

Antrodia camphorata (“niu-chang-chih”), new combination of a medicinal fungus in Taiwan

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Abstract. A new combination, *Antrodia camphorata* (M. Zang & C.H. Su) Sheng H. Wu, Ryvarden & T.T. Chang, is proposed for *Ganoderma comphoratum* M. Zang & C.H. Su, a name originally based on a polypore with contaminating *Ganoderma* spores. *Antrodia cinnamomea* T.T. Chang & W.N. Chou is reduced to a taxonomic synonym of *A. camphorata*. The species is famous and highly valued in Taiwan as a medicine, and is restricted to a Taiwanese endemic tree species, *Cinnamomum kanehirai*.

Keywords: *Antrodia camphorata*; *A. cinnamomea*; *Ganoderma comphoratum*; Polypore; Taiwan.

Many polypores are used for medicinal purposes in Taiwan. One of the most valued is *Antrodia camphorata*, especially since it is said to have several medicinal uses including a curative effect on cancer. The species is known only from Taiwan and is restricted to *Cinnamomum kanehirai* Hay (Lauraceae), also endemic to Taiwan. The species is known in Taiwan as “niu-chang-chih”; “niu-chang” is the Chinese common name for *C. kanehirai* and “chih” means *Ganoderma*-like fungus. Many Taiwanese also call it “niu-chang-ku”; “ku” in Chinese means mushroom. It is also known simply as “chang-chih” or “chang-ku.” In Taiwan, the wood of *C. kanehirai* has traditionally been regarded as high quality for manufacturing furniture. Nowadays this endemic tree species is becoming rare and has now been protected by the government. Consequently, it is also becoming difficult to find “niu-chang-chih” in the forest. “Niu-chang-chih” is very expensive in Taiwan. In recent years, basidiomes of good quality have sold for about US \$ 15,000 per kg., a result of host specificity and rarity in nature, and the failure of artificial cultivation.

This species was first published by Zang and Su (1990). Dr. Su, a resident chemist, knew “niu-chang-chih” very well from his chemical studies of various medicinal fungi. However, he could not find any available name in the literature for this striking species. Thus, he sent a specimen of “niu-chang-chih” to Prof. Zang, a specialist in Chinese higher fungi. Later they jointly published the species as *Ganoderma comphoratum* M. Zang & C.H. Su. The generic name, however, was based on a mistake as the type

(HKAS 22294, examined by us) was contaminated by spores of a *Ganoderma* species. After publication, Dr. Su told one of us (S.H. Wu) that the type specimen had been put in a bag together with a specimen of *Ganoderma*, the source of the foreign spores. In the original description, the host was also incorrectly given as *Cinnamomum comphora* (L.) Presl. (correct spelling: *C. camphora*), which explains the spelling of the specific epithet of the fungus.

Chang and Chou (1995) later described the species as *Antrodia cinnamomea* T.T. Chang & W.N. Chou (type = TFRI 119, examined by us). The specific epithet alludes to the host tree. They properly placed their species in *Antrodia* because of its dimitic hyphal system with clamped generative hyphae and brown rot causing ability.

After studying the types of both *Ganoderma comphoratum* and *Antrodia cinnamomea*, these fungi were found to be conspecific. Therefore a new combination is necessary, while *A. cinnamomea* is reduced to a taxonomic synonym.

Antrodia camphorata (M. Zang & C.H. Su) Sheng H. Wu, Ryvarden & T.T. Chang, comb. nov. (Figure 1)

Basionym: *Ganoderma comphoratum* M. Zang & C.H. Su, Acta Bot. Yunnanica 12: 395. 1990. Syn. nov.: *Antrodia cinnamomea* T.T. Chang & W.N. Chou, Mycol. Res. 99: 756. 1995.

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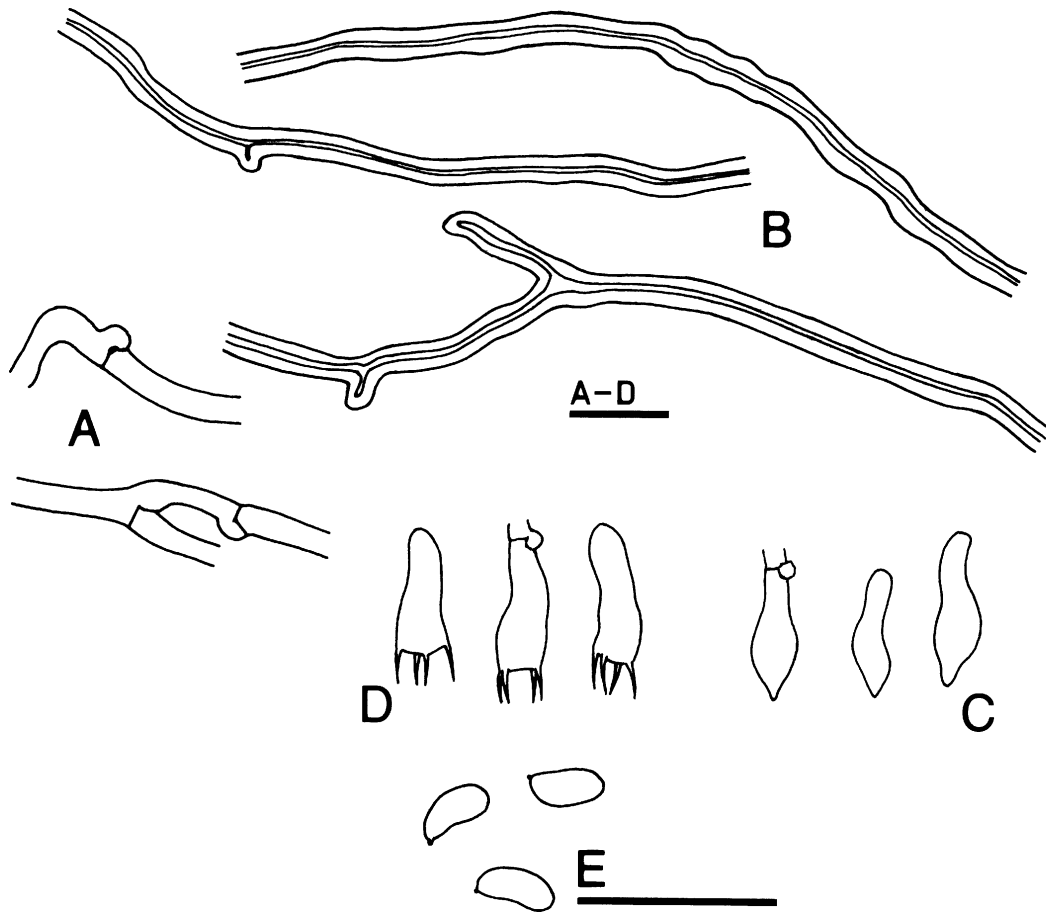


Figure 1. *Antrodia camphorata* (holotype). A, Contextual generative hyphae; B, Contextual skeletal hyphae; C, Cystidioles; D, Basidia; E, Basidiospores. Scale bars = 10 μ m.

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Antrodia camphorata (牛樟芝), 一種臺灣產醫用真菌的新組合名

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本文報導牛樟芝的新組合名：*Antrodia camphorata* (M. Zang & C.H. Su) Sheng H. Wu, Ryvardeen & T.T. Chang。牛樟芝的基名是 *Ganoderma comphoratum* M. Zang & C.H. Su, 乃因模式標本沾染了靈芝孢子而被誤發表為靈芝屬 (*Ganoderma*) 的成員。另本文將 *A. cinnamomea* T.T. Chang & W.N. Chou 處理為 *A. camphorata* 的同義名。牛樟芝是臺灣著名且昂貴的醫用真菌，僅生長於臺灣特有的牛樟 (*Cinnamomum kanehirai*) 樹幹。

關鍵詞：牛樟芝；*A. cinnamomea*；*Ganoderma comphoratum*；多孔菌；臺灣。