Arthrorhaphis Th. Fr.
(ARTHRORHAPHIDACEAE)

After Poelt & Vezda, 1977, Purvis, 1992, and Ihlen 1998

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Thallus crustose, without a distinct prothallus, enclosed within the thallus of the host and gray to gray-green, or free at some stage and soon verrucose-squamulose, the squamules strongly convex, bright greenish yellow to whitish gray, ecorticate or with a colorless epinecral layer; soredia occasionally present. Photobiont chlorococcoid, forming a thick layer.

Apothecia sessile or located between the squamules, black, urceolate or discoid, mostly ± filled with brownish green, crumbling, drop-like concretions. Discs flat, strongly marginate, but true exciple poorly developed, of lax hyphae with strongly swollen walls. Paraphyses free, thin, branched and net-like, anastomosing, the apices not or only weakly thickened. Hymenium containing oil droplets. Asci 8-spored, clavate to elongate-clavate or cylindrical, K/I-, the wall scarcely thickened at the apex, with an ocular chamber. Spores cylindrical to fusiform or mostly acicular, (2?-)7-12-septate.

Conidiomata unknown. On acidic substrates, either parasitic on Baeomyces species or, at least later, free-living on soil amongst mosses or on weathered rock surfaces in cool regions (arctic-alpine).

This genus is a segregate of Bacidia, distinguished especially by its bright yellowish-greenish thallus.

1. Spores 3(-5)-septate, 16-20 x 3-4 um, spindle-shaped; bordering verrucules of thallus effigurate, esorediate; hymenium and exciple green-tinged. Greenland. [see Thomson 1997 for full description]. ..... A. vacillans

1. Spores over 6-septate, over 20 um long, needle-shaped; bordering verrucules of thallus sorediate or not; hymenium green-tinged or not. 2

2. Thallus of bullate-high convex composite squamules, not sorediate, up to 1 mm (or more) wide (but sometimes abraded). Medulla with calcium oxalate. Apothecia not always occurring, sometimes in rows, to 0.6(-1.5) mm or more wide. Spores (24-)29.5-41.7-54(-72) x (2.5-)4-5.4-7(8.5) um, Squamules ± rounded, either remaining ± discrete or becoming confluent and forming small, ± compact irregular patches to ca. 1 cm diam.; marginal lobes indistinct, not becoming elongate; surface yellow to bright yellow-green, matt, often roughened and appearing ± pruinose; heteromerous; cortex present; epinecral layer 7-10 um thick, continuous. Photobiont cells (7-)12-14(-18) um diam., ± globose. Photobiont layer 60-70 um, continuous. Medulla with calcium oxalate crystals. Apothecia located between squamules, 0.1-0.6 mm diam. slightly concave, then flat, black; margin distinct, often raised, or becoming excluded; exciple brownish in the outer part, greenish in the inner part, (12-)25-55 um thick; hypothecium hyaline to green, K+ brown; true exciple and upper part of hymenium blackish gray-green. Hymenium hyaline to light green, with oil drops, K+ brown. Paraphyses branched, 1.5-2.5 um thick, not swollen at apices. Asci 80-110 x 12-17 um, cylrindrical to elongate-clavate, Spores arranged in parallel, narrowly fusiform or acicular, smooth, (6-)8-11(-14) septate.

Containing rhizocarpic acid and epanorin. On acid soil or decaying mosses, or on Baeomyces, often in crevices on ± vertical siliceous rock faces, arctic-alpine. .....A. alpina

2. Thallus of flat to slightly convex 0.5 mm wide, soon sorediate erupting composite areoles, frequently very thin, fragile (readily broken when touched with a needle). Thallus lacking calcium oxalate. Apothecia to about 0.1 mm wide, often lacking. Spores (35-)47.5-61.0-74.5(-100) x (2-)3-4.4-5.5(-6) um. Without a distinct, continuous epinecral layer. Spores arranged in parallel, narrowly fusiform or acicular, smooth, (6-)8-13(-15) septate, Thallus yellow to yellowish green or bright greenish; areoles convex, partly or completely sorediate. Calcium oxalate crystals absent. Photobiont cells globose, 9-12 um. Apothecia black, 0.2-0.6 mm diam., disc flat to concave; exciple distinct, raised, greenish brown in outer part, green in inner part, 50-70 um thick. Hypothecium hyaline, K+ light brown. Hymenium green, with oil drops, K+ brown. Paraphyses branched, 1.5-2.5 um, not swollen at apices. Asci cylindrical to elongate-clavate, K/I-, (60-)75-110(-120) x 7-13 um. With rhizocarpic acid and epanorin. Similar habitats to A. alpina, often parasitic on Baeomyces or Dibaeis on acid soils and weathered lime-free rock. .....A. citrinella

Literature

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