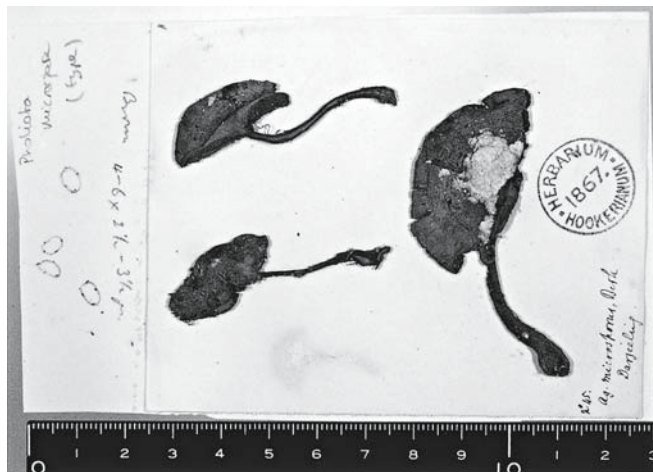


Fig. 2. Type specimen of *Agaricus microsporus* (type, K(M):130654)

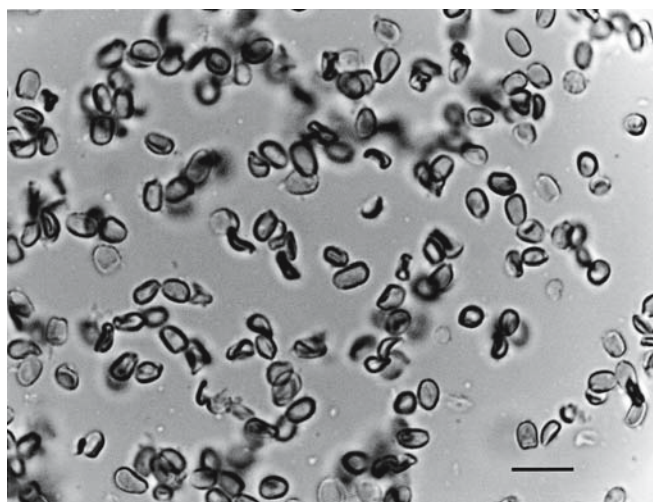


Fig. 3. Basidiospores of *Agaricus microsporus* (type, K(M):130654). Bar 10  $\mu$ m

Berk. (Hooker No. 45, K(M) :130654) contains three pieces of dried fruit bodies (Fig. 2). My observation of this specimen revealed the pileus is 27–43 mm diameter, hemispherical to convex, light yellowish brown, center darker, smooth, no scales on the surface, margin straight; gills brown, adnate; stipe central, clavate, 29–31 mm long, 2–6 mm width, solid; basidiospores ellipsoid to oblong, 4.5–5.5  $\times$  2.5–3  $\mu$ m, brown, smooth (Fig. 3); cystidia not seen.

The type specimen represents well the present “nameko” in both macroscopic and microscopic features, although the pileus of *P. microspora* was originally described as having livid shades toward the margin (Berkeley 1850). This color character is not known in Japanese “nameko”; however, I consider this minor color difference alone is not enough to separate the two species. Therefore, I conclude they are identical species. *Pholiota micorospora* has priority over *P. nameko*; hence, the name should be adopted as the correct name for the present “nameko” (Art. 11.4., ICBN Vienna Code).

*Pholiota microspora* (Berk.) Sacc., Syll. Fung. 5: 742. 1887.

*Agaricus microsporus* Berk. in Hook. J. Bot. 2: 86. 1850.

Typus: Darjeeling, India, leg. Fooker fil. 45. (K[M]: 130654).

*Collybia nameko* T. Ito in Proc. Imp. Acad. 5: 145. 1929.

Typus: Figs. 1–7. Proc. Imp. Acad. 5: 147. 1929. [lectotypus].

*Pholiota nameko* (T. Ito) S. Ito & S. Imai in S. Imai in Bot. Mag., Tokyo 47: 388. 1933.

*Kueneromyces nameko* (T. Ito) S. Ito, Mycol. Fl. Japan. 2(5): 355. 1959.

*Pholiota glutinosa* Kawam. nom. nud., Icones Japanese Fungi 5: 538. 1954.

(non-*Pholiota glutinosa* (Masse) E. Horak, N. Z. J. Bot. 9: 426. 1971)

*Pholiota glutinosa* var. *squamopes* Kawam. nom. nud., Icones Japanese Fungi 5: 541. 1954.

Pileus 25–100 mm broad, hemispherical to weakly conic then convex to plane; surface bay-brown at the center, paler on the margin, then becoming paler with age, smooth, glabrous, very glutinous; margin thin, incurved at first, not striate, at times appendiculate with glutinous veil remnants; context yellowish, taste and odor pleasant. Lamellae adnate with a decurrent tooth, emarginated or adnexed, crowded to very crowded, broad, yellowish then ochraceous-buff to ferruginous, often waved on edge. Stipe 25–80 mm long, 3–15 mm thick, equal slightly thickened downward, viscid, almost solid or stuffed, concolorous, cinnamon-buff or concolorous with the margin of pileus, or slightly paler, glutinous below the annulus, whitish and silky fibrous above. Annulus thin membranaceous, superior, cinnamon-buff, fugacious. Flesh yellowish, then becoming cinnamon, reddish-brown under cuticle of the pileus and in the stipe. Spores dull brown or dark rust brown in mass, ellipsoidal, oblong or subovate, obtuse, not truncate at the ends, smooth, 4–6  $\times$  2.5–4  $\mu$ m, 1–2 guttulate, apical pore not certain. Cystidia none.

Habitat: Densely caespitose or gregarious on the trunk of deciduous trees, especially *Fagus* in autumn.

Distribution: Japan, Himalaya.

Japanese name: “Nameko” (“Namesugitake”).

Selected illustrations: Ito (1929), figs. 1–7 (lectotype of *C. nameko*); Kawamura (1954a,b), fig. 527; Imazeki and Hongo (1957), fig. 159; Imazeki and Hongo (1987), fig. 358.

Specimens examined: Darjeeling, West Bengal, India (type of *Agaricus microsporus* Berk., Hook. No. 45, K(M)130654): Tazawako, Akita, 9 Nov. 2005, collected by Fuyuki Sugawara (TFM:M-L700); Hinoemata, Minami-Aidzu, Fukushima, 5 Oct. 1988 (TFM:M-B395); Ogawa, Kitaibaraki, Ibaraki, 22 Oct. 1992 (TFM:M-E822); Otaki, Chichibu, Saitama, 14 Oct. 1986 (TFM:M-A657); Mt. Takamaru, Kamikatsu, Tokushima, 11 Oct. 2001 (TFM:M-K290); Mt. Kunimi, Yabe, Kumamoto, 30 Oct. 1996 (TFM:M-G693).

**Acknowledgments** I thank Prof. Mitsuo Suzuki (Botanical Garden, Tohoku University, Sendai) for his kind help for tracing the type speci-



men of *Collybia nameko* T. Itô, Dr. Yosuke Degawa (Kanagawa Prefectural Museum of Natural History, Odawara) for showing the original illustrations of *C. nameko*, and Royal Botanic Gardens, Kew for loan of the type specimen of *Agaricus microsporus* Berk. I have benefited from discussions with my colleagues Dr. Tsutomu Hattori and Dr. Katsuhiko Babasaki (Forestry and Forest Products Research Institute, Tsukuba).

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