

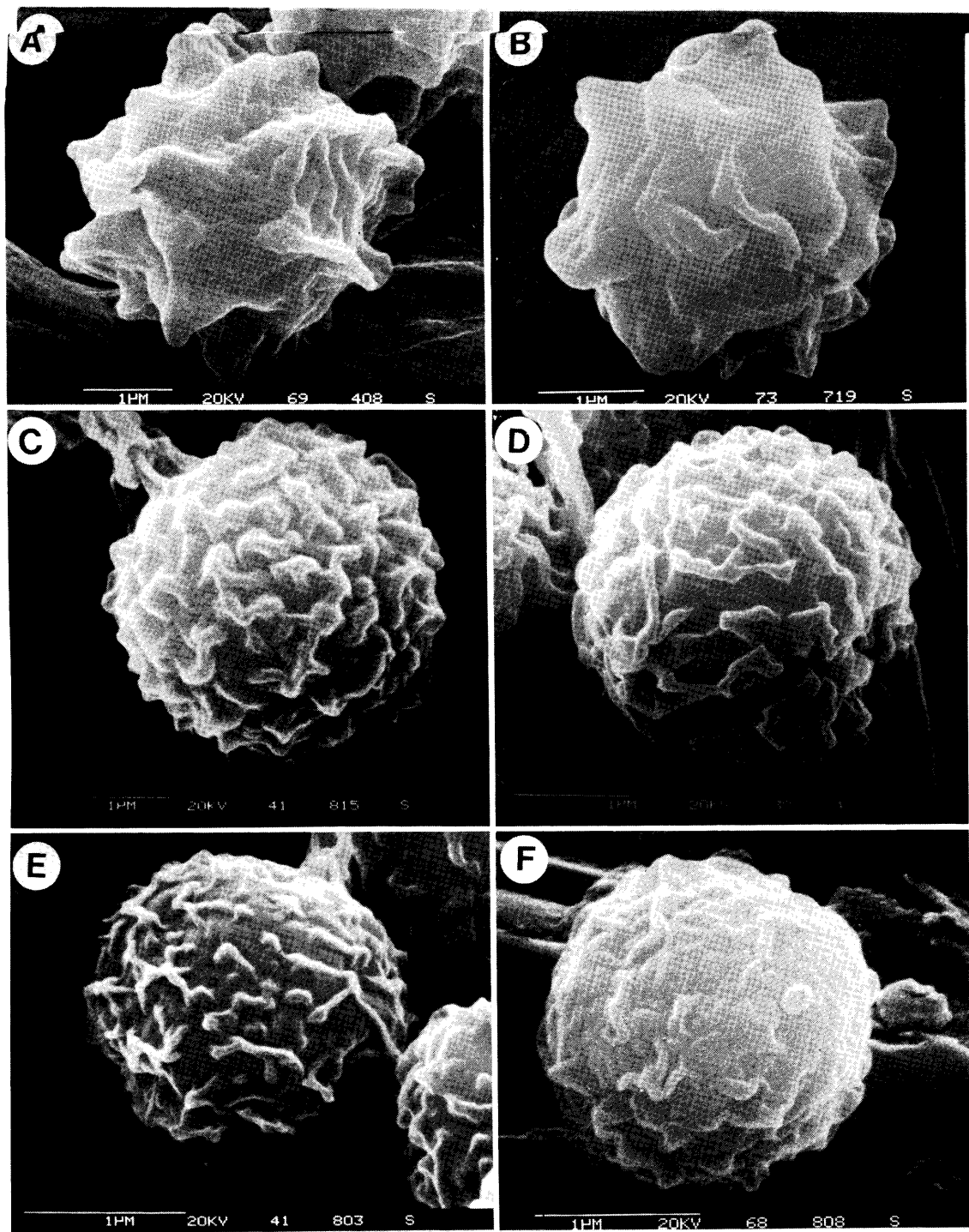


Fig. 64. *A. ustus* group: echinulate and lobate-reticulate categories: A, *A. pseudodeflectus*, IMI 278381; B, *A. ustus* NRRL 281 (echinulate class); C, *A. conjunctus*, IMI 135421; D, *A. puniceus*, IMI 126692; E, *A. panamensis*, IMI 19393ii; F, *A. granulatus*, IMI 17278iii (lobate-reticulate category).

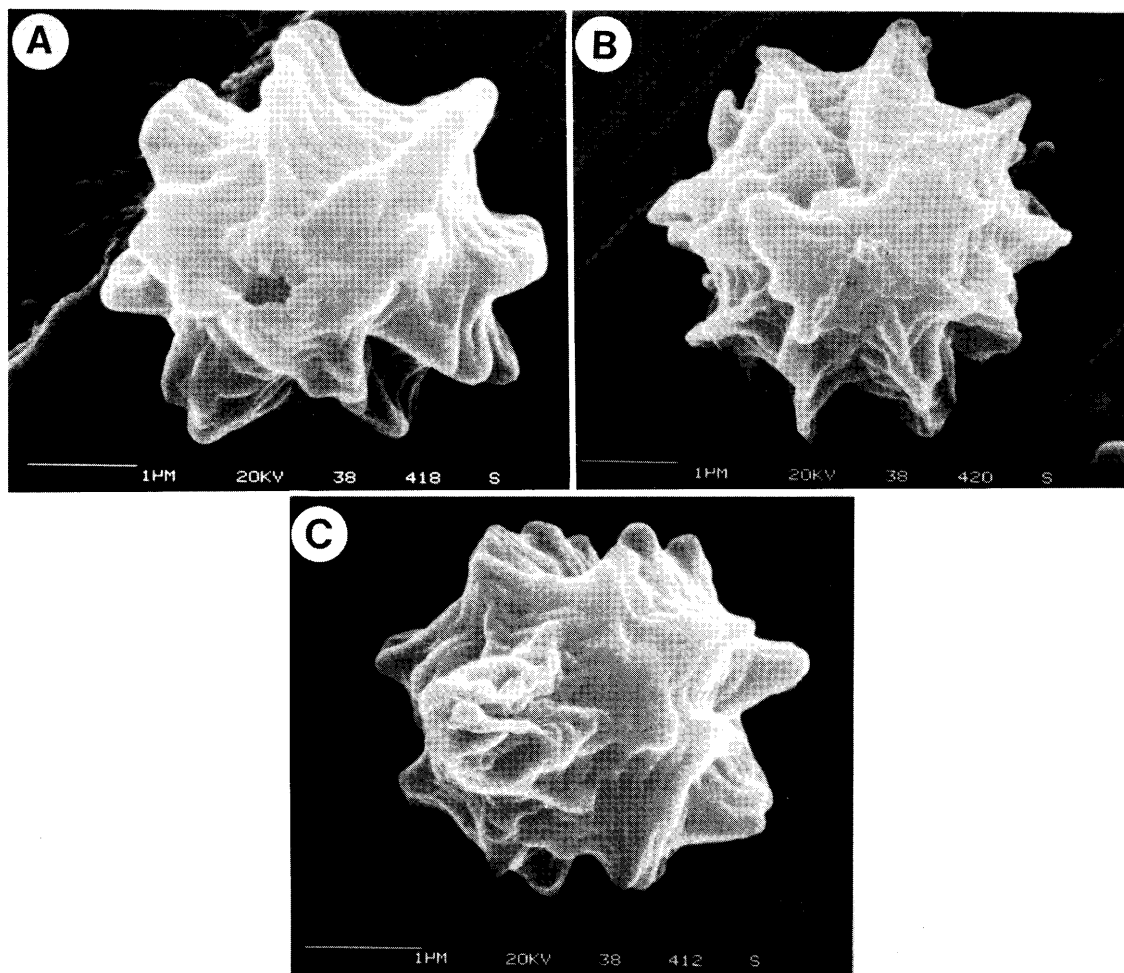


Fig. 65. *A. ustus* group: three isolates of *A. ustus*. A, IMI 126543; B, IMI 127148; C, IMI 211805.

strains one can find sufficient differences to warrant the assignment of specific designation to particular cultures'. I would agree with these sentiments, in particular colony colour may vary from mud brown to slate grey. However, I have examined three out of the six isolates on which Raper & Fennell (1965) based their redescription and in each case the spore morphology is identical (Fig. 65). The taxon may be reliably identified on the basis of its brown appearance, the possession of a diminutive biserial head giving off a brown pigmentation when prepared on a slide in lactophenol cotton blue, and a conidium with the distinctive echinulate ornamentation as shown in Fig. 65. In addition, some colonies bear Hülle cells scattered throughout the colony, which are not associated with a mat of pigmented mycelium as are other species in the group.

Aspergillus ustus* var. *pseudodeflectus (Samson & Mouchacca) Kozakiewicz, **comb. nov.**

Aspergillus pseudodeflectus Samson & Mouchacca, *Antonie van Leeuwenhoek* **41**: 345 (1975).

Illustrations: Fig. 64a,b.

Description: *Conidia* echinulate. *Conidiogenous cells* biserialate. *Conidiophores* roughened, short, curved, 35–37 µm long. The curved conidiophore gives an appearance of nodding, hence the name *pseudodeflectus*. *Conidial heads* radiate, brown on Czapek Dox agar but on malt and sucrose near vetiver green (R. XXXXVII). *Hülle cells* absent.

Type: Egypt: Western Desert, ex soil, 1974, *R.A. Samson & J. Mouchacca* (IMI 278381, holotype).

Host: Soil.

Distribution: Egypt.

Specimens: Isolate NRRL 281.

Notes: Samson & Mouchacca (1975) placed this in the *A. versicolor* group, because when they grew it on malt agar with the addition of sucrose, the colony possessed the blue-green colour typical of the *A. versicolor* group. In addition it did not produce Hülle cells. However, when grown on malt agar alone or on Czapek Dox agar, the colony colour is brown, which is typical of members of the *A. ustus* group under similar conditions. The micrographs in Figs 64a, 65a show *A. ustus* var. *ustus* and *A. ustus* var. *pseudodeflectus* to share the same conidial ornamentation. They only differ in that *A. ustus* var. *pseudodeflectus* does not possess Hülle cells and its conidiophores are bent when the colony is grown on Czapek Dox agar. Raper & Fennell (1965) identified isolate NRRL 281 as *A. ustus* despite its 'nodding head' appearance. This isolate was not seen by Samson (1979) but from my observations I consider it represents a second strain of *A. ustus* var. *pseudodeflectus*. I do not consider the differences between the two taxa sufficient to warrant separation at species level, and accordingly *A. pseudodeflectus* is reduced to varietal rank.

Aspergillus conjunctus Kwon & Fennell, in Raper & Fennell, *The genus Aspergillus*: 552 (1965).

Illustration: Fig.64c.

Description: *Conidia* lobate-reticulate. *Conidiogenous cells* biserialate. *Conidiophores* smooth, 500–700 µm, but up to 1 mm long. *Hülle cells* long and narrow, occasionally bent. *Colony colour* buffy olive (R. XXX).

Type: Costa Rica: Prov. of Puntarenas, Palmar, ex forest soil, 1962, *K.J. Kwon & D.I. Fennell* (IMI 135421, holotype).

Host: Ex soil.

Distribution: Costa Rica.

Notes: The specific epithet was coined to indicate a conical or pyriform connective which remains attached to the conidia and is clearly observed in liquid mounts. This connective is also most obvious in the SEM micrographs of the species (Fig.64c). It also occurs in other species of this group, but not *A. ustus* var. *ustus* (Fig.64d,e,c). In addition to its distinctive conidial ornamentation, the delicately curved, rather than extremely curved, Hülle cells may be used to identify this species.

Aspergillus puniceus Kwon & Fennell, in Raper & Fennell, *The genus Aspergillus*: 547 (1965).

Illustration: Fig.64d.

Description: *Conidia* lobate-reticulate. *Conidiogenous cells* biserialate. *Conidiophores* smooth, 150–250 µm, but up to 300 µm long. *Hülle cells* elongate, crescent-shaped, or twisted. *Colony colour* white then vinaceous pink (R. XXVIII) due to droplets of exudate.

Type: Costa Rica: Zarcero, ex soil, 1962, *K.J. Kwon* (IMI 126692, holotype).

Host: Ex soil, air, reservoir water (CMI, 1988).

Distribution: Singapore, India, Pakistan, Panama, Costa Rica.

Specimens: Pakistan: Karachi, 1967, *A. Kamal* (IMI 130755).

Notes: Distinctive features other than conidial ornamentation include the conspicuous pink appearance of its growing colony due to the production of a wine-red exudate. The Hülle cells are variously curved and twisted and aggregate in yellow masses.

Aspergillus panamensis Raper & Thom, *Mycol.* 36: 568 (1944).

Illustration: Fig.64e.

Description: *Conidia* lobate-reticulate. *Conidiogenous cells* biserialate. *Conidiophores* smooth, 600–900 µm long. *Hülle cells* produced within red-coloured mycelium, elongate and twisted or curved. *Colony colour* wood brown (R. XL).

Type: Panama ex soil, 1942, *J. Bonner* (IMI 19393iii, lectotype).

Host: Ex soil.

Distribution: Panama.