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CHRYSOSPORIUM ZONATUM, A NEW KERATINOPHILIC FUNGUS

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Chrysosporium zonatum, spec. nov., a keratinophilic and cellulolytic species, is described from horse dung in Kuwait. It was found in association with *Microsporum gypseum* (Bodin) Guiart & Grigorakis, both species colonizing horse hair.

During a routine study of coprophilous fungi, an undescribed keratinophilic *Chrysosporium* species was found as a secondary colonizer of horse hair immersed in horse dung. The first colonizer was *Microsporum gypseum* (Bodin) Guiart & Grigorakis, which did not survive in pure culture after a second transfer. The new *Chrysosporium* species produces cellulolytic enzymes on cellulose agar.

Chrysosporium zonatum Al-Musallam & Tan, *spec. nov.* — Fig. 1

Coloniae in agaro PYE dicto 55 mm diametro post 14 dies 25°C, intricatae ad granulosae, modice elevatae in medio ad 2–3 mm, zonas concentricas albas – bubalinas – vinaceo-bubalinas, in medio avellaneas praebentes; margo regularis; reversum dilute cremeum, subinde fuscescens. Hyphae tenuitunicatae, hyalinae, 2–3.5 (–6.0) µm latae; hyphae unilateraliter inflatae praesentes; hyphae aeriae plerumque fertiles, saepe conidia intercalaria ferentes. Conidia terminalia vel lateralia vel intercalaria, sessilia vel breviter pedicellata vel ramis longis producta, subhyalina, aggregata bubalina, matura crassitunicata, verrucosa, obovoidea vel clavata, continua (raro bicellularia), 5–7.5 × 3–5 µm, cicatrice basilari 2–2.5 µm diametro. Conidia intercalaria coposia, plerumque cellulis vegetativis alternantia, nonnumquam bina catenata, plerumque latitudine hyphis vegetativis similia, (5–)8–12 × 2–4 µm, nonnumquam doliiformia vel inaequilateraliter inflata, 4.5–10 × 2.5–6(–7.5) µm, matura crassitunicata, verrucosa. Chlamydosporae absentes. Temperatura crescentiae minima 20°C, optima 30°C, maxima 37–39°C. Keratino et cellulosa utitur.

Holotypus: *CBS 437.88* (vivus et exsiccatus), isolatus e pilo equino, Kuwait, Februariis 1986.

Colony on phytone-yeast agar (PYE) attaining 55 mm in diameter in 14 days at 25°C, felty to powdery, slightly raised at the centre, 2–3 mm high, showing coloured concentric zones ranging from white, buff to vinaceous-buff up to hazel in older parts; margin defined and regular; reverse pale cream, turning dark brown to umber brown with age. Hyphae thin-walled, hyaline, 2–3.5(–6.0) µm wide; raquet hyphae present, aerial hyphae mostly bearing chains of alternate arthroconidia. Conidia terminal, lateral and intercalary, subhyaline, appearing buff in mass, thick-walled and verrucose at maturity; dehiscence of conidia rhexolytic. Terminal and lateral conidia sessile or on short protrusions or side branches, obovoid to clavate, 1-celled (rarely 2-celled), 5–7.5 × 3–5 µm, with a wide basal scar measuring 2–2.5

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µm. Intercalary conidia abundant, mostly alternating with vegetative cells, occasionally in series of two conidia, the majority of the same width as the fertile hyphae, cylindrical, (5–)8–12 × 2–4 µm, some are barrel-shaped to inequilaterally swollen, 4.5–10 × 2.5–6(–7.5) µm. Chlamydospores absent. Growth temperatures: minimum 20°C, optimum 30°C, maximum 37–39°C. Keratinolytic and cellulolytic.

The species is closely related to *C. queenslandicum* Apinis & Rees (1976) mainly being distinguished by verrucose rather than smooth-walled conidia. In later transfers some smooth-walled conidia may be found, suggesting smoothness being a possible degenerative character, but Apinis & Rees (1976) explicitly described their fresh isolate of *C. queenslandicum* as having smooth-walled conidia. The species are differentiated further by their colony colours (white for *C. queenslandicum* and buff for *C. zonatum*) and by optimum growth temperatures (25°C for *C. queenslandicum* and 30°C for *C. zonatum*). Chains of alternate arthroconidia suggest a resemblance to *C. articulatum* Scharapov (1978) and *C. europae* Sigler & al. (1986). *Chrysosporium europae* differs significantly in colony characteristics and low growth rate (55–65 mm diam. after 5 weeks on PYE). *Chrysosporium articulatum* was listed as a synonym of *C. queenslandicum* by Van Oorschot (1980). However, in the course of the present study the species were found to be different on the basis of the size of conidia, viz. (4–)7–8(–11) × 3–4(–5.5) µm for *C. queenslandicum* and (6–)10–11(–21) × (4–)5(–7.5) µm for *C. articulatum*, the presence of chains of alternate arthroconidia in *C. articulatum*, and the growth rate, viz. 42 mm in diam. in 14 days at 25°C on PYE in *C. queenslandicum* and 83 mm in *C. articulatum*. Therefore we support the conclusion of Sigler & al. (1986) who maintained *C. queenslandicum* and *C. articulatum* as separate species. The arrangement of the conidia of *C. articulatum* resembles that of *C. zonatum*. The two species are distinguished

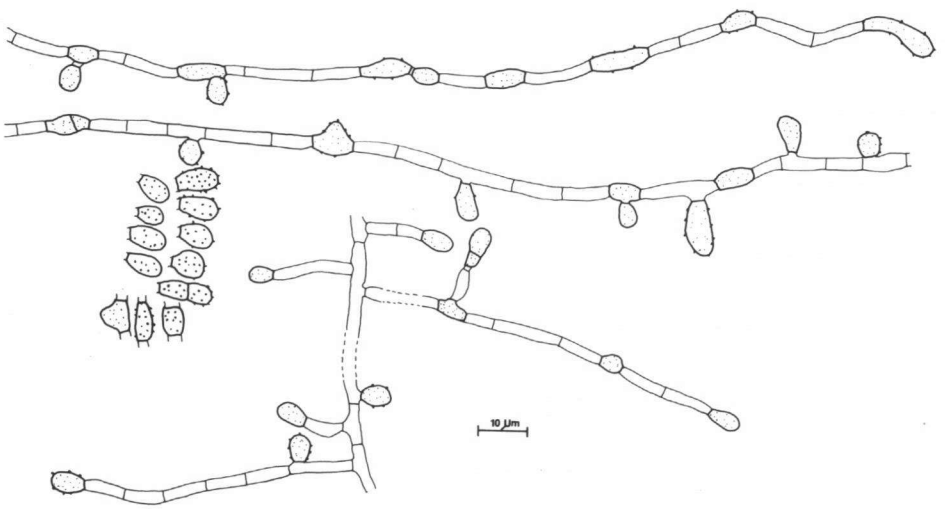

Fig. 1. *Chrysosporium zonatum.*

from each other by the wall structure of the conidia (smooth in *C. articulatum*), size of the conidia, viz. (6–)10–11(–21) × (4–)5(–7.5) µm for *C. articulatum* and 5–7.5 × 3–5 µm for *C. zonatum*, colour of the colony, which is white in *C. articulatum* and growth rate (55 mm in diam. in 14 days at 25°C on PYE) for *C. zonatum*, 83 mm for *C. articulatum*.

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