

Notes on genus *Entoloma* of Korea (II)

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韓國產 외대버섯屬의 記錄 (II)

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ABSTRACT: Eight species of genus *Entoloma* were collected from the areas around Mt. Manduck and newly identified in Korea; *Entoloma scabrosum*, *E. aethiops* var. *aethiops*, *E. pallid-olivaceum*, *E. sericellum*, *E. sarcitum*, *E. anatinum*, *E. tortuosum*, and *E. mephiticum*. Detail descriptions and Korean descriptions for them were made.

KEYWORDS: *Entoloma scabrosum*, *E. aethiops* var. *aethiops*, *E. pallid-olivaceum*, *E. sericellum*, *E. sarcitum*, *E. anatinum*, *E. tortuosum*, *E. mephiticum*.

E. scabrosum (Fr.) Noordel. 깔깔이외대버섯 (신칭)

Noordel., *Persoonia* 12:462, 1985. *Agaricus scabrosus* Fr., *Epicr.* 154, 1838. *Rhodophyllus scabrous* (Fr.) Quélet., *Enchir. Fung.* 61, 1866. *Leptonia scabrosa* (Fr.) Sacc., *Fung.* 5:715, 1887.

Pileus 1.7-3.7 cm broad, broadly convex expanding, depressed with rarely a small umbo, whitish gray to pinkish, darkish brown when wet, disc scaly-fibrillose, almost darker, elsewhere minutely scaly-fibrillose of pallid pink, margin even, involute, rarely translucently striate, context thin, flesh color, odor fairly strong, herbaceous or almost aromatic, taste indistinctive. Lamellae adnate emarginate, close or slightly crowded, mixed long and short, white, changing pinkish, edges even. Stipe 3.7-5.8 cm long, 0.15-0.40 cm thick, cylindrical, fragil, glabrous, whitish gray when touched with hands, rarely pallid grayish pink, almost polished but with some scattered silvery fibrils lengthwise, becoming more and more fibrillose striate on drying, solid to stuffed, concolorous.

Spores 10.0-13.0×6.0-8.0 μm, with 6-7 angles in side view, subglobose in outline, angles slightly

prominent, rarely with one or two oil drops, pleurocystidia and cheilocystidia absent, clamp connection absent.

Habt.: Clustered on soil in grass. Summer to autumn. Edibility unknown.

Distr.: Wipong-Sa (suburban Chonju city of Korea).

Specimens studied: CHO-1011 collected from the areas between Wipong-Sa and Wipong-Sansung of Wanju, on 18th of July, 1989.

Characteristics of this species is scaly-fibrillose all over on pileus.

Entoloma scabrosum (깔깔이 외대버섯): 자실체는 소형이고 갓에 인편이 있고 가장자리는 줄무늬가 있으며 황회색이고 냄새가 난다. 대는 부서지기 쉽고 세로 줄이 있다. 포자는 중형 또는 대형이고 측낭상체와 연낭상체는 없다. 풀밭에 군생한다.

E. aethiops (Fr.) var. *aethiops* Hesler 검은비늘 외대버섯 (신칭)

Hesler, *Beih. Nova Hedwigia* 23: 152-153, figs. 87-88, 223, 1967. *Agaricus aethiops* Fr., *Epicr. Myc.* 152, 1838. *Leptonia aethiops* (Fr.) Gill., *Champ. Fr.* 415, 1976.

Pileus 1.8-4.0 cm broad, hemispheric-convex or truncately broadly convex, deep umbilicate, darkish blue, fibrillose scaled, darker at umbilicate, disc squamulose, margin even, more rarely striatulate with the age, context at first white, changing bluish, finally fading to pale blue or pallid, odor and taste mild. Lamellae adnate or sinuate, broad, close, white, changing pinkish, edges fimbriate, concolorous. Stipe 3.5-9.0 cm long, 0.18-0.26 cm thick, cylindrical, deeper darkish blue than pileus, fading to grayish brown or dingy, apex purinose, elsewhere glabrous, rarely tapering downward, base white myceloid, hollow, white.

Spores 8.0-10.0×6.0-7.0 μm, with 5-6 angles in side view, elliptical or subglobose in outline, with one or two oil drops, angles obtuse, prominent 1.0-1.5 μm high, basidia clavate 28.0-40.0×7.8-10.0 μm, pleurocystidia absent, cheilocystidia fusiform or subfusiform 57.5-80.0×16.3-18.8 μm.

Habt.: Clustered on humus in deciduous leaves. Summer to autumn. Edibility unknown.

Distr.: Mt. Manduck (suburban Chonju city of Korea)

Specimens studied: CHO-1003 collected from Miruk-Sa areas of Mt. Manduck, on 10th of October, 1989.

The pileus of *E. aethiops* (not recorded in Korea) is blue-black at first, then fading more or less to brownish, the margin usually even but more rarely becoming somewhat striate, the context blue at first, fading in age to grayish or pallid, the stipe more or less concolorous and fading dingy or grayish brown.

E. aethiops var. *aethiops* (검은비늘 외대버섯) : 자실체는 소형이고 갓은 배꼽형으로 검은 청색이며 인편이 있으며 가장자리는 줄 무늬가 있다. 대의 근부에 하얀 균사체가 있다. 포자는 소형 또는 거의 공모양이고 연낭상체는 있으나 측낭상체는 없다. 길가의 풀밭에 균생한다.

E. pallid-olivaceum Hesler 퇴색노랑외대버섯 (신칭) Hesler, *Behi. Nova Hedwigia* 23 : 122-123, figs. 63-65, 1967.

Pileus 1.0-4.0 cm broad, truncately campanulate, depressed with broadly brownish umbo, yellowish, striate from truncation to margin, silk-shining, disc

fibrillose, margin even, context thin, whitish, changing grayish olive, odor mild, taste farinaceous, bitter. Lamellae adnate, broad, close, mixed long and short, knife-shaped, white, changing pale pinkish, edges fimbriate, concolorous. Stipe 2.5-6.0 cm long, 0.15-0.30 cm thick, cylindrical, rarely bent, white to pallid whitish yellow, apex mealy, elsewhere glabrous, white myceloid at base, hollow, concolorous.

Spores 10.0-13.0×6.0-8.0 μm, elliptical in outline, mostly with 7 angles, angles slightly prominent, pleurocystidia ventricose, club-shaped or fusiform, 85.0-112.5×25.0-27.5 μm, cheilocystidia clavate or club-shaped, 40.0-47.5×12.5-17.5 μm.

Habt.: Scattered on soils of mixed woods. Autumn. Edibility unknown.

Distr.: Mt. Manduck (suburban Chonju city of Korea).

Specimens studied: CHO-1008 collected from areas at Experiment Forest of Chonbuk-Do in Mt. Manduck, on 13th of September, 1989.

This species is pale olivaceous, shing pileus, grayish olive flesh, farinaceous, bitter taste.

E. pallid-olivaceum (퇴색노랑 외대버섯) : 자실체는 소형으로 갓은 배꼽형이고 노랑색이며 줄 무늬가 있다. 육질은 쓴맛이 있고 대는 매끈하다. 포자는 중형 또는 대형이고 측낭상체와 연낭상체는 없다. 혼효림의 흙에 산생한다.

E. sericellum (Fr.) Kumm. 비단외대버섯 (신칭)

Kummer, *Fuhr. Pilzk.* 97. 1871. *Agaricus sericellus* Fr., *Syst. mycol.* 1 : 196, 1821. *Rhodophyllus sericellus* (Fr. : Fr.) Quél., *Enchir. Fung.* 61, 1886. *Hyporrhodius sericellus* (Fr. : Fr.) Schroet., *Cohn., Kryptog. Fl. Schlesion* 3(1) : 616, 1889. *Leptonia sericella* (Fr. : Fr.) Barbier, *Bull. trimenst. Soc. mycol. Fx.* 27 : 178, 1904. *Eccilia sericella* (Fr. : Fr.) Sing., *Collect. Bot* 218, 1947. *Alboleptonia sericella* (Fr. : Fr) Largent & Benedict, *Mycologia* 62 : 446, 1970.

Pileus 0.7-2.0 cm broad, hemispherical or broadly campanulate then broadly convex to expanding, broadly umbo, whitish with slightly yellow, ochraceous or pinkish tinge at center, silk-fibrillose or minutely scale, margin even, involute when young, rarely revolute when mature, context thin,

white, odor mild, taste indistinctive. Lamellae adnate or slightly decurrent, close or slightly crowded, white, changing pinkish, edges concolorous. Stipe 2.5-3.5 cm long, 0.09-0.10 cm thick, cylindrical, white to pallid yellowish, glabrous, at first stuffed then hollow.

Spores 9.0-11.3×6.8-8.0 μm, mostly slightly with 6-7 angles in side view, subglobose or ovoid in outline, angles slightly prominent, rarely with one oil drop, pleurocystidia absent, cheilocystidia 22.5-23.8×10.0-11.3 μm, fusiform.

Habt.: Clustered on soil in grass. Early summer to autumn. Edibility unknown.

Distr.: Wipong-Sa (suburban Chonju city of Korea).

Specimens studied: CHO-1017 collected from areas between Wipong-Sa and Wipong-Sansung, on 18th of July, 1989.

This species is easily distinguished because pileus is white, ochraceous or pinkish tinge at center and cheilocystidia is present.

E. sericellum (비단 외대버섯) : 자실체는 소형으로 갓은 종모양이고 백색이며 섬유상 인편이 있고 대는 매끈하다. 포자는 중형이고 약간 알 모양이다. 연낭상체는 있으나 측낭상체는 없다. 길가의 풀밭의 흙에 균생한다.

E. sarcitum (Fr.) Noordel. 짐외대버섯 (신칭)

Noordel., *Persoonia* 11 : 150, 1981. *Agaricus sarcitus* Fr., *Epicr.* 155, 183, 1938. *Leptonia sarcita* (Fr.) P.A. Darst., *Ryssl. Finl. Skand. Halfons. Hattsvamp* 1 : 279, 1879. *Rhodophyllus sarcitum* (Fr.) Quél., *Enchir. Fung.* 61, 1886.

Pileus 1.4-1.8 cm broad, truncately convex, broadly umbilicate, grayish yellow to darkish sepia brown, rarely slightly fibrillose, micaceous, margin slightly translucently striate when moist, involute, context thin, concolorous, odor none, taste indistinctive. Lamellae adnate or subdecurrent, close or slightly crowded, white, changing grayish brown to brownish, edges even, concolorous. Stipe 5.5-6.5 cm long, 0.2-0.3 cm thick, cylindrical, twisted, slightly longitudinal, paler brownish or flesh color, glabrous, solid, paler concolorous.

Spores 10.0-12.0×6.5-8.5 μm, with 6-7 angles in side view, elliptical or subelliptical in outline, ang-

les obtuse, rarely with one oil drop, pleurocystidia and cheilocystidia absent.

Habt.: Solitary or clustered on soil of mixed woods. Autumn. Edibility unknown.

Distr.: Mt. Manduck (suburban Chonju city of Korea).

Specimens studied: CHO-1007 collected from the areas between Miruk-Sa and the top of Mt. Manduck, on 2nd of September, 1989.

Characteristics of this is broadly umbonate, sepia brown of pileus, twist of stipe.

E. sarcitum (짐 외대버섯) : 자실체는 소형으로 갓은 배꼽형이고 길은 갈색이며 가장자리에는 줄무늬가 있다. 대는 비틀린다. 포자는 중형이고 연낭상체와 측낭상체는 없다. 혼효림의 흙에 단생 또는 군생한다.

E. anatinum (Lasch: Fr.) Donk 민꼬리외대버섯 (신칭)

Donk, *Bull. Bot Gdns Buitenz.*, Ser III, 18 : 158, 1949. *Agaricus anatinus* Lasch, *Linnaea* 4 : 540, 1829. *Agaricus anatinus* Lasch: Fr., *Syst. mycol.* 3 (Index): 7, 1832. *Leptonia anatina* (Lasch: Fr.) Kumm., *Fuhr. Pilzk.* 96, 171. *Rhodophyllus anatinum* (Lasch: Fr.) Quél., *Enchir. Fung.* 60, 1886. *Hyporrhodius anatinum* (Lasch: Fr.) Schroet. in *Cohn., Krypt-Fl. Schlesien* 3(1): 614, 1889.

Pileus 2.8-5.4 cm broad, truncately conic-convex, or truncately campanulate, not expanding, rarely expanding with age, depressed with a subumbonate, not translucently striate, bluish brown, or grayish brown or darkish brown to almost dark, densely fine squamulose from disc to margin, disc almost deeply darkish, squamulose often arranged in radial rows giving streaky appearance, margin slightly flexed when young, even, context thin, odor and taste not distinctive. Lamellae adnate, crowded, mixed long and short, knife-shaped, or ventricose, whitish, changing reddish pink, edges even, concolorous. Stipe 7.5-14.0 cm long, 0.3-0.5 cm thick, cylindrical, innately silvery fibrillose to floculose-squamulose under pileus, slightly bent at base, sometimes with swollen base, concolorous with pileus or pallid with age, white myceloid at base, hollow, white.

Spores 9.0-14.0×7.0-8.0 μm, with 6-8 angles in

Plate I

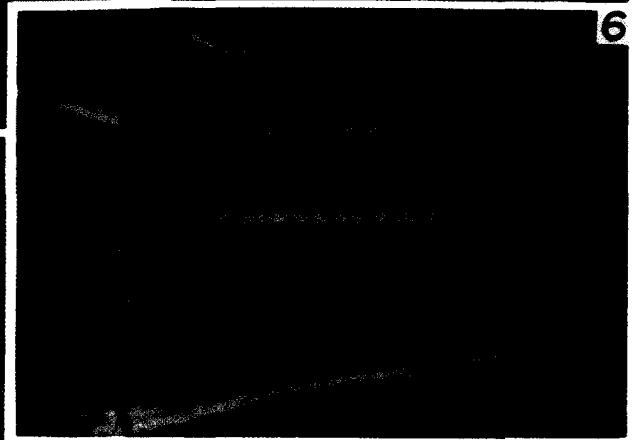
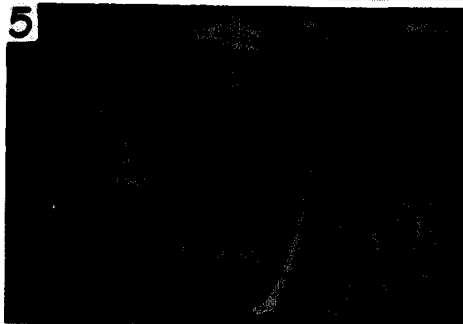
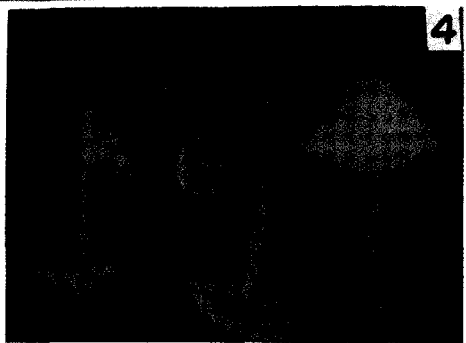
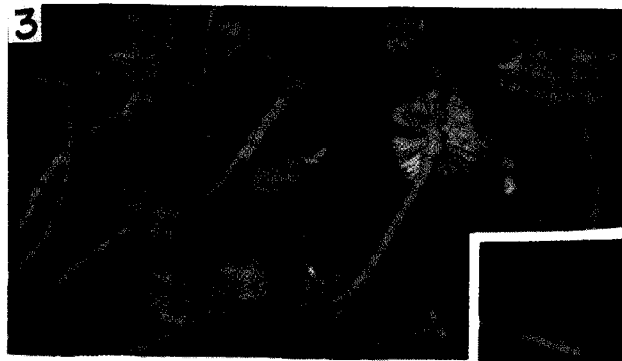
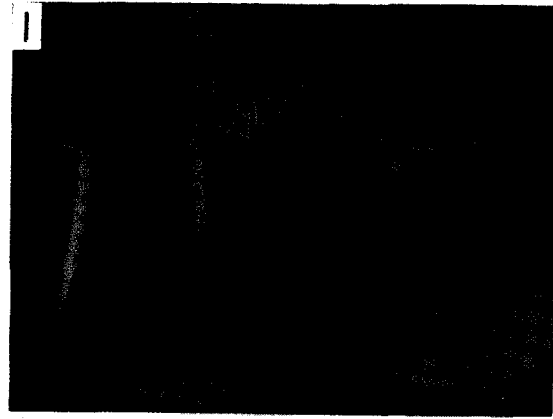
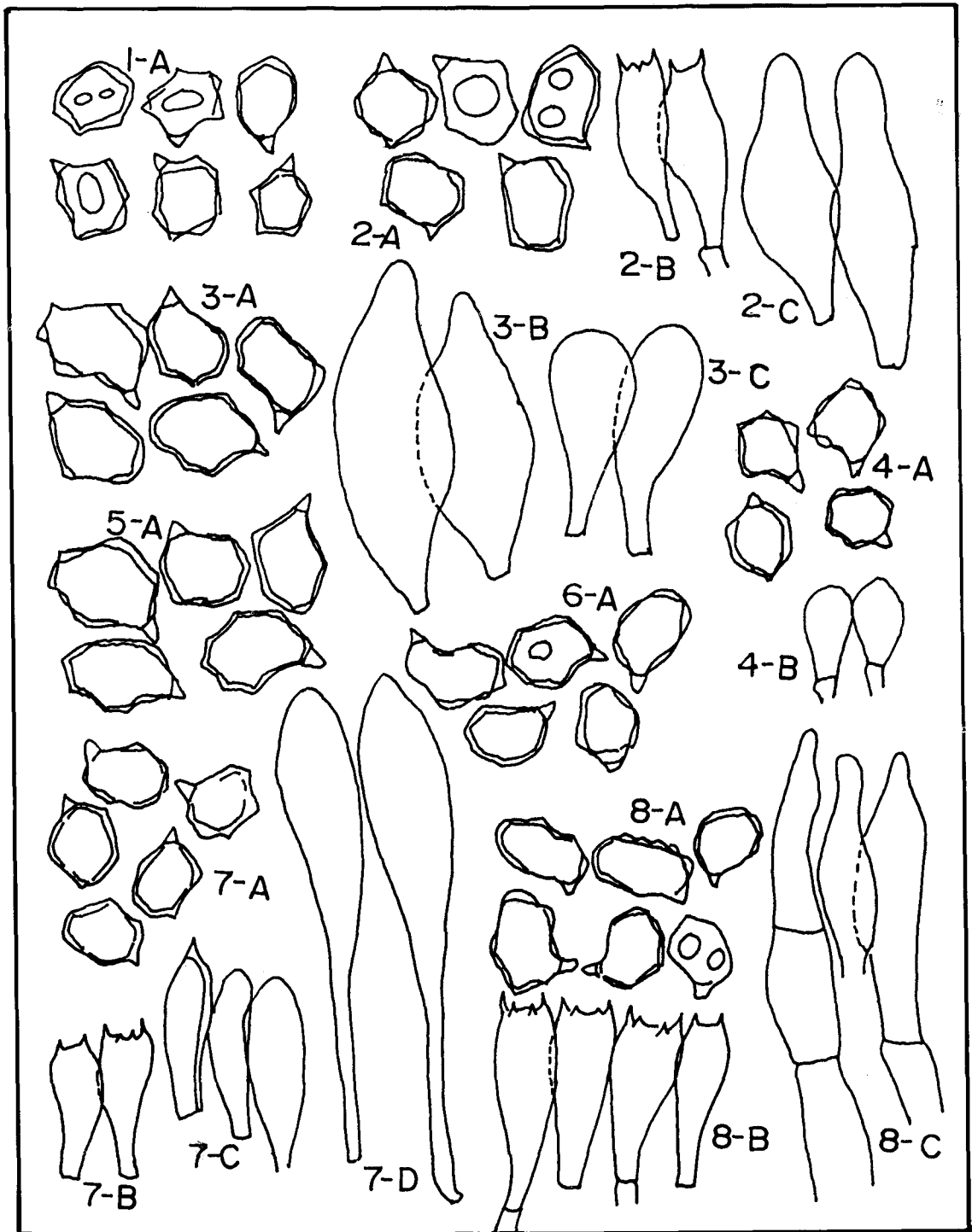


Plate II



side view, elliptical in outline, angles obtuse or slightly prominent, with often one oil drop, pleurocystidia and cheilocystidia absent, clamp connection absent.

Habt.: Solitary or clustered on soil in grass. Summer to autumn. Edibility unknown.

Distr.: Mt. Manduck (suburban Chonju city of Korea).

Specimens studied: CHO-1013 collected from the areas at side road of Gomti-Jae in Mt. Manduck, on 16th of July, 1989.

This species is distinctive because of basidiocarps with bluish brown or darkish brown, and conical, densely squamulose pileus and fibrillose stipe.

E. anatinum (민꼬리 외대버섯) : 자실체는 중형으로 갓은 청갈색이고 인편이 있으며 대에는 섬유상 인편이 있다. 포자는 중형이고 연낭상체와 측낭상체가 있다. 길가의 풀밭에 군생한다.

***E. tortuosum* Hesler 굴곡외대버섯 (신칭)**

Hesler, *Beih. Nova Hedwigia* 23 : 94-95, figs. 206, 1967.

Pileus 5.0-6.5 cm broad, broadly umbonate or convex to conic, expanding plane in age, yellowish brown or slightly reddish brown, deep color at center, darker when wet, shiny when dry, margin minutely striate, straight at first, finally wavy-upturned, splitting fragil, context thin, white, taste and odor farinaceous slightly. Lamellae white in young, and light pinkish cinnamon in age, adnexed, crowded, medium narrow to broad, ventricose or knife-shaped, edges even or slightly rough. Stipe 5.5-7.0 cm long, 0.4-0.8 cm thick twisted, longitudinally striate with fibrilloses, apex minutely scabrous, equal or base enlarged slightly, sometimes compressed, fragil, hollow, white.

Spores 8.0-11.0×6.5-7.5 μm, mostly with 5-6 angles, rarely with 4 or 7 angles, subovoid in outline, angles obtuse, basidia 4 spored, 27.5-37.5×9.5-10.0 μm, cheilocystidia 33.8-50.0×10.0-12.5 μm, clavate, rarely with acutic of top, pleurocystidia and cheilo-cystidia absent, pilocystidia 125.0-142.5×17.5-21.3 μm, spoon-shaped.

Habt.: Solitary or clustered on soil with mixed deciduous-coniferous woods. Summer. Edibility unknown.

Distr.: Yongmun-Sa (suburban Chonju city of Korea).

Specimens studied: CHO-1031 collected from the areas at Yongmun-Sa of Wanju, on 8th of July, 1990.

This species is distinguished by its reddish brown pileus, the wet pileus drying in fine streaks, its twisted stipe, medium-large spores.

E. tortuosum (굴곡 외대버섯) : 자실체는 중형이고 갓은 적갈색이고 가장자리는 줄무늬가 있다. 대는 비틀어지고 섬유상의 인편이 있다. 포자는 중형이고 연낭상체와 측낭상체가 있다. 낙엽 활엽수림의 흙에 단생 또는 군생한다.

***E. mephiticum* (Murr.) Hesler 독외대버섯 (신칭)**

Hesler, *Behi. Nova Hedwigia* 23 : 14-15, figs. 4, 163, 1967. *Claudopus mephiticus* Murr., *Mycologia* 7 : 290, 1915.

Pileus 0.5-1.0 cm broad, flabellate, convex to plane, disc depressed, white to greenish white when young, dull white or yellowish white in age, odor and taste garlic. Lamellae sinuate, white at first, becoming pinkish, subdistant, broad or medium broad, edges serrate, concolorous. Stipe none, the pileus attached laterally, rarely present and the very short, eccentric, white, solid, perianth.

Spores 8.5-12.0×6.0-7.5 μm, elliptical or subnodulose in outline, mostly with 6-7 angles in side view, sometimes angles obtuse, rarely with two oil drops, basidia 35.0-45.0×10.0-12.5 μm, clavate, cheilocystidia 60.0-100.0×7.5-14.5 μm, obtusely flask-shaped, pleurocystidia absent.

Habt.: Clustered or cespitose with overlapping on wood-decay with mosses or on oak and barks of pine trees. Summer.

Distr.: Sunun-Sa (Kochang in Chonbuk-Do of Korea).

Specimens studied: CHO-1023 collected from the areas at Sunun-Sa of Kochang, on 21th of July, 1990.

Specific characteristics of this species has garlic odor and taste. Sometimes the pileus exhibit reddish brown when spores deposit because of overlapping of basidiocarps.

E. mephiticum (독 외대버섯) : 자실체는 소형이며

갓은 부채꼴모양이고 백색이며 강한 마늘의 맛과 냄새가 난다. 대는 없거나 측생이다. 포자는 중형이고 연낭상체와 측낭상체는 없다. 소나무의 껍질 또는 고목의 이끼속에 중첩하여 발생한다.

Explanations of Plate

- Plate 1.** 1. *Entoloma scabrosum* (Fr.) Noordel. $\times 1/3$
 2. *E. aethiops* (Fr.) var. *aethiops* Hesler $\times 1/3$
 3. *E. pallid-olivaceum* (Fr.) Hesler $\times 1/3$
 4. *E. sericellum* (Fr.) Kumm. $\times 1/3$
 5. *E. sarcitum* (Fr.) Noodel. $\times 1/3$
 6. *E. anatinum* (Lasch: Fr.) Donk $\times 1/3$
 7. *E. tortuosum* Hesler $\times 1/3$
 8. *E. mephiticum* (Murr.) Hesler $\times 1/3$

- Plate 2.** 1. *Entoloma scabrosum* (Fr.) Noordel.
 1-A, spores $\times 1000$
 2. *E. aethiops* (Fr.) var. *aethiops* Hesler
 2-A, spores $\times 1000$ 2-B, basidia $\times 400$
 2-C,
 cheilocystidia $\times 400$
 3. *E. pallid-olivaceum* Hesler
 3-A, spores $\times 1000$ 3-B, pleurocystidia
 $\times 400$
 3-C, cheilocystidia $\times 400$
 4. *E. sericellum* (Fr.) Kumm.
 4-A, spores $\times 1000$ 2-B, cheilocystidia
 $\times 400$
 5. *E. sarcitum* (Fr.) Noordel.
 5-A, spores $\times 1000$
 6. *E. anatinum* (Lasch: Fr.) Donk
 6-A, spores $\times 1000$
 7. *E. tortuosum* Hesler
 7-A, spores $\times 1000$ 7-B, basidia $\times 400$
 7-C, cheilocystidia $\times 400$
 7-D, pilpcystidia $\times 400$
 8. *E. mephiticum* (Murr.) Hesler
 8-A, spores $\times 1000$ 8-B, basidia $\times 400$
 8-C, cheilocystidia $\times 400$

摘要

전주근교에 위치한 만덕산은 전라북도 임업시험

림이 있는 곳으로 산림이 잘 보존된 지역이다. 인공적으로 식재한 숲과 자연림이 어울려져 균류 발생에 좋은 환경을 가지고 있다.

이 지역을 중심으로 1989년 4월부터 1990년 10월까지 외대버섯을 다수 채집하여 동정하였다. 그 결과 한국산 미기록종으로 확인된 것은 다음과 같으며 이들에 대하여 한국보통명과 한국어 설명을 약술하였다.

Entoloma scabrosum(겉겉이 외대버섯), *E. aethiops* var. *aethiops*(검은비늘 외대버섯), *E. pallid-olivaceum*(퇴색노랑 외대버섯), *E. sericellum*(비단 외대버섯), *E. sarcitum*(짐 외대버섯), *E. anatinum*(민꼬리 외대버섯), *E. tortuosum*(굴곡 외대버섯), *E. mephiticum*(독 외대버섯).

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