

УДК 582.282.16

© V. P. Prokhorov

GENERA IODOPHANUS, THECOTHEUS AND ASCODESMIS: SPECIES' IDENTIFICATION KEYS

ПРОХОРОВ В. П. РОДЫ IODOPHANUS, THECOTHEUS И ASCODESMIS: КЛЮЧИ ДЛЯ ОПРЕДЕЛЕНИЯ ВИДОВ

At former USSR give not consideration on coprophilous ascomycetes. Therefore only 2 species of *Thecotheus* were known. One species of *Iodophanus* was considered as member of genus *Ascophanus* Boud. During of study of fimicolous discomycetes which was carried out from 1977 to 1990 some species of genera *Iodophanus* and *Thecotheus* were founded. The species of these genera are characterized by diffusely amyloid asci and callose-pectic ornamentation of ascospore wall. The analysis of taxonomic relationships permit to delimitate these genera to separate family Iodophanaceae within order Pezizales (Прохоров, 1993).

The fungi of this group develop mainly on dung of various animal but some species appear on different non coprous substrata as for instance on soil, rotten wood, paper, textile, plant debris. Thus these fungi are coprophilous only partial.

The genus *Iodophanus* was segregated by Kimbrough et al. (1969) from genus *Ascophanus* Boudier (1869).

The fruit bodies of *Iodophanus* are superficial, discoid of pulvinate, salmon pink, pale buff or red-brownish, 0.5—3.0 mm in diam. Externally apothecia are covered with hyphoid, septate, hyaline hairs. Ectal excipulum is textura globuloso-angularis. Asci are cylindrical or broadly clavate, operculate, diffusely amyloid, 8-spored. Spores are ellipsoid, smooth or with callose-pectic markings, covered by thick mucilaginous sheath. Paraphyses are filiforme, septate, simple or branched, inflated upward, hyaline or sometimes contain yellowish droplets. From our country were founded 4 species marked by asterisk.

The key to species of *Iodophanus*

- 1. Spores less than 23 mkm long 2
- 1*. Spores more long 5
- 2. Spores smooth, broadly ellipsoid
- **I. difformis* (P. Karst.) Kimbr., Luck-Allen et Cain
- 2*. Spores ornamented 3
- 3. Spores 10.7—14.2 × 6—7 mkm, ornamented with small warts; apothecia white with pale yellow hymenium *I. kimbroughii* Thind et Kaushal
- 3*. Spores more large; apothecia orange, orange-yellowish 4
- 4. Spores narrowly ellipsoid to ellipsoid, 15—20 × 11—12 mkm, warted
- **I. carneus* (Pers.: Fr.) Korf apud Kimbr. et Korf
- 4*. Spores broadly ellipsoid, 18—22.5 × 12—13.5 mkm, warted
- **I. testaceus* (Moug.: Fr.) Korf apud Kimbr. et Korf

5. Asci less than 300 mkm long 6
5*. Asci more long 8
6. Spores ellipsoid, 25—30 × 15—17 mkm, ornamented with T-shaped warts
. *I. helotinus* Cain
6*. Spores ornamentation not as above 7
7. Spores broadly ellipsoid, 22—27 × 14—16.5 mkm, ornamented with large warts
. **I. verrucosporus* (Graff.) Kimbr., Luck-Allen et Cain
7*. Spores covered by small lateral warts (about 0.5 mkm high) and with more large apical
warts (to 2.0 mkm) **I. granulipolaris* Kimbr.
8. Spores narrowly ellipsoid, length: width ratio 2.0—2.2, with large apical warts (about
4—5 mkm high) and more small lateral ones (to 3 mkm high)
. *I. crustaceus* (Starb.) Kimbr.
8*. Spores more than 25 mkm long, broadly ellipsoid 9
9. Spores 25—30 × 15—20 mkm, ornamented with regular warts to 2.0 mkm in diam
. *I. sarcobius* (Boud.) Kimbr.
9*. Spores 27—30 × 16—18 mkm, with small lateral (to 1.4 mkm) and more large (to
3.0 mkm) polar warts, bearing two polar caps of slime
. *I. venezuelensis* Jeng et Krug

The genus *Thecotheus* is closely related with *Iodophanus*. It was established by Boudier (1869) as separate genus. Formerly the species of *Thecotheus* were described as *fimicolous* but later were founded some species which can develop on wet soil and plant debris (Pfister, 1972, 1981).

The fruit bodies are solitary or in small groups, superficial, sessile, at first narrowly conical, pyriforme then cylindrical or barrel-shaped, without defined or absent margin, whitish, greyish-white, pale brown or reddish-brown with violet tint, 0.4—2.5 mm in diam. Ectal excipulum is textura angularis to globulosa. Asci operculate, narrowly clavate, cylindrical clavate with truncated or rounded apex, diffusely amyloid, 8—32 (rarely 64)-spored. Spores ellipsoid, hyaline, smooth or warted, sometimes with polar apiculi. Paraphyses filamentous, septate, hyaline, simple or branched, at tip enlarged.

From Russia and neighbouring countries were founded 4 species marked by asterisk.

The key to species of *Thecotheus*

1. Apothecia on dung of animals 2
1*. On others substrata 6
2. Spores smooth 3
2*. Spores apiculate and/or ornamented 4
3. Asci 8-spored **T. agranulosus* Kimbr.
3*. Asci 32-spored **T. pelletieri* (Cr. et Cr.) Boud.
4. Spores smooth, with polar apiculi 5
4*. Spores verrucose, apiculate **T. cinereus* (Cr. et Cr.) Chenantais
5. Spores 16—20 × 8—12 mkm; apothecia reddish-brown **T. apiculatus* Kimbr.
5*. Spores 12—15 × 7.5—9 mkm; apiculi with hyaline collaret; apothecia pale yellow
. *T. africanus* Khan et Krug
6. Apothecia gray-brownish on wet soil; spores 17—22 × 7—9.5 mkm, ornamented with irregular warts
. *T. rivicola* (Vacek) Pfister
6*. Apothecia ochraceo-brownish, on plant debris; spores 30—36 × 15—16 mkm, smooth, thick walled
. *T. phycophilus* Pfister

The genus *Ascodesmis* was described by van Tieghem at 1876 for *A. nigricans* and *A. aurea* (type of later material is unknown) as dung inhabiting fungi. Just now genus *Ascodesmis* contains 7 species which are developed on dung of various animals and some unprobable substrata (Obrist, 1961; Jeng, Cain, 1976; Brummelen, 1981;

Currah, 1986). At our country 4 species are known. In the key these species marked by asterisk.

The apothecia of *Ascodesmis* species are present naked bundle of asci with paraphyses deprived of excipulum. Asci broadly clavate, obovate or almost saccate, operculate, 8-spored (sometimes with 1—2 abortive spores). Ascospores are broadly ellipsoid to subglobose, pale brownish or red-brownish, ornamented with warts, spines, ribs or reticulated. Paraphyses are cylindrical, hyaline, septate, usually simple and numerous.

The key to species of *Ascodesmis*

1. Spores broadly ellipsoid, subglobose to globose, length: width ratio to 1.3 2
- 1*. Spores more narrow, ellipsoid, length: width ratio more 1.3 5
2. Spores broadly ellipsoid, subglobose to almost globose, (10.5)11.5—13.0(14.0) × (9.0)10.0—11.5(12.0) mkm without ornamentation, length: width ratio 1.05—1.15; ornamented with more or less regular net-work formed by anastomosing ridges, spines, short crests **A. sphaerospora* Obrist
- 2*. Ornamentation not as above
3. Spores globose to broadly ellipsoid, 8.5—10.0(11.0) × 8.3—9.5(10.0) mkm without ornamentation, length: width ratio 1.0—1.2; ornamented with isolated, rounded or elongated, rarely anastomosing warts **A. nana* Brumm.
- 3*. Spore more narrow
4. Spores broadly ellipsoid, 9.4—13.7 × 12.7 mkm without ornamentation, length: ratio 1.4—1.5; ornamented with irregular, broad net-work, with spines and warts within meshes **A. microscopica* (Cr.) Seaver
- 4*. Spores broadly ellipsoid to ellipsoid, 11.1—12.2 × 8.1—8.8 mkm, length: width ratio 1.25—1.35; ornamented with isolated spines, often narrowed to base, rarely anastomosing* *A. nigricans* v. Tiegh.
5. Spores ellipsoid to broadly ellipsoid, (11.0)11.5—13.5(14.5) × (7.0)7.5—10.0(11.5) mkm without ornamentation, length: width ratio 1.35—1.55; ornamented with isolated spines connected by irregular anastomoses and with one longitudinal, simple or branched rib *A. porcina* Seaver
- 5*. Spores ornamentation not as above
6. Spores ellipsoid to broadly ellipsoid, (18.0)19.0—20.5(21.5) × (13.5)15.0—16.5(17.5) mkm without ornamentation, length: width ratio 1.4; ornamented with irregular incomplete net-work formed by ribs, spines, isolated anastomosing warts *A. macrospora* Obrist
- 6*. Spores ellipsoid, elongated, 10.5—13.0 × 6.0—8.5 mkm, ornamented with closely arranged warts with the exception of oval, free from warts surface *A. obristii* Currah

The study was supported in part by the Russian Foundation for fundamental investigations, the Program of Biodiversity of Russia, and the Universities of Russia.

References

- Boudier J. L. E. Memoire sur Ascoboles // Ann. Sci. nat. Bot. 1869. Ser. 5, N 10. P. 191—268.
- Brummelen J. van. The genus *Ascodesmis* (Pezizales, Ascodesmidaceae) // Persoonia. 1981. Vol. 11, N 13. P. 333—358.
- Currah R. A new species of *Ascodesmis* from Alberta // Mycologia. 1986. Vol. 72, N 2. P. 198—201.
- Jeng R. S., Cain R. F. A new species of *Ascodesmis* from Venezuela // Mycotaxon. 1976. Vol. 3. P. 391—395.
- Kimbrough J. W. Iodophanus, the Pezizeae segregate of Ascophanus (Pezizales) // Amer. J. Bot. 1969. Vol. 56, N 10. P. 1186—1202.
- Obrist W. The genus *Ascodesmis* // Can. J. Bot. 1961. Vol. 39. P. 934—953.
- Pfister D. H. The psilopezoid fungi. II. *Thecotheus rivicola* comb. nov. and other Iodophaneae (Pezizales) occurring on water-soaked wood // Bull. Torrey Bot. Club. 1972. Vol. 99. P. 198—200.

Pfister D. H. A new noncoprophilous species of *Thecotheus*, *T. phycophilus* // *Mycologia*. 1981. Vol. 73. P. 1001—1004.

Prokhorov V. The genera of coprophilous discomycetes with diffusely blueing asci // *Микол. и фитопатол.* 1993. Т. 27, вып. 2. С. 24—26.

Moscow State University

Received 19 V 1997

РЕЗЮМЕ

Виды родов *Iodophanus* и *Thecotheus* мало известны в России и сопредельных странах. В настоящей работе представлены ключи для определения видов *Iodophanus* — 10, *Thecotheus* — 7 и *Ascodesmis* — 7 видов. Среди них имеются найденные в России и еще не обнаруженные в нашей стране виды.

Рецензент — А. В. Тобиас