

CHAPTER 14

FAMILY RAMALINACEAE

Characteristics of the Family Ramalinaceae

Thallus: corticolous, grey-green to yellow-green, warted, continuous; epruina; Soralia and Isidia absent; Prothallus not visible; Photobiont chlorococcoid; **Apothecia**: scattered and entire, sessile; disc plane to convex, yellow-orange, reddish-brown to dark brown and persistent, biatorine at margin; epruina with biatorine (proper exciple), prosoplectenchymatic tissue, composed of radiating branched and anastomosed hyphae with very thick; Parathecium: weakly differentiated, composed of thin walled; Epihymenium: hyaline; Hymenium: hyaline; Subhymenium: indistinct; Hypothecium hyaline; Paraphyses: unbranched or sparingly branched, apical not conspicuously swollen; Asci: clavate, *Bacidia*-type; **Ascospores**: 8 per ascus, hyaline, oblong or acicular to bacillar or clavate to acicular, straight, curved or sigmoid, transversely 3-5 septate, $(21.5)21.8-24.5-27.5(27.9) \times (2.4)2.5-2.9-3.4(3.5) \mu\text{m}$; **Pycnidia** and **Conidia** not observed.

Description of the Genus *Bacidia*

Bacidia De Not., Giorn. Bot. Ital. 2: 189(1846) (Ekman, 2004, pp. 18-19).

Thallus: corticolous, grey-green to yellow-green, warted, continuous, 103.5-282.5 mm thick; epruina; Soralia and Isidia absent; Prothallus not visible; Photobiont chlorococcoid; **Apothecia**: scattered and entire, sessile; disc plane to convex, yellow-orange, reddish-brown to dark brown and persistent, biatorine at margin; epruina, 0.1-0.8 mm diam.; with biatorine (proper exciple), prosoplectenchymatic tissue, composed of radiating branched and anastomosed hyphae with very thick; Parathecium: weakly differentiated, composed of thin walled; Epihymenium: hyaline; 5.0-15.0 μm thick; Hymenium: hyaline, 30.0-70.0 μm high; Subhymenium: indistinct; Hypothecium hyaline, 70.0-129.5 μm high; Paraphyses: unbranched or sparingly branched, apical not conspicuously swollen, 30.5-45.4 μm high; Asci: clavate, *Bacidia*-type, 8.0-10.9 μm high; **Ascospores**: 8 per ascus, hyaline, oblong or acicular to bacillar or clavate to acicular, straight, curved or sigmoid, transversely 3-5 septate, (21.5)21.8-24.5-27.5(27.8) \times (2.4)2.5-2.9-3.4(3.5) μm ; **Pycnidia** and **Conidia** not observed.

Key to Species of Bacidia

- 1a. Ascospores transversely 5 septate; Thallus containing atranorin
..... *Bacidia subannexa*
- 1b. Ascospores transversely 3-5 septate; Thallus lacking atranorin.....2
- 2a. Discs reddish-brown to dark brown*Bacidia convexula*
- 2b. Discs yellow-orange.....*Bacidia incongruens*

Description of the Species

1. *Bacidia convexula* (Müll. Arg.) Zahlbr., *Cat. Lich. Univers.* 4: 188 (1926) [1927] (Awasthi, 1991, p. 58).

Patellaria convexula Müll. Arg., 29:222 (1892).

(see Figure 55)

Thallus: corticolous, grey-green to yellow-green, warted, continuous, 180.6-282.5 mm thick; epruina; Soredia absent and isidia absent; Prothallus not visible; Photobiont chlorococcoid; **Apothecia**: scattered and entire, sessile; disc plane to convex, reddish-brown to dark brown and persistent, biatorine at margin; epruina, 0.1-0.5 mm diam.; with biatorine (proper exciple), prosoplectenchymatic tissue, composed of radiating branched and anastomosed hyphae with very thick; Parathecium: weakly differentiated, composed of thin walled; Epihymenium: hyaline, 6.0-15.0 µm thick; Hymenium: hyaline, 30.0-45.0 µm high; Subhymenium: indistinct; Hypothecium hyaline, 70.0-129.5 µm high; Paraphyses: unbranched or sparingly branched, apical not conspicuously swollen, 32.6-45.4 µm high; Asci: clavate, *Bacidia*-type, 8.0-10.9 µm high; **Ascospores**: 8 per ascus, hyaline, acicular to bacillar, transversely 3-5 septate, (25.8)27.4-33.8-39.9(40.4) × (2.4)2.5-2.9-3.4(3.7) µm; **Pycnidia** and **Conidia** not observed.

Chemistry: thallus P-, K-, C-, KC-; No lichen substance.

Habitats: on barks in lower montane scrub at 1,487 m.

Distribution: India, and Thailand.

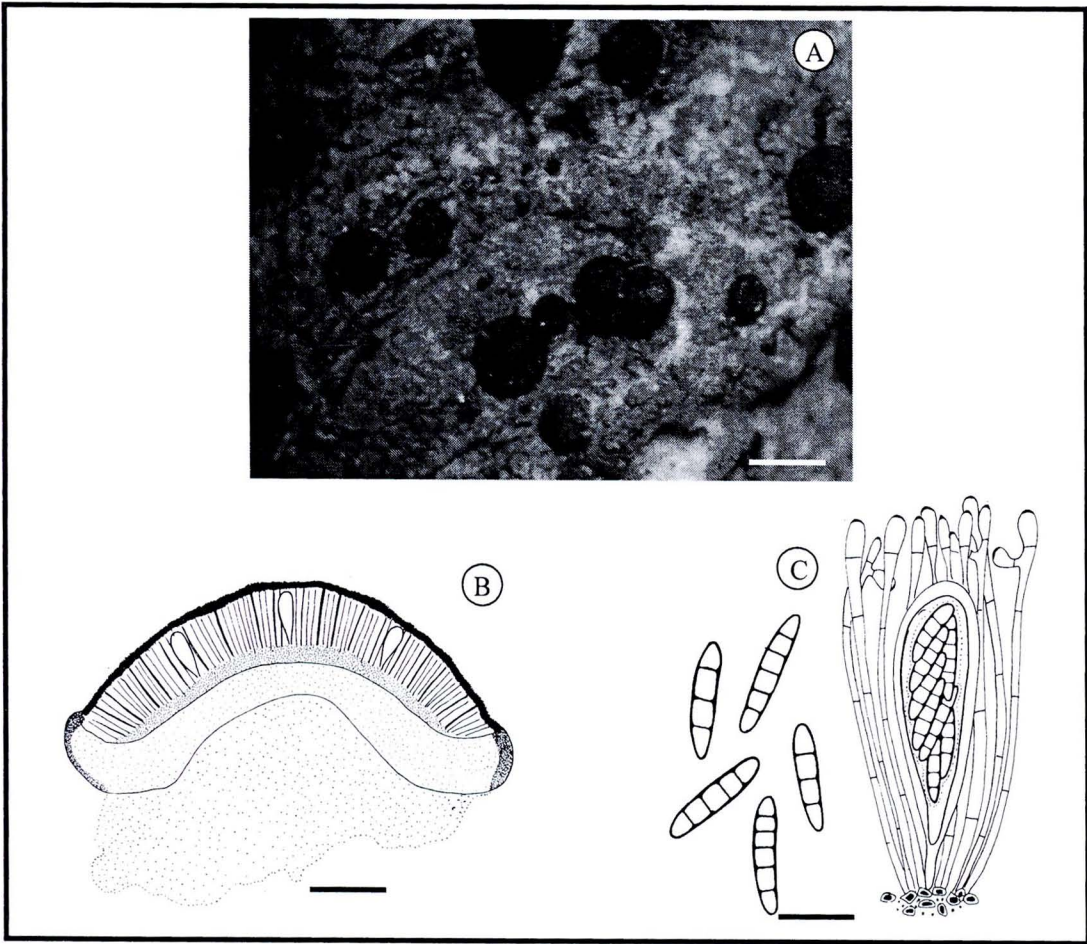


Figure 55 *Bacidia convexula* (Müll. Arg.) Zahlbr.

Note. A = Apothecia biatorine, sessile, dark brown [VC524(RAMK)]

(scale = 0.5 mm)

B = Illustration of vertical section of apothecia [VC524(RAMK)]

(scale = 10.16 μm)

C = Illustration of ascus with paraphyses and ascospores

[VC524(RAMK)] (scale = 11.4 μm)

Specimens examined: Phu Luang Wildlife Sanctuary, Loei Province.
the sideway to Lan Suriyan, on trunk of an unidentified tree, 25 June 2008,
Varaporn Sriprang—VC524(RAMK); *ibid.*, Khok Phrommachan, on trunk of

an unidentified tree, 26 June 2008, Varaporn Sriprang—VC523(RAMK).

Observation: *Bacidia convexula* is characterized by continuous, warted, thin, grey-green to yellow-green thallus, sessile apothecia with reddish-brown to dark brown discs and ascospores transversely 3-5 septate.

2. *Bacidia incongruens* (Stirt.) Zahlbr., *Cat. Lich. Univers.* 4: 208 (1926) (Awasthi, 1991, p. 56).

Lecidea incongruens Stirt., *Proc. Phil. Soc. Glasgow* 11: 314 (1879).

(see Figure 56)

Thallus: corticolous, grey-green to yellow-green, warted, continuous, 109.6-209.5 mm thick; epruina; Soralia and Isidia absent; Prothallus not visible; Photobiont chlorococcoid; **Apothecia**: scattered and entire, sessile; disc plane to convex, yellow-orange and persistent, biatorine at margin; epruina, 0.2-0.5 mm diam.; with biatorine (proper exciple), prosoplectenchymatic tissue, composed of radiating branched and anastomosed hyphae with very thick; Parathecium: weakly differentiated, composed of thin walled; Epihymenium: hyaline, 5.0-10.0 μm thick; Hymenium: hyaline, 50.0-70.0 μm high; Subhymenium: indistinct; Hypothecium hyaline, 75.0-119.7 μm high; Paraphyses: unbranched or sparingly branched, apical not conspicuously swollen, 30.5-43.4 μm high; Asci: clavate, *Bacidia*-type, 8.0-10.9 μm high; **Ascospores**: 8 per ascus, hyaline, clavate to acicular, straight, curved or sigmoid, transversely 3-5 septate, (14.1)15.0-16.0-17.8(20.0) \times (2.4)2.5-2.9-3.4(3.67) μm ; **Pycnidia** and

Conidia not observed.

Chemistry: thallus P-, K-, C-, KC-; No lichen substance.

Habitats: on bark in lower montane scrub at 1,468 m.

Distribution: India, and Thailand.

Specimens examined: Phu Luang Wildlife Sanctuary, Loei Province. Seven Chanel Station, on trunk of an unidentified tree, 13 November 2008, Varaporn Sriprang—VC774(RAMK).

Observation: *Bacidia incongruens* is characterized by continuous, warty, thin, grey-green to yellow-green thallus, sessile apothecia with yellow-orange discs and 3-5 transversely septate ascospores.

3. *Bacidia subannexa* (Nyl.) Zahlbr., *Cat. Lich. Univers.* 4: 242 (1926-1927) (Awasthi, 1991, p. 56).

Lecidea subannexa Nyl. Zahlbr., *Cat. Lich. Univers.* 4: 242 (1926-1927)

(see Figure 57)

Thallus: corticolous, grey-green to yellow-green, warted, continuous, 103.5-206.3 mm thick; epruina; Soralia and Isidia absent; Prothallus not visible; Photobiont chlorococcoid; **Apothecia**: scattered and entire, sessile; disc plane to convex, brown and persistent, biatorine at margin; epruina, 0.5-0.8 mm diam.; with biatorine (proper exciple), prosoplectenchymatic tissue, composed of radiating branched and anastomosed hyphae with very thick; Parathecium: weakly differentiated, composed of thin walled;

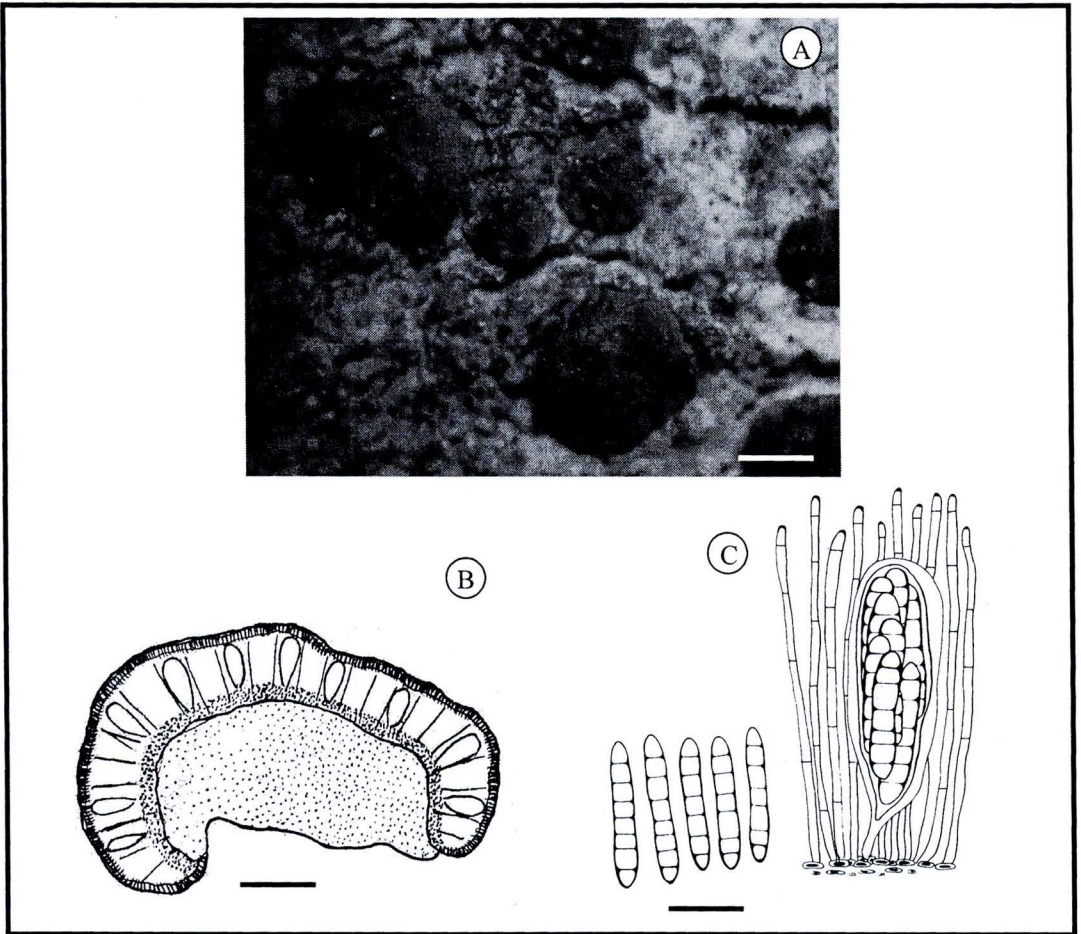


Figure 56 *Bacidia incongruens* (Stirt.) Zahlbr.

Note. A = Apothecia biatorine, sessile, yellow-orange [VC774(RAMK)]
(scale = 0.5 mm)

B = Illustration of vertical section of apothecia [VC774(RAMK)]
(scale = 10.81 μm)

C = Illustration of ascus with paraphyses and ascospores
[VC774(RAMK)] (scale = 7.12 μm)

Epihymenium: hyaline, 6.0-10.0 μm thick; Hymenium: hyaline, 30.0-40.0 μm high; Subhymenium: indistinct; Hypothecium hyaline, 75.0-120.7 μm high; Paraphyses: unbranched or sparingly branched, apical not conspicuously

swollen, 30.5-43.5 μm high; Asci: clavate, *Bacidia*-type, 8.0-10.9 μm high;

Ascospores: 8 per ascus, hyaline, oblong or rod-shaped, transversely 5-septate, (21.5)21.8-24.5-27.5(28.3) \times (2.4)2.5-2.9-3.4(3.67) μm ; **Pycnidia** and **Conidia** not observed.

Chemistry: thallus P+ orange, K+ yellow, C-, KC-; containing atranorin.

Habitats: on bark in a lower montane scrub at 1,468 m.

Distribution: India, and Thailand.

Specimens examined: Phu Luang Wildlife Sanctuary, Loei Province. around the Khok Nok Grabra Forest Protection Unit, on trunk of an unidentified tree, 13 November 2008, Varaporn Sriprang—VC741(RAMK).

Observation: *Bacidia subannexa* is characterized by a continuous, warty, thin, grey-green to yellow-green thallus, sessile apothecia with brown discs and transversely 5 septate ascospores.

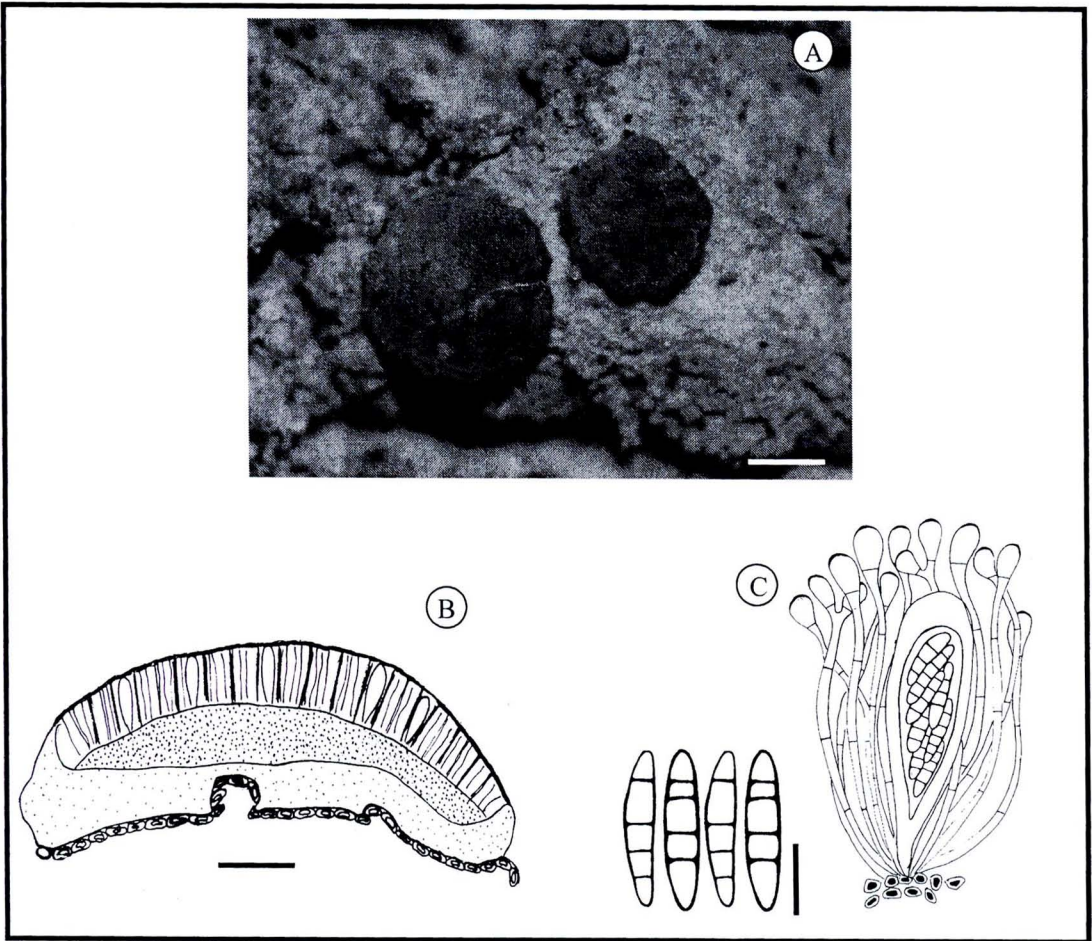


Figure 57 *Bacidia subannexa* (Nyl.) Zahlbr.

Note. A = Apothecia biatorine, sessile, brown [VC741(RAMK)]

(scale = 0.5 mm)

B = Illustration of vertical section of apothecia [VC741(RAMK)]

(scale = 11.47 μm)

C = Illustration of ascus with paraphyses and ascospores

[VC741(RAMK)] (scale = 6.06 μm)