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CREPIDOTUS CRISTATUS, A NEW YELLOW SPECIES FROM THE NETHERLANDS

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Crepidotus cristatus is described as a new species close to *C. citrinus*. Distinctive features are the yellow colour of the fruit-bodies, (sub-)globose spores, small cheilocystidia with finger-like outgrowths, thick-walled epicuticular hyphae near the point of attachment and small crystals on the cystidia and on the pileipellis.

A collection of *Crepidotus* from an estate in the Netherlands proved to represent an undescribed species with noteworthy characters such as crystals on the cheilocystidia, typical of species known from the paleotropics and Australia / New Zealand.

Crepidotus cristatus Senn-Irlet & Immerzeel, *spec. nov.* — Fig. 1–3

Pileo 2–10 mm lato, reniformi vel conchiforme, citrino-luteo perstrigoso. Lamellis excentrice concurrentibus, pallide luteis dein brunneis. Stipite iuventute praesenti, cylindrico, sublaterali. Sporis 5.0–6.5 × 4.5–6.5 μm, globosis vel subglobosis, verrucosis, brunneis. Basidia clavata, 20–30 × 6–8 μm, 4-sporigera. Cheilocystidiis 20–30 × 6–15 μm, utriformis, cristalliferis, hyalinis, appendicibus valde diverticulatis praeditis. Cuticula valde tomentosa ex hyphis laxe intricatis fibuligeris, parte tunicis 0.2–0.5 μm crassis vel cristalliferis. Ab *C. citrinus* differt sporis minoribus. Ad corticem arborum, Hollandia.

Holotypus: The Netherlands, prov. Utrecht, Nijenrode, Breukelen, 20.X.2001, *G. Immerzeel* (I2001-302 (L; Paratypus ZT)).

Pileus 2–10 mm, irregularly rounded flabelliform, reniform, rarely semicircular, mostly ungulate when young, later plano-convex or with a low umbo at point of attachment, irregularly waved when old, with distinctly incurved margin, mat, felted-tomentose, pale sulphur to lemon yellow, butter yellow (Methuen 3A4-3A5, 4A4-A5), in dried specimen buff to ochraceous, not hygrophanous, sessile, at point of attachment tomentose-villose. Lamellae L = 6–14, l = 1–3, rather narrow, moderately crowded, subventricose, narrowly adnexed, young pale yellowish, later cinnamon-buff to cinnamon; edge white, distinctly fimbriate. Stipe visible only in very young, undeveloped fruit-bodies, curved, tomentose. Flesh thin, white. Taste slightly farinaceous, smell fungus-like.

Spores 5.0–6.5 × 4.5–6.5 μm, Q = 1–1.25, mean volume 92 μm^3, globose, sometimes subglobose, punctate-warty, verruculose (type 1 sensu Senn-Irlet, 1995); walls moderately coloured. Basidia 20–30 × 6–8 μm, four-spored, clamped. Cheilocystidia 20–30 × 6–15 μm (including outgrowths), clavate, narrowly utriform, with short finger-like, up to 3 μm wide protuberances, which may be branched, angled or flexuous, antler-like, in upper part covered with scattered small crystals. Trama of lamellae subregular.

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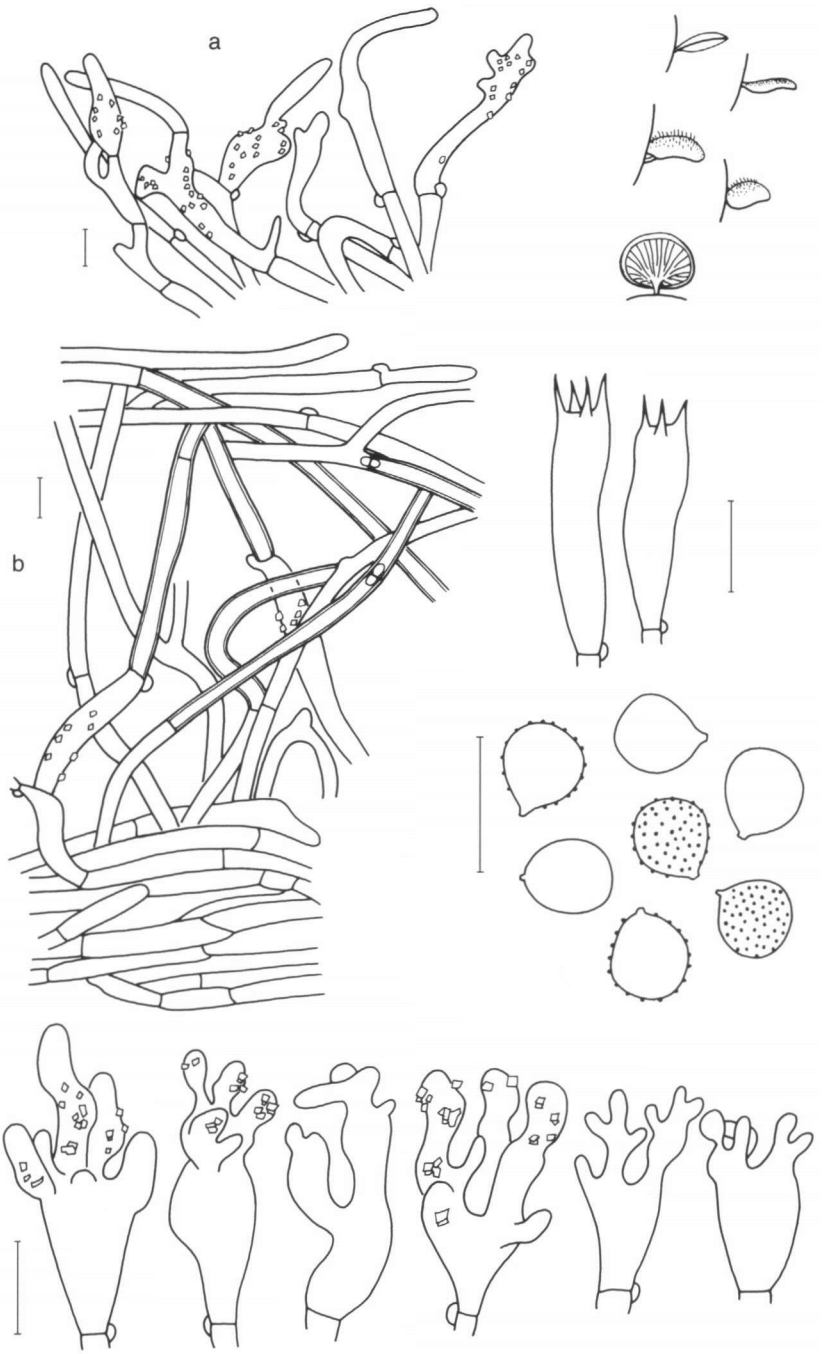

Fig. 1. *Crepidotus cristatus*. Line-drawings from pileipellis (a, near cap margin) and in the centre (b), basidia, spores, and cheilocystidia. Scale bars = 10 μm.

Fig. 2. *Crepidotus cristatus*. Fresh carpophores from collection GI1999-101 (above) and from collection GI2001-302 (below).

Pileipellis a transition between a trichoderm and a cutis with mostly straight, more rarely flexuous, filiform, 2–3 μm wide hyphae; in lower part scattered fragments covered with small crystals and slightly thick-walled hyphae not rare; terminal cells undifferentiated, especially at pileus margin often in the shape of cheilocystidia with outgrowths and covered with small cuboid crystals; strigose hairs at point of attachment composed of straight, slightly thick-walled hyphae. Pileitrama regular, hyaline. Pigment yellowish, rather indistinct, intracellular and faintly membranaceous in pileipellis, dissolving in ammonia. Clamp-connections abundant in all tissues.

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Habitat — On various fallen corticated branches of up to 15 cm diameter of *Acer pseudoplatanus, Buxus*. Together with *Nectria* spec.

Collections examined. THE NETHERLANDS: prov. Utrecht, Nijenrode, Breukelen, 8.XI.1999, *G. Immerzeel GI1999-101* (L); idem 20.X.2001, *G. Immerzeel GI2001-302* (L, holotype).

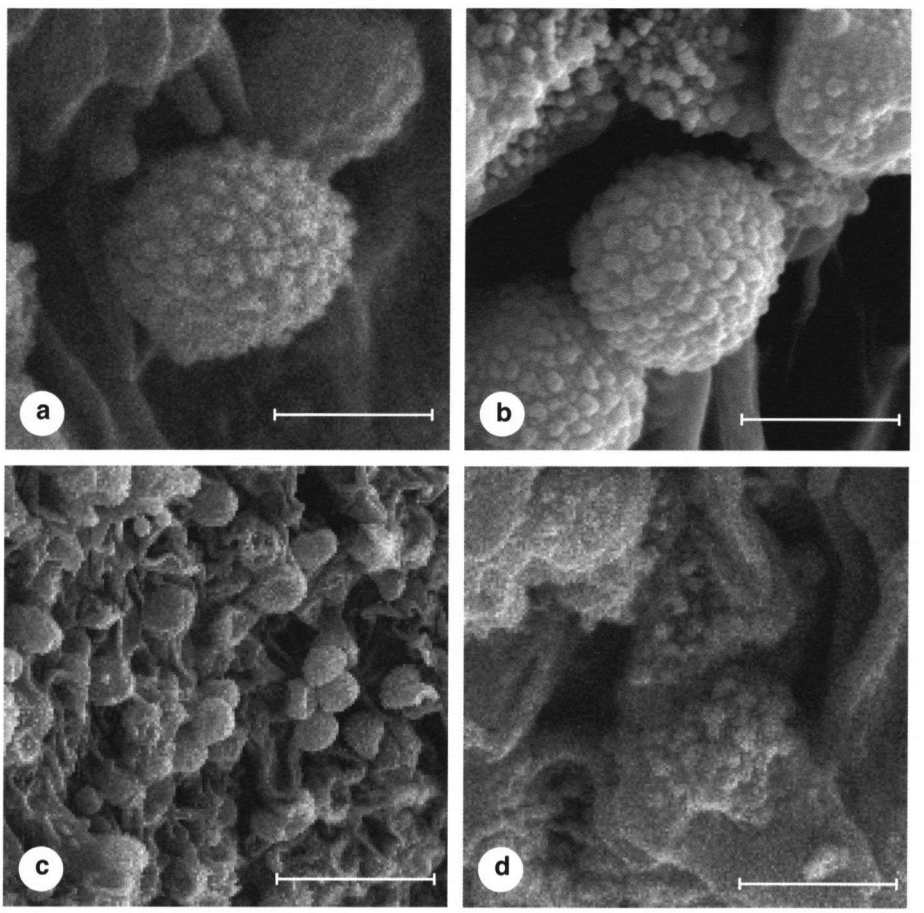

Fig. 3. *Crepidotus cristatus*. a–c. Spores, crystals on collapsed cheilocystidia; d. arrowhead. Scale bars = 10 μm.

DISCUSSION

This species is characterised by the combination of a yellow fruit-body, small cheilocystidia with finger-like outgrowths and cuboid crystals.

Among the hitherto known European species with cystidia of such shape and size are *C. carpaticus* and *C. roseoornatus*. While the latter is a reddish-coloured species, *C. carpaticus* with cream-buff fruit-bodies may also display yellowish tints. However, its cheilocystidia lack crystals. In addition the SEM pictures show a slightly different type of spore ornamentation: isolated hemispherical warts in the new species (Fig. 3 a–c), irregular, confluent warts at times decorated with small outgrowths in *C. carpaticus* (Senn-Irlet, 1995).

In the North American mycoflora (Hesler & Smith, 1965) *Crepidotus contortus* Hesler & A.H. Sm. seems to come close with pale olive buff colours, globose spores and small, exceptionally strongly contorted cheilocystidia. The cystidia in our species cannot be described as contorted, they form a dense band not easy to detach for a microscopic analysis as the outgrowths sometimes intermingle. In addition the presence of crystals is not reported for *C. contortus*.

Crystal bearing cheilocystidia are known from several species in the *Crepidotus episphaeria*-complex from the Southern hemisphere (Reid, 1975; Horak, 1977). However, none of these species have the same shape of cystidia.

Table I. Distinctive sizes (in µm) and features of six collections of the complex around *Crepidotus citrinus*.

species	collection	mean spore length in µm (N = 20)	mean spore width in µm (N =20)	cheilocystidia size in µm	shape of cheilocystidia	presence crystals	number of spores per basidium
sulphurinus	CBM-FB 11123	7.7	7.5	30–46 × 6–10	utriform	scattered on cheilocystidia	2
sulphurinus	CBM-2281	8.0	7.5	14–42 × 8–11	utriform	scattered on cheilocystidia	2
citrinus	PR-3434	7.7	7.3	19–43 × 7–10	utriform & antlerlike	scattered on cheilocystidia and pileipellis	2
citrinus	RE-68	7.8	7.4	25–45 × 6–10	antlerlike	abundant on cheilocystidia	2–4
cristatus	GI 1999-101	5.7	5.4	22–35 × 6–10	antlerlike	scattered on cheilocystidia	4
cristatus	GI 2001-302	6.0	5.5	18–28 × 7–14	antlerlike	abundant on cheilocystidia and scattered on pileipellis	4

Localities. CBM-FB-11123: Japan, Chiba pref., Higashi-yamashina-cho, Midori-kuz, 14.VI.1994, leg. Ostuta & Isoda; CBM-2281: Japan, Chiba pref., Kiyosumi-yama, Amatsu-kominato-cho, Awa-gun, 300–350 m, broad-leaved forest mixed with *Quercus acuta*, and *Castanopsis cuspidata*, 8.VII.1989, leg. T. Fukiharu; PR-3434: Puerto Rico, Luquillo Mountains, Mun. de Rio Grande, Caimitillo Trail, 700 m, 2.X.1996, leg. S.A. Cantrell; RE-68: La Réunion, Forêt de Bélouve, 13.III.1996, leg. A. Hausknecht & G. Wölfel.

Crepidotus citrinus Petch, a species with a mainly (sub-)tropical distribution, has larger, intensely coloured golden-brown spores and two-spored basidia (Singer, 1973). There is a difficulty in the unequivocal interpretation of this species, as hitherto published type studies do not mention the shape of the cheilocystidia (Pilát, 1951) nor the crystals and the thick-walled hyphae of at least parts of the pileipellis (Pegler, 1986). These structures seem to be destroyed in the type collection. Singer (1973) illustrates quite bizarre cheilocystidia shapes from a collection from Argentina which have the same antler-like pattern as our species. Own observations on several collections from all over the world with distinct yellow fruit-bodies have convinced us that *C. citrinus* should be interpreted as a species with antler-like cheilocystidia, scattered crystals at least in the cheilocystidia and often in addition in the pileipellis, and thick-walled epicuticular hyphae especially near the point of attachment.

In contrast to the original description of *C. citrinus*, Japanese authors offer a more exhaustive description of another similar species, *C. sulphurinus* Imazeki & Toki. Already the original description mentions rare incrustations of the cheilocystidia. The study of Japanese collections of *C. sulphurinus* showed utriform cheilocystidia with scattered small crystals and the presence of thick-walled hyphae in the epicutis. Yet, the basidia are all two-spored, the spores larger (see Table I) and in one collection coarse yellow agglutinated crystals were present in the trama. In contrast to Singer (1973) who interpreted *C. sulphurinus* as a synonym of *C. citrinus* we treat these two as distinct species, with the main difference found in the shape of the cystidia.

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