
AGARICOSTILBUM NOVA-ZELANDICA, A NEW AURICULARIROID
FUNGUS ON *RHOPALOSTYLIS SAPIDA* FROM NEW ZEALAND

Bryce Kendrick
and
Xiandi Gong

*Department of Biology, University of Waterloo,
Waterloo, Ontario, Canada, N2L 3G1.*

Examining collections made by one of us in New Zealand, we found an unusual fungus growing in a decaying inflorescence of the native palm, *Rhopalostylis sapida* H. Wendl. & Drude, which exhibits some characters that collectively do not appear to fit into any known genus: (1) long fertile hyphae (often fasciculate toward the base), septate only in the apical and basal regions, (2) a linear series of four (occasionally up to 7) integrated sporogenous cells at the apex of each fertile hypha, (3) the development on each fertile cell of a localized, swollen, initially hump-like but ultimately vesicular structure producing a cluster of sporogenous loci each bearing a non-septate spore. This structure, while apical on the terminal cell of the fertile hypha, is lateral, always on the same side of, and positioned just below the upper septum of, the sub-apical sporogenous cells (Figs. 1, 2, 3, 4, 5).

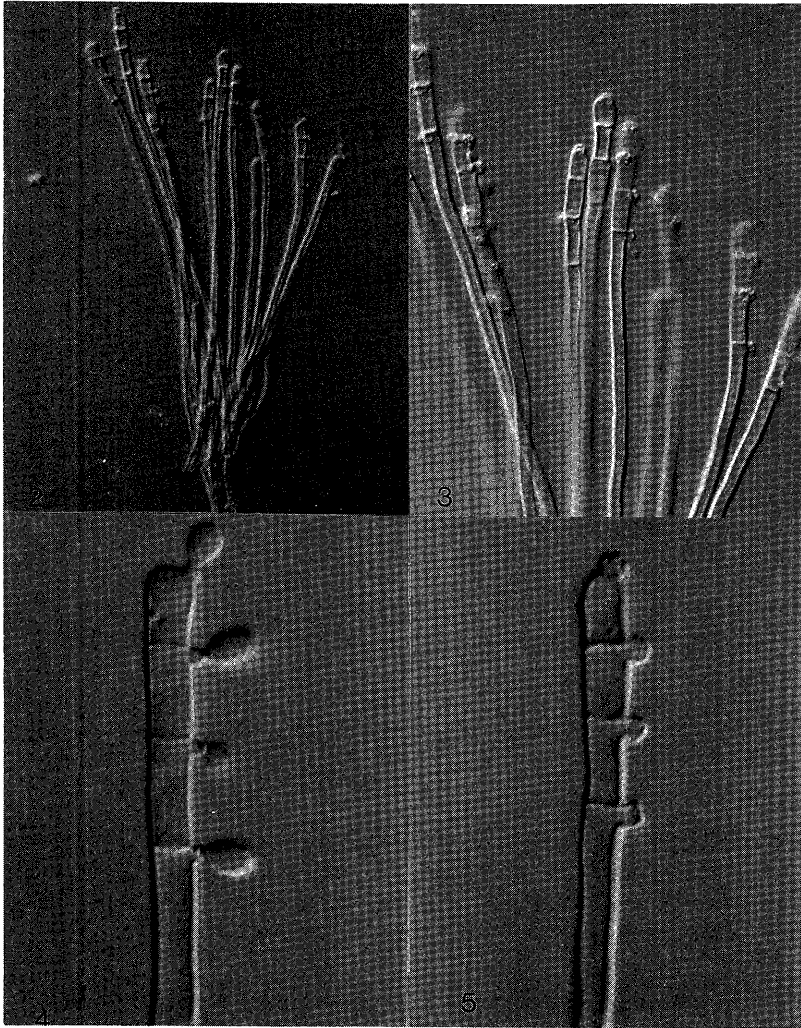
This unusual suite of characters invites comparison with only one or two known fungal genera, notably *Agaricostilbum* Wright (1970) [which was emended by Subramanian and Natarajan (1977), and again by Wright, Bandoni and Oberwinkler (1981)], and *Microstroma* Niessl (1861), although species of both of these genera produce synnema-like aggregations, rather than individual fertile hyphae. Nevertheless, in both genera the free upper parts of the fertile hyphae clearly exhibit features (2) and (3) noted above. This similarity between *Agaricostilbum* and *Microstroma* was briefly noted

by Carmichael et al. (1980) (who referred, however, to *Amerobotryum* Subramanian et Natarajan, a synonym of *Agaricostilbum*). *Atractiella* Saccardo : Saccardo (1886) is also similar to our fungus, but produces only one spore from each fertile cell. *Agaricostilbum* and *Atractiella* were originally described as conidial fungi (synnematal hyphomycetes), but are now regarded as gasteroid or sequestrate basidiomycetes, and were placed in a new order, Atractiellales, by Oberwinkler and Bandoni (1982). Later, Oberwinkler and Bauer (1989), having accumulated a wider range of data on *Agaricostilbum*, decided that it occupied a rather isolated position in the basidiomycetes, and erected the new order Agaricostilbales for it.

In the meantime, the taxonomic position of *Microstroma* must be regarded as uncertain, since it (like *Atractiella* and *Agaricostilbum*) was described as a hyphomycete, but there seems to be a possibility that it, like *Agaricostilbum*, may eventually be determined to be a basidiomycete.

In a recent discussion of the taxonomy of synnematal hyphomycetes, Seifert and Okada (1990) noted that although the production of synnemata had been an extremely important character in the Saccardoan system of classification, this feature was downgraded by Hughes (1953) and other subsequent workers, who considered conidium ontogeny to be of much greater importance. Seifert and Okada noted that several genera incorporate both mononematous and synnematosus species (e. g. *Penicillium* Link, *Aspergillus* Micheli : Link, and *Hirsutella* Patouillard).

This led us to consider incorporating our new fungus in one of the described genera, rather than erecting a new genus for it. Leaving aside the issue of the possible synonymy between *Agaricostilbum* and *Microstroma*, while noting that both genera have yeast-like growth phases (Carmichael et al., 1980; Oberwinkler et al., 1982) we decided that our fungus resembled the former more closely. This suggestion of relationship is reinforced by the fact that our fungus and *A. pulcherrimum* (Berk. & Broome) Brady, Sutton et Samson, the type species of *Agaricostilbum*, both occur on palm spathes (*Agaricostilbum pulcherrimum* on *Butia*, *Cocos* and *Phoenix* [though also on *Xanthorrhoea* sp: Liliaceae], and our new species on *Rhopalostylis*). *Microstroma* has been found on dead leaves of *Juglans* and *Carya* (Juglandaceae).



Figs. 2-5. *Agaricostilbum nova-zelandica* sp.nov.
2. fertile hyphae, X200 3. fertile hyphae, X500
4. young basidia and basidiospores, X1250
5. mature basidia with vesicular outgrowths, X1250.

These examples, and the overwhelming similarity between the development and anatomy of the fertile cells of our fungus and those of *Agaricostilbum* spp., led us to dispose our new species as the third species of *Agaricostilbum*. The placement of our new species in *Agaricostilbum* necessitates some further emendation of the generic diagnosis.

Agaricostilbum Wright emend. Kendrick et Gong.

Agaricostilbales, Basidiomycotina.

Hyphae colourless, septate, lacking clamp connections, septal pores simple. *Basidiomata* either: (1) stipitate, stilboid, capitata, white, fleshy-waxy, not bound together by gelatinous matrix; or (2) reduced to loosely fasciculate fertile hyphae. Usually growing on palm spathes. *Cystidia* absent. Fertile hyphae colourless, bearing apical, integrated basidia; clamps absent. *Basidia* colourless, transversely 3-septate ["auricularioid" sensu Oberwinkler & Bandoni (1981)] (occasionally up to 6-septate), each cell producing several basidiospores from closely aggregated loci on an outgrowth which, following repeated spore formation, is ultimately vesicular. This outgrowth is apical on the uppermost cell of the basidium, but lateral on the three lower cells (the vesicle arises just below the upper septum of each cell, and on the same side in all three). *Basidiospores* colourless, non-amyloid, non-septate, more or less ellipsoidal, not forcibly discharged, germinating to produce a yeast-like phase.

Agaricostilbum nova-zelandica Kendrick et Gong sp. nov. (Figs. 1, 2, 3, 4, 5)

Ad Agaricostilbales, Basidiomycotina, pertinens. Hyphae fertiles non ramosa vel ramosa, sparsa vel fasciculata, hyalina, clavata, echinulata, septata, 2.5-5.0 μm lat., 155-300 μm long. Basidia in hyphis incorporata. Basidiospora in apiculibus et lateralibus, gibberibus locis efferentia, loci sporogeni unilaterales tria septa distalia conidiophori subtenti. Basidiospora 2.3-3.8 X 3.2-5.1 μm , multi in quoque loco, sicca, hyalina, ovoidea, echinulata, non-septata, ad basim acuta.

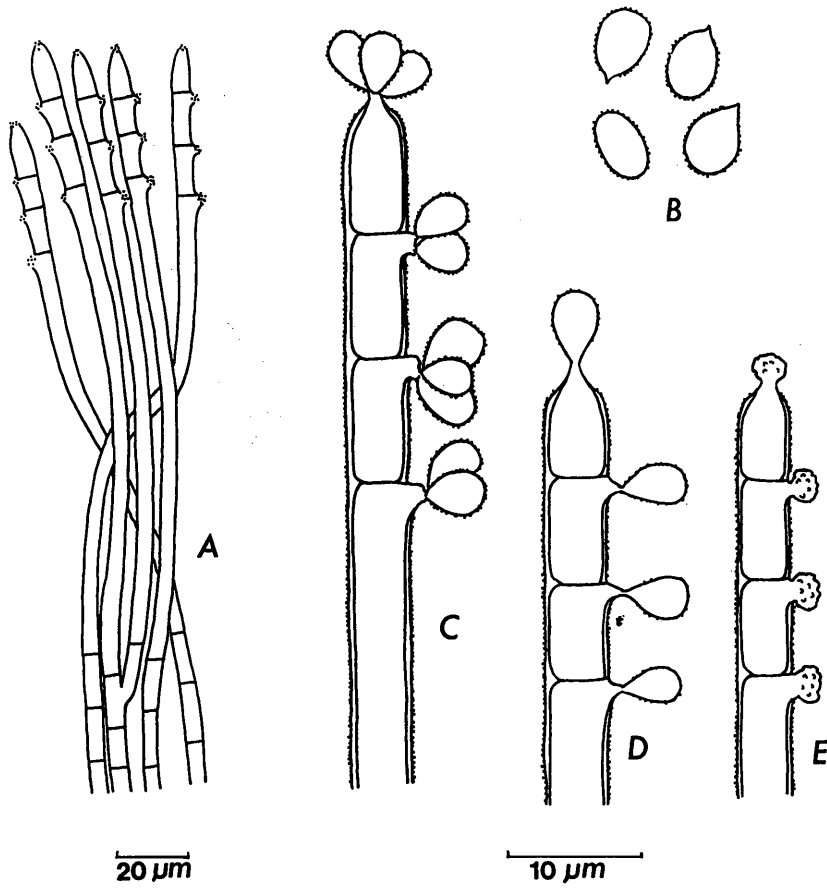


Fig.1. *Agaricostilbum nova-zelandica* sp. nov. A. fertile hyphae
 B. basidiospores C. D. basidia with attached basidiospores,
 E. basidium with vesicular outgrowths bearing reduced sterigmata.

Agaricostilbales, Basidiomycotina. *Basidiomata* reduced to fasciculate fertile hyphae which are erect, branched at the base or unbranched, colourless, finely echinulate, septate only in the upper, fertile part (the basidium) and the basal part, septa in these regions 7.2-10.5 μm apart; 155-300 μm tall, sterile part narrower, 2.3-3.2 μm wide. *Cystidia* absent. *Basidia* transversely 3-septate, each of the upper three cells 6.8-10.5 μm long, 3.8-5.0 μm wide. Basidiospore production localized, a succession of 3-7 spores developing on the same side of each of the lower 3 cells, the accumulation of sporogenous loci on each cell of the basidium forming a structure which is at first slightly raised and hump-like, and finally vesicular; this structure is found just below the upper septum of the three lower cells of the basidium. After the basidiospores have been passively shed, small scars (reduced sterigmata?) remain at the sporogenous loci. *Basidiospores* dry, colourless, ovoid, echinulate, non-septate, pointed at the base, 3.2-5.1 X 2.3-3.8 μm . Basidiospores germinating to produce yeast cells.

Habitat and type: on dead *Rhopalostylis sapida* inflorescence, Fairy Falls Track, Waitakere Ranges, Auckland, New Zealand, W.B. Kendrick, 23 January 1980 (KNZ 785).

Acknowledgements

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