

タイ国土壌産 Chaetomium属3種について

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Three *Chaetomium* species from Thailand soil

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Abstract

A new species, *Chaetomium variosporum*, characterized by olivaceous perithecia ornamented with arcuate hairs and irregular-shaped ascospores, is described. This species and two noteworthy isolates of *Chaetomium* were found in the paddy field soil of Thailand.

Among numerous isolates of ascomycetous fungi obtained from soil samples taken in 1970, from the paddy field in Thailand are three which appear to represent curious members of *Chaetomium*. Two of these, *C. apiculatum* LODHA and *C. venezuelense* AMES have been recorded few in the world. A third, moreover, is morphologically distinct from any species of the genus previously described (AMES 1961; SETH 1970). The new fungus appears to be most satisfactorily assignable to a group with *C. aureum* CHIVERS or "Group 4" of SETH (based on terminal hair characters), but differs essentially from the known members of the group by means of the irregular shape of ascospores. Hence, the species epithet *variosporum* was selected.

All collections cited here are deposited in the Mycological Collection of National Institute of Hygienic Sciences, Tokyo. In addition, subcultures of the type of *C. variosporum* are deposited in the Institute for Fermentation, Osaka, and the Centraalbureau voor Schimmelcultures, Baarn, the Netherlands.

Chaetomium apiculatum LODHA, in J. Indian Bot. Soc. 43: 122 (1964); SETH, A monograph of the genus *Chaetomium*, 39 (1970). (Figs. 1 & 4)

Cultures on potato-carrot agar spreading broadly, light grey to light olive grey, consisting of a very thin basal felt, with floccose, loose aerial hyphae, perithecia abundantly produced on the felt, surrounded by a thin covering of aerial hyphae; reverse brownish white to dark yellowish brown.

Perithecia dark brown to dark olive brown, subspherical to ovoid, $180\sim 200\times 160\sim 170\ \mu\text{m}$. Terminal hairs dark olive to dark brown, finely roughened, septate, unbranched, straight or flexed below, becoming spirally coiled above with 25 or more coils, which are usually close in appearance, more or less tapering and ending in a rounded tip, $2.5\sim 3\ \mu\text{m}$ wide at the middle. Lateral hairs dark olive, straight or flexed, $2.5\sim 3.5\ \mu\text{m}$ wide at the base. Asci 8-spored, cylindrical, $45\sim 60\times 5\sim 6\ \mu\text{m}$, at maturity evanescent. Ascospores uniseriate, at first hyaline to pale yellowish brown, then becoming olive to olive grey,

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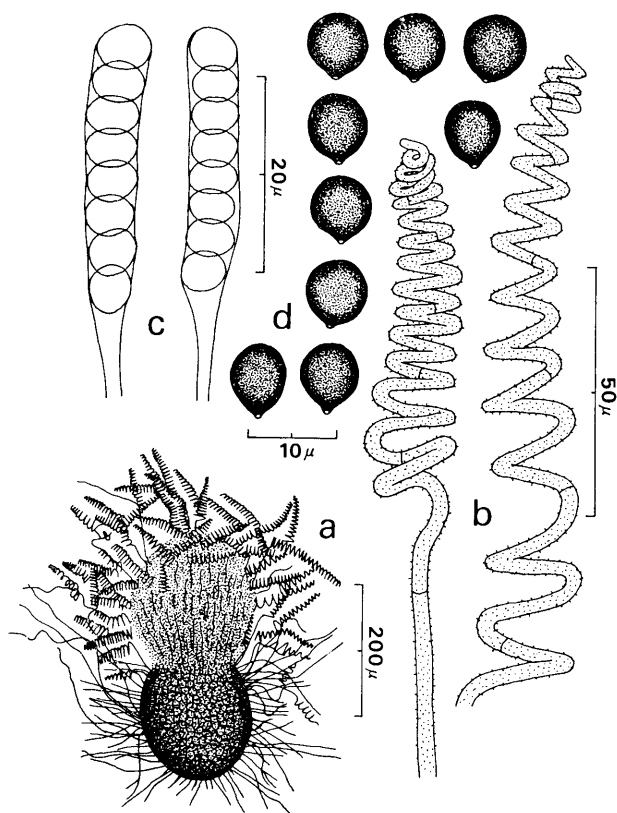


Fig. 1. *Chaetomium apiculatum* LODHA

a. Perithecium; b. Terminal hairs; c. Asci; d. Ascospores.

ovoid to almond-shaped, often apiculate at one end, $7\sim 8 \times 6\sim 7\ \mu\text{m}$, smooth-walled.

Cultures on cellulose agar also spreading, brownish white to pale orange, with limited perithecia.

At 37°C , grows slightly more rapidly than at 25°C , and with perithecia usually absent.

HABITAT: On soil of paddy field, Pimai Experimental Station, Nakhornrachasima, Thailand, April 1970, NHL 2697.

C. apiculatum can be distinguished from *C. brasiliense* BATISTA et PONTUAL, to which it appears most similar, in having larger ascospores and terminal hairs with close, up to 25 or more coils. This collection, to our knowledge, represents the second record of the species. It was collected only once from monkey dung, Rajasthan, India.

Chaetomium variosporum UDAGAWA et HORIE sp. nov. (Figs. 2, 5 & 6)

Culturis in agaro cum cellulosa satis restrictis, dilute olivaceis vel cinereo-olivaceis, tenuibus, cum mycelio aereo paulo, peritheciis dispersis; reverso dilute olivaceo vel obscure flavo; in agaro cum decocto tuberorum et carota fuscatis, e coacta tenui mycelica constitutis, peritheciis abundantibus.

Peritheciis atro-olivaceis vel paene nigris, subsphaericis vel ovoideis, $180\sim 200\times 145\sim 170\ \mu\text{m}$. Pilis terminalibus olivaceo-brunneis vel atro-brunneis, arcuatis, plerumque incurvatis, non ramosis, longis $70\sim 130\ \mu\text{m}$, basi latis $2.5\sim 3.5\ \mu\text{m}$, distincte septatis, leviter asperis, cum apice rectis vel incurvatis, et obtusis. Pilis lateralibus dilute olivaceis vel dilute olivaceo-brunneis, rectis vel aliquantum curvatis, septatis, leviter asperis, basi latis $2\sim 3\ \mu\text{m}$, apice rotundatis gradatim attenuatis. Ascis octosporis, clavatis, $55\sim 65(\sim 75)\times 12.5\sim 15\ \mu\text{m}$, evanescentibus. Ascosporis olivaceis vel olivaceo-cinereis, formis variis ornatis, ovatis, leviter triangularibus, vel irregulariter angulatis, saepe uno vel pluribus lateribus complanatis ornatis, $10\sim 12.5\times 6\sim 10\ \mu\text{m}$, laevibus. Foramine germinali rotundo, $1\ \mu\text{m}$ diam., plerumque bino in ascospore, in termino attenuato sito.

TYPUS: In culturis ex solo, Muang, Lopduri, Thailand, April 1970, NHL 22698.

Cultures on cellulose agar growing rather restrictedly, pale olive to greyish olive, consisting of a very thin basal felt or submerged mycelium, with very sparse aerial growth, perithecia scattered on the felt; reverse pale olive to dull yellow.

Perithecia dark olive to nearly black, subspherical to ovoid, $180\sim 200\times 145\sim 170\ \mu\text{m}$.

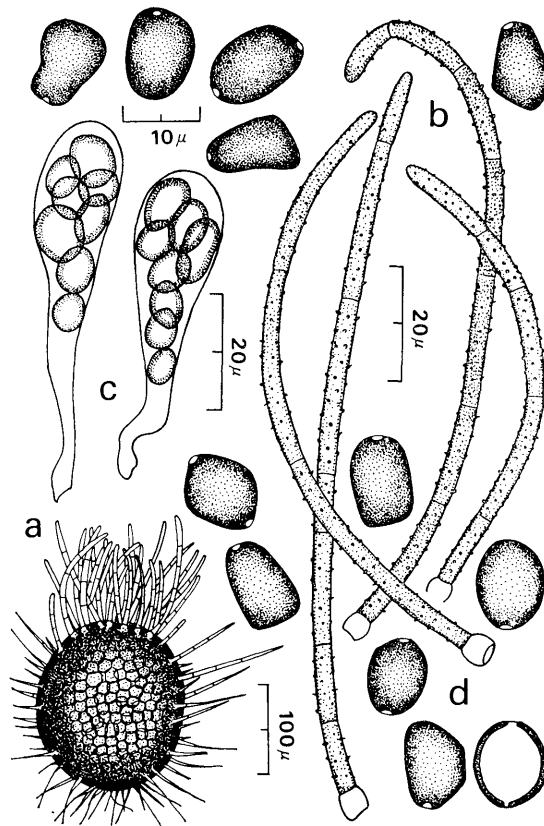


Fig. 2. *Chaetomium variosporum* UDAGAWA et HORIE
a. Perithecium; b. Terminal hairs; c. Ascis; d. Ascospores.

Terminal hairs olive brown to dark brown, arcuate from the base, usually incurved, unbranched, $70\sim 130\ \mu\text{m}$ long, $2.5\sim 3.5\ \mu\text{m}$ wide at the base, distinctly septate, minutely roughened, with straight or incurved, blunt tip. Lateral hairs pale olive to pale olive brown, straight or somewhat flexed, minutely roughened, $2\sim 3\ \mu\text{m}$ wide at the base, tapering gradually to a rounded tip. Asci 8-spored, clavate, $55\sim 65(\sim 75)\times 12.5\sim 15\ \mu\text{m}$, evanescent at maturity. Ascospores olive to olive grey, variable in shape, ovate, somewhat triangular, or irregularly angular, frequently with one or more flattened sides, $10\sim 12.5\times 6\sim 10\ \mu\text{m}$, smooth-walled; with a germ pore circular, $1\ \mu\text{m}$ in diam., usually two in ascospore, located at pointed end.

Cultures on potato-carrot agar as on cellulose in rate of growth, olive to dark olive

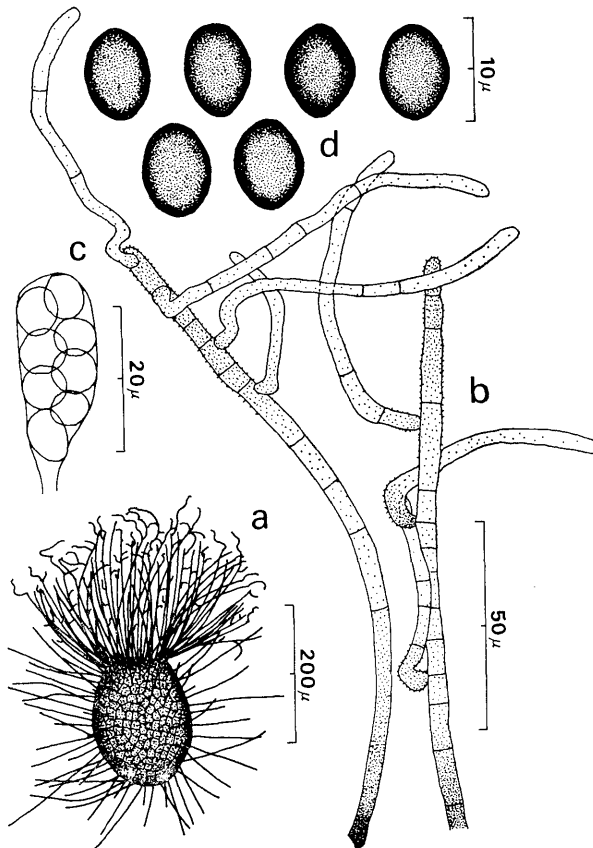
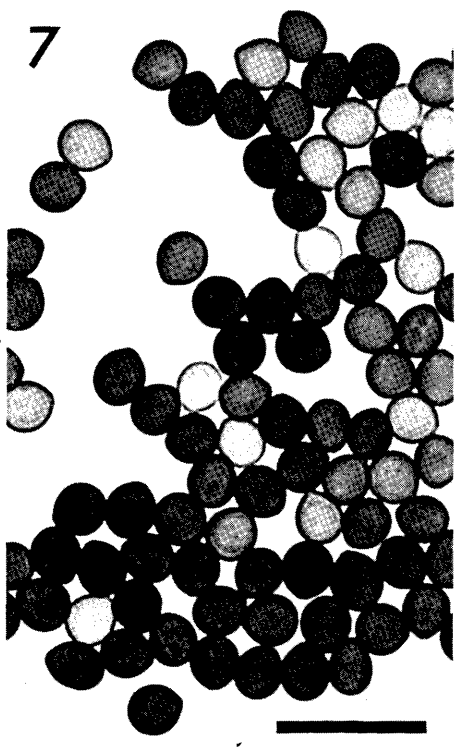
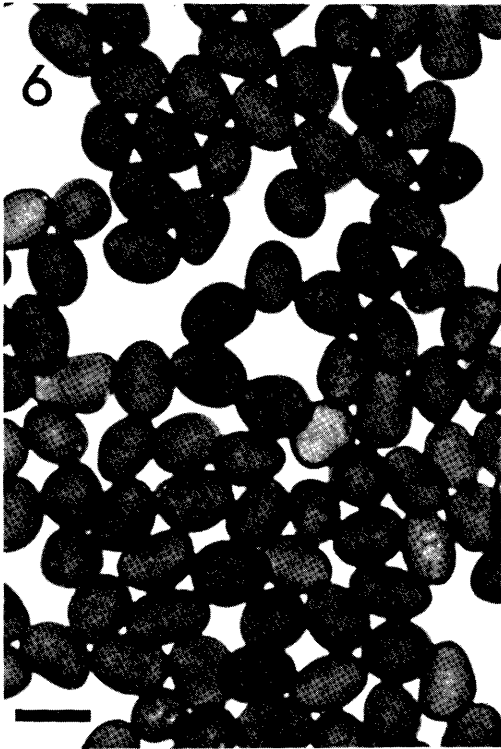


Fig. 3. *Chaetomium venezuelense* AMES
a. Perithecium; b. Terminal hairs; c. Ascus; d. Ascospores.

Fig. 4. *C. apiculatum* LODHA: Ascospores (scale= $10\ \mu\text{m}$).

Figs. 5 & 6. *C. variosporum* UDAGAWA et HORIE: Fig. 5. A portion of terminal hairs (scale= $20\ \mu\text{m}$). Fig. 6. Ascospores (scale= $10\ \mu\text{m}$).

Fig. 7. *C. venezuelense* AMES: Ascospores (scale= $20\ \mu\text{m}$).



grey, with a thin mycelial felt, perithecia abundantly produced, loosely surrounded by a covering of limited aerial hyphae; reverse light olive to dark yellowish brown.

At 37°C, grows faster than at 25°C but with production of perithecia much reduced.

HABITAT: On soil of paddy field, Muang, Lopduri, Thailand, April 1970.

HOLOTYPE: NHL **22698**, has been preserved at the Mycological Collection, National Institute of Hygienic Sciences, Tokyo.

The general characteristics of its terminal hairs are somewhat suggestive of *C. aureum* CHIVERS and the allied members. Among the members, they are most nearly approximated in *C. aureum*, *C. erraticum* AMES, *C. fusiforme* CHIVERS, *C. fusi sporale* RAI et MUKERJI, *C. gracile* UDAGAWA, and *C. trilaterale* CHIVERS. In our isolate, however, the ascospores are much broader, and show a unique type of shape. On the other hand, there is a considerable similarity in spore morphology between *C. variosporum* and two *Chaetomium* described by GAMS (1966). This new species differs from *C. irregulare* SÖRGEL ex GAMS and *C. difforme* GAMS by producing arcuate, unbranched terminal hairs, instead of undulate, rather branched hairs in the latter two species.

Chaetomium venezuelense AMES, A monograph of the Chaetomiaceae, 42 [1961 (1963)]; AUE & MÜLLER, in Schweiz. Bot. Ges. **77**: 195 (1967); SETH, A monograph of the genus *Chaetomium*, 117 (1970). (Figs. 3 & 7)

Cultures on cellulose agar spreading broadly, brownish white to olive grey, plane, very thin, vegetative mycelium submerged, with sparse aerial hyphae, perithecia scattered on the agar; reverse brownish white.

Perithecia dark brown to dark olive brown, subspherical to ovoid, 170~200×135~150 μm. Terminal hairs light olive brown to olive brown, septate, minutely roughened, arcuate from the swollen base, with blunt tips, 120~230 μm long, 3~5 μm wide near the base, at first unbranched, then becoming irregularly branched above, with numerous, twisted, interlaced, septate branches. Lateral hairs straight or slightly flexed, rather tapering to rounded tip, septate, minutely roughened, 3~5 μm wide at the base. Asci 8-spored, clavate, 30~35×10~12.5 μm, evanescent at maturity. Ascospores olive to olive brown, ovoid to broadly ellipsoid, 8~10×6~7 μm.

Cultures on potato-carrot agar growing rather restrictedly, pale orange to dark olive grey, consisting of a thin mycelial felt, producing abundant perithecia on the felt, with loose aerial hyphae; reverse pale yellowish brown to olive black.

At 37°C, growth better than at 25°C and with increased perithecium production.

HABITAT: On soil of paddy field, Muang, Lopduri, Thailand, April 1970, NHL **2699**.

The ascospore measurements in the description of egyptian material (AUE & MÜLLER 1967) and those given above are slightly too broader. In the type collection from Venezuela, the spores are 7.5~9×3.75~4.8 μm. Such variation may also occur in colony color, which was originally described as tangerine, but both characters failing to show sufficient differences from *C. venezuelense* to warrant species recognition.

We wish to thank Dr. T. MATSUGUCHI, National Institute of Agricultural Sciences, Tokyo, for supplying the materials.

NOTE ADDED IN PROOF: Recent information, not yet published, by HAWKSWORTH shows that the earliest name for *C. venezuelense* is *C. lucknowense* RAI et TEWARI (Can. J. Bot. **40**: 1380, 1962).

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和 文 摘 要

タイ国土壤産 *Chaetomium* 属 3 種について

宇田川 俊一・堀江 義一

1970年、タイ国産水田土壤試料より3種の *Chaetomium* 属を分離した。*C. variosporum* nov. sp. は *C. aureum* を代表とする弓形頂毛を生ずる菌群に含められ、不規則な子のう胞子を形成する点に特徴がある。その他、既知種 *C. apiculatum*, *C. venezuelense* を稀少種として記載した。
