MYCOTAXON

Volume LIX, pp. 189-196 July-September 1996

# STUDIES ON KERATINOPHILIC FUNGI. VII. *Chrysosporium vespertilium* *sp. nov.* from Zaire

Vidal P.[1], Guarro J.[1] & de Vroey Ch.[2]

[1] *Unitat de Microbiologia, Facultat de Medicina, Universitat Rovira i Virgili, 43201 Reus, Spain.* [2] *Laboratory for Mycology, Institute of Tropical Medicine* 'Prince Leopold', Antwerpen, Belgium.

## ABSTRACT

***Chrysosporium vespertilium*** *sp. nov.* is described and illustrated and its relationships to the other species of ***Chrysosporium*** are briefly discussed. The species is characterized by having typically yellow colonies and long and coiled sterile hyphae; fertile hyphae are warty, frequently constricted at septa and branching orthotropically. Conidia are clavate to cylindrical, yellowish and verrucose.

## RESUMEN

Se propone a ***Chrysosporium vespertilium*** como nueva especie para la ciencia y se describe, ilustra y discute su posición taxonómica. Se caracteriza por presentar colonias tipícamente amarillas, hifas estériles largas y espiraladas, hifas fértiles verrucosas, frecuentemente constreñidas en los septos y con ramificaciones en ángulo recto y conidios amarillentos, mazudos a cilíndricos y de pared verrucosa.

## INTRODUCTION

During a study of keratinophilic fungi deposited at the Institute of Tropical Medicine `Prince Leopold' of Antwerpen (Belgium), two strains of ***Chrysosporium*** isolated from intestinal content of bat in Zaire are considered sufficiently distinct from other taxa in the genus to justify their description as a new species.

## TAXONOMY

***Chrysosporium vespertilium*** Guarro, Vidal *et* de Vroey *sp. nov.*
Figs. 1-3.

(*Etym*: *vespertilio* = bat, the latin name referring to the animal from which the fungus was isolated).

*Coloniae in agaro PYE ad 25°C moderatim crescunt, 35-45 mm diametri post 14 dies, primo albae, postea clare luteolae, in margine albae, pulvisculae vel floccosae, compactae, planae, aliquando in medio tenuiter radiato-striatae, margo definitus; reversum pallide luteolum. Ad 37°C non crescunt. Hyphae subhyalinae vel luteolae, septatae, dense ramosae, tenuitunicatae, primo laeves, deinde verrucosae, usque ad 8 µm crassae; in maturitate frequenter constrictae in septis. Hyphae steriles oriundae ex hyphis fertilibus praesentes, spirales vel undulatae, septatae, tenuitunicatae, laeves, in basi rare verrucosae, usque 400 µm longae, ad 3µm crassae. Hyphae reticulatae praesentes. Conidia terminalia et lateralia, sessilia vel oriunda ex protrusionibus vel ramulis lateralibus frequenter in angulo recto dispositis, solitaria, primum hyalina, laevia et tenuitunicata, deinde luteola, verrucosa et crassitunicata, clavata, unicellularia, aliquando bicellularia et rare tricellularia, (3-)5-8(-20) x (1.5-)2-4(-5) µm, cicatrice basilari 1-2.5 µm. Conidia intercalaria rara, solitaria vel subinde catenata, primum hyalina, laevia et tenuitunicata, deinde luteola, verrucosa et crassitunicata, cylindrica vel unilateraliter inflata, (4-)7-13.5(-17) x (1-)2-3(-5) µm. Chlamydosporae absentes. Species keratinolytica et non cellulosolytica. Reproductio sexualis ignota.*

**Holotypus**: IMI 357403, *ex vespertilii.*

Colonies on phytone yeast-extract agar (PYE) attaining 35-45 mm in 14 days at 25°C, characteristically light yellow (2A4 to 3A4) (KORNERUP & WANSCHER, 1978) with a narrow white margin, powdery to mealy and scarsely floccose, fairly dense, slightly raised and often radially folded, sometimes with droplets of yellow exudate (2A4), margin sometimes slightly lobulate and well defined; reverse with light yellow (4A5) to greyish orange (5B4) center and whitish periphery. Odour mouldy.

Hyphae septate, repeatedly branched, subhyaline to yellowish, wall thin, first smooth and later warty, up to 8 µm in width; at maturity becoming constricted at septa and forming long and sterile appendages. Appendages septate, subhyaline to yellowish, characteristically wavy or loosely coiled, tapering toward the apex, thin- and smooth-walled, rarely warty at the base, up to 400 x 3 µm.

Conidia abundant, sessile or borne on short protrusions or on long side branches developing at more or less right angles to each other, solitary, mostly clavate, sometimes pyriform, 1-, occasionally 2- and rarely 3-celled, (3-) 5-8(-20) x (1.5-)2-4(-5) µm, with a basal scar 1-2.5 µm wide, wall initially hyaline, smooth and thin, later yellowish, thick and warty; intercalary conidia rare, solitary, occasionally catenate, cylindrical or unilaterally inflated, 7-13.5 x 1-2.5 µm, wall initially hyaline, smooth and thin, later yellowish, thick and warty. Chlamydospores not observed. Racquet hyphae present. Teleomorph unknown.

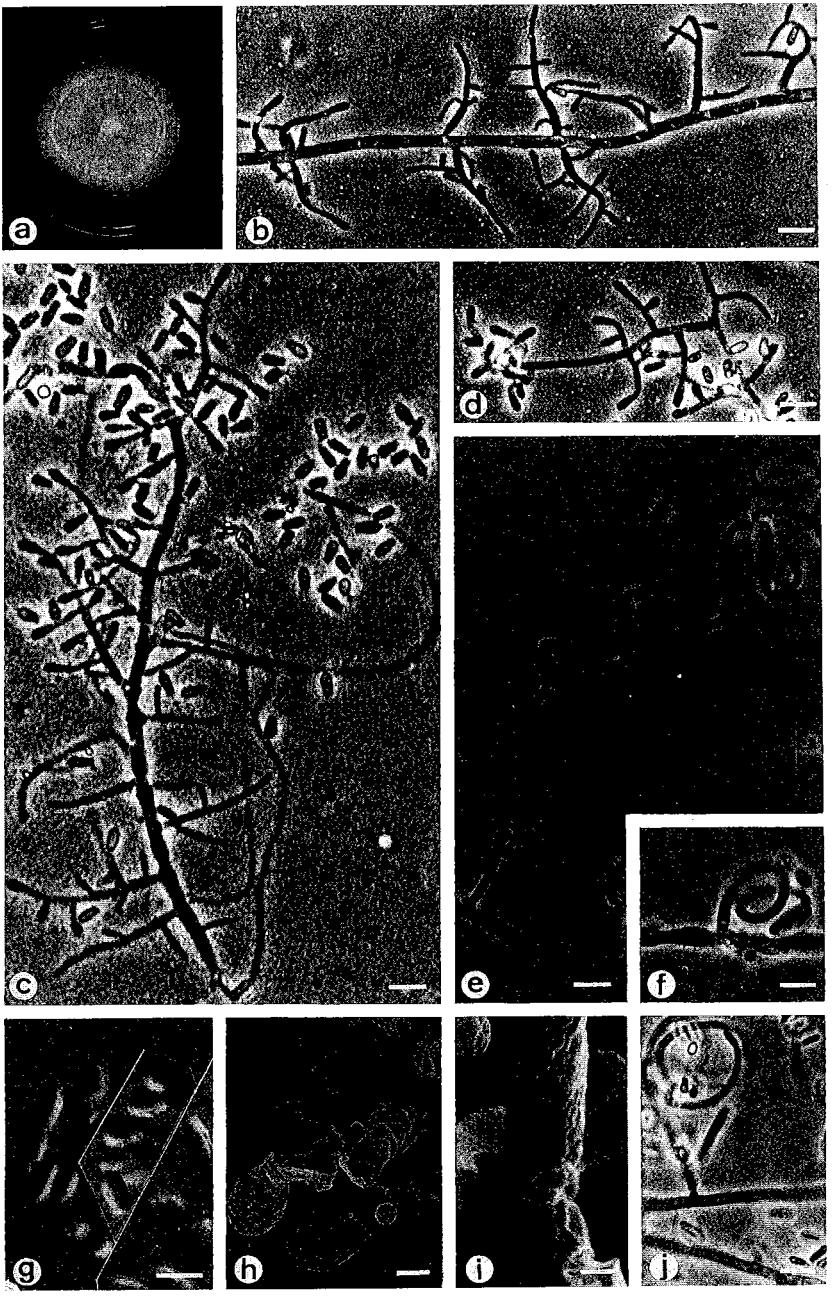
Colonies on Sabouraud agar (SAB) and potato dextrose agar (PDA) are similar to those on PYE.

Growth temperatures: minimum 12°C, optimum 20-25°C, maximum 30°C. Resistant to cycloheximide (0.04 %). Keratinolytic. Not cellulolytic.

**Material examined**: IMI 357403 (**holotype**), (**isotypes:** FMR 3752, RV 27093), 16.01.71. IMI 357404 (=FMR 3814, RV 27084), 18.01.71. Both strains were isolated at the University of Kinshasa, from the intestinal content of the same bat captured in a cave near Kibisi (Sanda, about 50 km S.E: from Kinshasa, Zaire).

---

Fig. 1. ***Chrysosporium vespertilium*** IMI 357403. a. Colonial morphology on PYE at 25°C after 21 days, b-d. Fertile hyphae with conidia (bar = 10µm). e,f,j. Sterile appendages (bar = 10µm). g,h. Conidia (g. bar = 5µm; h. bar = 10µm). i. Fertile hyphae constricted at septa (bar = 1µm).


a
b
c
d
e
f
g
h
i
j

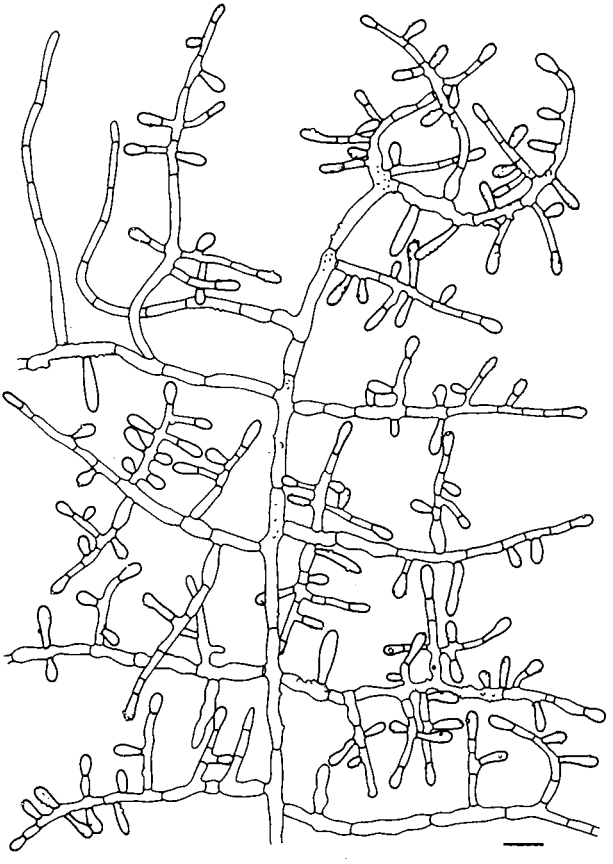


Fig. 2. ***Chrysosporium vespertilum*** IMI 357403. Fertile hyphae (bar = 10 µm).

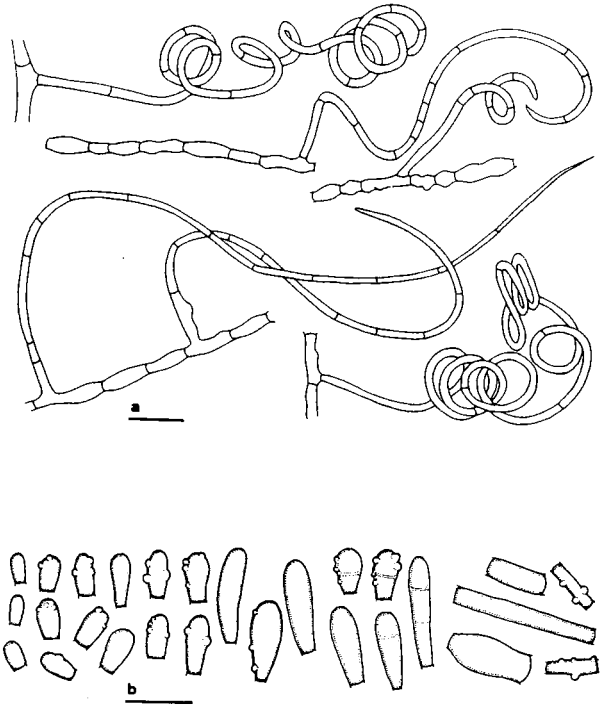



Fig. 3. ***Chrysosporium vespertilium*** IMI 357403. a. Sterile appendages (bar = 10µm). b. Mature conidia (bar = 10 µm).

***C. vespertilium*** differs from other described species of ***Chrysosporium*** in its warty fertile hyphae, frequently constricted at septa and branched orthotropically, and by its long, coiled appendages. In appearance, these appendages suggest those that arise from some gymnoascaceous teleomorphs, but no ascoma could be obtained by crossing the isolates in all possible combinations under a variety of growth conditions. In the colour of the colony, ***C. vespertilium*** is comparable to ***C. keratinophilum*** Frey *ex* Carmichael (OORSCHOT, 1980), the ***Chrysosporium*** anamorph of ***Renispora flavissima*** Sigler, Gaur, Lichtwardt *et* Carmichael (SIGLER *et al.*, 1979), ***C. merdarium*** (Link *ex* Grev.) Carmichael (OORSCHOT, 1980), ***C. pseudomerdarium*** van Oortschot (OORSCHOT, 1980), ***C. sulfureum*** Fieldl., van Oortschot *et* Samson (OORSCHOT, 1980) and ***C. vallenarense*** van Oorschot *et* Piontelli (OORSCHOT & PIONTELLI, 1985). ***C. merdarium*** and ***C. pseudomerdarium*** differ by the abundance of intercalary conidia which are rare in ***C. vespertilium***. This species is easily distinguishible from the other mentioned species by its narrower (rarely exceeding 4 µm), 0-1-2-septate and clavate rather than globose to subglobose conidia. Other species, such as ***C. georgii*** (Varsavsky & Ajello) van Oorschot (OORSCHOT, 1980), the ***Chrysosporium*** anamorph of ***Arthroderma curreyi*** Berk (OORSCHOT, 1980), the ***Chrysosporium*** anamorph of ***A. cuniculi*** Dawson (OORSCHOT, 1980) and ***C. filiforme*** Sigler, Carmichael *et* Whitney (SIGLER *et al.*, 1982), also have 2- or 3-celled conidia. Furthermore, ***C. georgii*** can also produce sterile coiled appendages. The former species, except the ***Chrysosporium*** anamorph of ***A. curreyi***, are mainly distinguished from ***C. vespertilium*** by their smooth-walled conidia, and the ***C.*** anamorph of ***A. curreyi*** by having white colonies, smaller conidia and an associated teleomorph. ***C. vespertilium*** resembles some species of ***Trichophyton*** on the presence of sterile coiled appendages, the disposition of conidia on orthotropically branched fertile hyphae and multicellular conidia. However, in the latter, macroconidia are smooth-walled and broader than the microconidia.

## ACKNOWLEDGEMENTS

We thank Dr. E. Descals (C.S.I.C.) for critically reading the manuscript and Dr. J.M. Escolà (Universitat Rovira i Virgili) for reviewing the Latin diagnoses. This study was supported by grant no. 92/0785 (FISss, Ministerio de Sanidad y Consumo, Spain).

## REFERENCES

KORNERUP, A. & WANSCHER, J. H. 1978. Methuen handbook of colour. Eyre Methuen Ltd. London.

OORSCHOT, C.A.N. VAN. 1980. A revision of ***Chrysosporium*** and allied genera. Studies in Mycology, 20: 1-89.

OORSCHOT, C.A.N. VAN & PIONTELLI, E. 1985. ***Chrysosporium vallenarense***, *spec. nov.* Persoonia: 12: 487-488.

SIGLER, L., GAUR, P.K., LICHTWARDT, R.W. & CARMICHAEL, J.W. 1979. ***Renispora flavissima***, a new gymnoascaceous fungus with tuberculate ***Chrysosporium*** conidia. Mycotaxon 10: 133-141.

SIGLER, L., WHITNEY, H.S. & CARMICHAEL, J.W. 1982. **Chrysosporium filiforme**, a new hyphomycete associated with the bark beetle ***Dendroctonus ponderosae***. Mycotaxon 14: 261-265.