

A new genus of Pezizales from Thailand

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Summary. A new ascomycetous genus, *Leptokalpion*, related to *Thelebolus*, is proposed with *L. albicans* sp. nov. as type species.

Leptokalpion *Brummelen*, gen. nov.

Ascomata paragymnohymenialia (zona incrementi secundaria marginali), sessilia, minutissima. Excipulum superficiei textura globulosa vel angulari, laeve. Asci lati, multi-spori, epistomio apicali destituti, eis generis *Thelebolus* similia, pariete iodo haud caerulescente. Ascosporae ellipsoideae, laeves, hyalinae. Paraphyses simplices, filiformes. Fimicola.

Typus generis: *Leptokalpion albicans* Brummelen.

Ascomata paragymnohymenial, with secondary marginal growing zone; superficial, sessile, very small. Receptacle at first subovoid or pyriform but not closed, then urceolate; surface smooth. Hypothecium and flesh not clearly differentiated. Excipulum of one or a few layers of isodiametric cells (textura globulosa or angularis). *Asci* broad with a dome-shaped apex, multi-spored, without an apical apparatus, resembling those of a *Thelebolus*; the wall not stained blue with iodine. Ascospores ellipsoid, smooth, hyaline. *Paraphyses* simple, filiform, hyaline. Fimicolous.

Etymology: Greek, λεπτος, thin, delicate, and το καλπιον small pitcher or urn.

Leptokalpion albicans *Brummelen*, sp. nov.

Ascomata sessilia, 160–230 μm diam. Receptaculum initio subovoideum vel pyriforme, collo procero, deinde utriculatum, saepe basi angustatum, albidum, laeve. Hymenium ex asco singulari paraphysibus circumdato constans. Excipulum textura globulosa vel angulari. Ascus ovoideus vel pyriformis, apice tholiformi, 290–400 \times 150–210 μm , c. 4000 sporas continens, paries duobus stratis compositus, iodo haud caerulescens. Ascosporae ellipsoideae, hyalinae, laeves, 8.3–9.3 \times 5–5.5 μm . Paraphyses filiformes, 2.0–3.0 μm crassae. Fimum cervinum incolit. Typus: Thailand, *van Brummelen* 2490 (holotypus, L). (Fig. 1.)

Ascomata solitary or more rarely in small groups, superficial, sessile, often on a small base, 160–230 μm across, 350–480 μm high. Receptacle at first subovoid, then pear-shaped with a slender neck, and finally urn- or vase-shaped with flaring rim, white in all parts; surface smooth, with a slightly thickened margin. Hymenium consisting of a single ascus surrounded by paraphyses. Hypothecium not differentiated as a layer, consisting of a single branch of which the terminal cell becomes the ascogenous cell. Flesh not clearly differentiated. Excipulum of varying thickness, in the lateral part

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9–12 μm , near the base up to 30 μm , and near the opening at the top up to 40 μm at maturity; the cells at first subglobular, then more angular, mostly isodiametric, 6–15 \times 9–19 μm (textura globulosa or angularis), hyaline; the margin when young of longitudinal hyphae, at maturity of globular cells 13–22 μm in diameter, sometimes giving rise to rather long hyphae 8–11 μm wide. *Ascus* ovoid to pyriform, with a very short ill-defined stalk, with dome-shaped apex, 290–400 \times 150–210 μm , containing about 4000 spores, opening with a bilabiate split at the top; the wall rather thick, consisting of a more brittle outer layer 1.0–1.6 μm thick and a flexible, rather extensible inner layer 0.2–0.4 μm thick, stained blue in no part by iodine. Ascospores loosely clustered at maturity and ejected in a mass, ellipsoid, hyaline, 8.3–9.3 \times 5.0–5.5 μm , with rather homogeneous contents, without mucilaginous substance adhering. *Paraphyses* rather scarce, simple, filiform, 2.0–3.0 μm thick, not enlarged upwards, colourless.

Known only from dung of roe-deer.

Material examined—THAILAND: *van Brummelen* 2490, laboratory culture on dung of roe-deer (comm. Dr. E. F. van Beusekom), Khao Luang, Prov. Nakhon Si Thammarat, July 1968 (microscopic slides, type of *L. albicans*, L.).

The genus *Leptokalpion* is related to a number of genera of the *Thelebolaceae* and must be placed in this family. Especially those species in which only a single large, multi-spored ascus is formed in each fruit body, like *Thelebolus stercoreus* Tode ex Fr. and *Trichobolus zukalii* (Heimerl) Kimbr. in Kimbr. & Korf, show similarities with *Leptokalpion albicans* (cf. Kimbrough & Korf, 1967; Kimbrough, 1966a, b, 1970, 1972).

In these species no regular operculum is formed in the ascus. Dehiscence of the ascus is provoked by an irregular tear in the upper part of the wall. The ascus wall is rather thick at certain stages of maturity, while it is also very extensible. Usually two layers are clearly visible with light microscopy. No blue staining is observed with iodine.

In *Lasiobolus monascus* Kimbr. very similar asci are formed opening with a large apical operculum (Kimbrough, 1974).

With regard to the type of development of the ascomata, significant differences are observed in the genera concerned. In *Thelebolus* Tode ex Fr., *Trichobolus* Sacc., and *Lasiobolus* Sacc. cleistohymenial ascomata that open in the telohymenial or mesohymenial phase are found (van Brummelen, 1967). On the other hand in *Leptokalpion*, paragymnohymenial ascomata occur in which the ascogonium is over-arched only by hyphae of limited growth that do not form a closed sheath on further development. The excipulum is open from its earliest development and shows a kind of ostiolum, which is at first very narrow, becoming wider on ripening.

The excipular margin shows a certain active growth even at maturity. Terminal cells of this margin may grow out and form hyphae which are sometimes found to detach terminal or subterminal elements as a kind of arthrospore.

Gaseous inclusions (or 'deBary bubbles') in ascospores as reported for *Trichobolus zukalii* (Kimbrough, 1966a), *Coprobolus poculiformis* (Cain & Kimbrough, 1969), and *Lasiobolus* species (Kimbrough & Korf, 1967) are not found in *Thelebolus* and *Leptokalpion*.

In principle the shape of the rupturing of the mature ascus of *Leptokalpion*

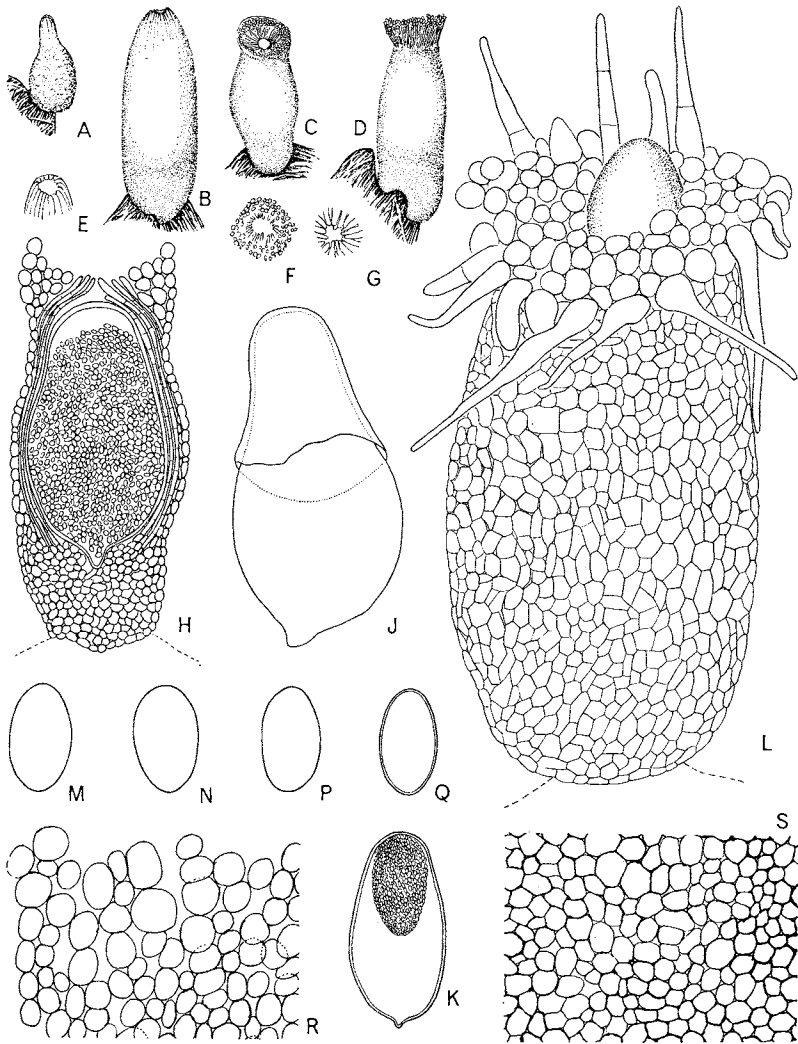


FIG. 1. *Leptokalpion albicans*. A-D, habit of fruit bodies, $\times 50$; E-G, view on the top of fruit bodies, $\times 50$ (E, very young); H, median section through ripening fruit body, $\times 100$; J, almost mature ascus, squashed, $\times 100$; K, mature ascus, $\times 63$; L, side view of fruit body with discharged ascus, $\times 250$; M-P, ascospores, $\times 1600$; Q, ascospore in optical section; R-S, texture of excipulum seen from outside, $\times 300$ (R, near the margin, S, in the lateral part). (All from type.)

albicans at ascospore discharge is rather accidental. In fact its position is restricted by the shape of the surrounding receptacle at maturity. This is strongly stretched in the lateral wall with a strengthened ring-shaped margin surrounding the top of the ascus. Only a rather small, more or less circular area of this top remains uncovered. Here the rupturing occurs, which is often forced to take the shape of a somewhat irregular, broadly attached operculum. But also bilabiate splits are found.

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