

## 韓國에서蒐集된 무당버섯屬에 대한檢討

金養燮 · 朴容煥 · 金榮培

農村振興廳 農林技術研究所

## Revision of the Genus *Russula* collected in Korea

Yang Sup Kim, Yong Hwan Park and Yeung Bae Kim.

*Institute of Agricultural Sciences,  
Office of Rural Development, Suweon, Korea*

### Abstract

In this paper, three species of *Russula* previously not recorded in Korea were found in Suweon, Mt. Chiri, Taegwanryung, Kwangneung, and etc., during 1977. The authors classified 32 species of *Russula* including 3 unrecorded species into 4 subgenera according to morphological and cytological characteristics by S. Ito's taxonomic system, and proposed to designate the 3 unrecorded species of *Russula* and 4 sub genera, ((*Compactae*, *Ingratae*, *Rigidae*, and *Fragilis*) in Korean common name.

### Introduction

Although wild mushrooms have been used as foods and medicines since old times, the scientific taxonomical study on domestic higher fungi in Korea was attempted for the first time by Okada in 1932. In 1919 Uyeki described at first one species of the Genus *Russula*, and also reported 62 species of mushrooms including two species of *Russula* growing in Suweon in 1936. Kaburagi, (1940) recorded 163 varieties of the higher fungi in which 5 species of *Russula* were inserted. 3 years later, Takagi introduced 5 species of *Russula* in 1943. Because of the liberation of Korea from foreign occupation and the war of Korea from 1950 to 1962, domestic research on wild mushroom was almost ceased until 1957 or so.

In 1957. T.S. Lee and Y.W. Lee revived the task

with "A LIST OF THE KOREAN FUNGI PART I" of 12 families, 3 species including 6 species of *Russula*. In the same year Lee, J.Y. displayed a list of fungi composed of 265 recorded species with 9 unrecorded ones, and next year Lee and Lee informed 96 species including 8 species of *Russula* and 50 unrecorded ones of higher fungi in their second list. Lee (1959) alone furnished 49 addition unrecorded species in his third list. It was noteworthy in view of improving research of higher fungi in Korea that Lee et al, published an illustrated book "COLOURED ILLUSTRATION OF FUNGI OF KOREA" of 288 species in 1959.

Later Lim, J.H. (1968) reported 397 species 5 unrecorded species and 18 ones of *Russula* in his "TOTAL LIST OF KOREAN FUNGI". Recently Lim and Kim (1972) listed 381 recorded species and 5 unrecorded ones of the higher fungi in their paper. In the same year Lee and Jeong who searched all references about Korean basidiomycetes recorded up

to now reported 2 subclasses, 10 orders, 37 families, 149 genera, 368 species included 19 species of *Russula* and 13 unrecorded ones in their paper "Floral Studies on the Basidiomycetes in Korea". In 1975 Kim, Kim, Park, and Hongo reported 37 unrecorded species of basidiomycetes containing 4 ones of the *Russula*, and continuously Kim alone rearranged to group 25 species of the Genus *Amanita* including 3 new species into 3 subgenera according to the modern taxonomic system, and also designated the 3 unrecorded species of *Amanta*.

It is known as a result of the above that in the domestic Genus *Russula* recorded up to now list 29 species. The authors collected samples from Suweon, Kwangneung, Mt. Chiri, Taegwanryung, and Mt. Hanla, from 1973 to 1977.

The authors identified 3 unrecorded species of *Russula* and then grouped 32 species of *Russula* into 4 subgenera according to the modern taxonomic system.

*Russula* Pers. ex S.F. Grey

Persoon, Obs. Myc. 1 : 100, 1976; S.F. Grey, Nats Arr. Brit. Pl. 1 : 618. 1821; Frues, Gen. Hymen. 9. 1836; Epicr. Myc. 349. 1838 Singer, Agaricales, 698. 1949

The characters of the genus: pileus regular, rigid, usually becoming more or less depressed in the center.

Flesh of the pileus brittle. Ring and Veil absent.

Stem thick cylindrical, stout, short, brittle.

Gills rigid, fragile, edge thin and acute.

Spores rounded, often echinulate, white or yellowish, The genus of *Russulais* closely allied to *Lactarius*, it differs chiefly in that the flesh does not exude a milk (latex) when broken.

In moist weather, watery drops are exuded out the pileus of some species.

Most species are edible.

### 1. *Compabtae*

Flesh compact, firm till in age, lamellae unequal, either distant-adnate, or very numerous; Margin at first inrolled, without striae, without a distinct gluey pellicle; pileus fleshy gray, dusky purplish, olivaceous tinge, brownish; Spore print pure white to cream color; Reaction with FeSo4 positive,

pinkish to salmon, or green.

### 2. *Ingratae*

Flesh becoming yellow to yellowish brown when broken and old, without tinged blackish, generally no reacting Formallin; Pileus sticky, grayish brown, ochre, lemon color at young stage, Margin some or less acute; taste generally acrid; odor often fetid or pungent; Spore print white or cream color; Pileus turning darker with KOH;

### 3. *Rigidae*

Pileus covered with like hoar-frost, velvety, tomentose or divided into little areas or patches, taste mild, bitter, moderately acrid in the young gills, or merely strong acrid, FeSO4 with context negative, or green, or salmon color, or grayish pink to pinkish-gray-sordid (normal); Spore print cream-flesh; cuticle or the pileus not darkening with KOH.

### 4. *Fragilis*

Pileus smooth, sticky in the wet weather, and not pruinose scurfy, subvelvety, sericeous, etc.; lamellae not intermixed or forked; the reaction with FeSO4 normal, and Flesh becoming yellow, In some species salmon-orange or pink, but never negative or green; Spore print from white to deep yellowish-ochre.

#### 1. *Compactae*

A. Flesh white, when broken becoming black on exposure to the air; Pileus white; lamellae irregular, intermixed by short lamellae.

a. Spore print white; Spore large form; Gills white; taste mild

.....*R. delica* (1)

b. Spore print ochre; Spore small form; Gills ochre; taste mild

.....*R. pseudodelica* (2)

B. Flesh white, when broken or age becoming reddish or occasionally blackish; pileus smoky, gray or blackish; lamellae regular, intermixed by short lamellae.

a. Lamellae thick, distant, reddening when touched.; taste mild

.....*R. nigricans* (3)

b. Lamellae thick, crowded; Pileus smaller; taste acrid

.....*R. densifolia* (4)  
c. Lamellae thin, crowded; Pileus pallid, grayish  
wooly, compact; taste mild

.....*R. adusta*. (30)

## 2. *Ingratae*

A. Pileus dull color; The cultivle of the pileus  
turning darker with KOH; margin of the pileus  
pectinate-sulcate to tuberculate-sulcate

a. Pileus not prominent wrinkles.

α. Spore print white; surpace of the pileus  
pilocystidia; yellow to ochre; taste acrid.

Spore large form, 9-12 x 7-8u

.....*R. metachroa* (5)

β. Spore print cream colored; surpace of the  
pileus without pilocystidia

I. Pileus ochre; yellowish brown.

1. Pileus large form, 8~10cm; taste acrid,

.....*R. foetens* (6)

2. Pileus middle form, 5cm; odor often of  
nitrobenzen.

Spore raised network (ornamentaion)

.....*R. laurocerasi* (32)

II. Pileus darker, middle size.

1. Pileus at first gley, toast-brown then  
drybecoming pale with the disk always  
darker. lamellae free; taste bad acrid;  
Spore with network

.....*R. pectinata* (7)

2. Pileus usually more sepia or yellowish  
brown to darker brown; lamellae at first  
free; taste acrid; spore not network

.....*R. sororia* (8)

b. Pileus with blackish brown wrinkles, prominent  
when young, later dark yellow; Stipe belt-yellow  
with dark brown spots; taste acrid.

.....*R. senecis* (9)

B. Piles rather lucid color, darker colored with K  
OH; margin of the pileus dull color; taste acrid

.....*R. ochroleuca* (10)

C. Pileus bright citron color; Margin of the pileus  
acute; taste mild

.....*R. violeipes* (11)

## 3. *Rigidae*

A. lamellae a few dimidiate, dilated in front and

running out with a very broad, somewhat for  
bed; pileus lucid color, sometimes pallid; reaction  
with FeSO<sub>4</sub> negative; margin of the pileus acute;  
Spore print dark-blue.

a. Pileus lilac or purplish then olivaceous-green,  
disk commonly becoming pale often yellowish,  
margin azure-blue or livid purple, deflexed then  
expanded, remotely and slightly striate.

.....*R. cyanoxantha* (12)

b. Pileus bronze or dark purple, long white scales  
on the margin

.....*R. cutefracta*. (13)

c. Pileus red-flesh-color, disk darker, Margin at  
length spreading, Fleshy cheesy, firm, shining  
white

.....*R. vesca* (14)

B. lamellae adnate-decurrent, attenuated at both  
ends, frequentlyforked shining white; reaction with  
FeSO<sub>4</sub> positive; spore print bluishblack; in reaction  
with FeSO<sub>4</sub> flesh golden color

.....*R. furcata* (15)

C. lamellae somewhat crowded, equal, forked,  
with a few shorter ones intermixed.

a. Pileus breakinginto areolate patches and branny  
scales or scurf, when dry or moist viscid, espe-  
cially virescense structure.

α. Pileus pale ochre or brownish ochre; margin.  
slightly striate

.....*R. crustosa* (16)

β Pileus greenish blue or dark blue; margin of  
the pileus usually plane

.....*R. virescens* (17)

b. Pileus brightly colored (pink, bright pink-red to  
red, purple to violate, bright yellow to dull  
yellow), cuticle of the pileus and the stipe with a  
characteristic bloom, with long hairs.

α. Pileus reddish purple, bright pink red; Stipe  
white or pale purple color

.....*R. amemoena* (18)

β. Pileus orange color to bright yellow; stipe the  
same color as pileus

.....*R. flavida* (19)

c. Pileus velvet to short hair, blood-red to rose,  
plane, smooth, at length cracked scaly, Gills  
rather thick,often forked, red at the edge.

.....*R. lepida* (20)

d. Pileus deep purple to dull red; flesh becoming yellow or brown when bruised, reaction with FeSO<sub>4</sub> positive, green, odor strongly trimethylamin; Gills regular or forked

.....*R. xerampelina* (21)

4. *Fragilis*

A. Spore print white to cream color.; taste strongly acid; margin of the pileus at first acute.

a. Spore print white-pale cream color

α. Spore subglobose, minutely rough; Pileus dark purple; lamellae and stipe white; taste mild, odor of the drying plant fetid

.....*R. atropurpurea* (22)

β. Spore spheroid, echinulate, taste hot bitter.

I. Pileus bright red; stipe and lamellae white.,

.....*R. emetica* (23)

II. Pileus bright red, changing color, pellicle thin; stipe 2~5cm. long; lamellae very thin, crowded, broad, ventricose

.....*R. fragilis* (24)

III. Plant very similar to former, but plant white

.....*R. fragilis. f. nivea* (25)

b. Spore print cream; pileus deep red; lamellae cream

.....*R. sanguinea.* (31)

B. Spore print cream to pale ochre; pileus dull brown to bright reddish blood; stipe and lamellae white, tasteless

.....*R. integra* (26)

C. Spore print deep color than former, pale yellowish salmon, ochre or deep yellowish-ochre.

a. margin of the pileus at first more or less acute then obtuse; taste very acrid; pileus unicolous, cinnabar-vermilion

.....*R. rubra* (27)

b. Pileus reddish purple, dark blood red., 6~12cm. diameter; lamellae adnate, yellow; stipe white

.....*R. alutacea* (28)

c. Pileus flesh-color, then becoming yellow at the disc; lamellae more or less adnexed, thin, crowded, light-yellow-ochraceous

.....*R. chamaeleontina* (29)

1. *Russula delica* Fr. var *glaucophylla* Quel.

(흰젓 버섯)

Ito, 1957, p. 453.

*Lactarius chloroides* (From.) Kawam.; Lee and Lee, 1957, p. 4; Lee, J.X. 1957; Lee et al, 1959, p. 81; Lim J.H. 1968, p. 19.; Lim, J.H. and Kim B.K. 1972, p. 15.;

*Russula delica* Fr.; Charles, M. and R.K. Macadam, 1973, p. 190; R. Imazeki, and T. Hongo, 1965, p. 92; S. ITO, 1959, p. 452; Singer, R. 1962, p. 763. Habitat: on the ground in the woods, in Summer and Autumn.

Edibility: edible

Distribution: Kwangneung, and Mt. Chiri.

2. *Russula pseudodelica* Lante(젓버섯 아재비)

Lee, J.Y. 1975, p. 28; R. Imazeki and T. Hongo, 1965, p. 103; S. Ito, 1959, p. 454; Singer, R. 1962, p. 763.

Habitat: solitary or gregarious in the mixed woods, in Summer and Autumn.

Edibility: edible

Distribution: Suweon and Kwangneung.

3. *Russula nigricans* (Bull.) Fr. (절구 버섯)

Lee and Lee, 1958, p. 11; Lee, J.Y. 1957; Lee et al. 1959, p. 79; Lim, J.H. 1968, p. 10; Christensen, C.M. 1955, p. 89; Charles, M. and R.K. Macadam, 1973, p. 187; Lim, J.H. and Kim, B.K. 1972, p. 15; R. Imazeki and T. Hongo, 1965, p. 92; S. Ito, 1959, p. 455; Singer, R. 1962, p. 764.

Habitat: on the ground in the woods, in Summer and Autumn.

Edibility: edible

Distribution: Suweon, Kwangneung and Taegwan ryung.

4. *Russula densifolia* (Secr.) Gill. (애기절구버섯)

Lim, J.H. 1968, p. 10; Lim, and Kim, 1972, p. 15; R. Imazeki, and T. Hongo, 1965, p. 92; S. Ito, 1959, p. 456; Singer, R. 1962, p. 764.

Habitat: on the ground in the mixed woods, in Summer and Autumn.

Edibility: uncertain

Distribution: Kwangneung, and Mt. Chiri.

5. *Russula metachroa* Hongo (색갈이 무당버섯)

Lim, J.H. 1968, p. 10; Lim, and Kim, 1972, p. 15;

R. Imazeki, and T. Hongo, 1965, p.93; S. Ito, 1959, p.451;

Habitat: on the ground in pine trees, in Autumn  
Edibility: uncertain

Distribution: Kwangneung

**6. *Russula foetens* (Fr.) Fr.** (애기 깔대기 버섯)

Lim, J.H. 1968, p.10; Smith A.H. 1963, p.248;

Christensen, C.H. 1955, p.88; Charles, M. and R.K. Macadam, 1973, p.199; Lim, and Kim, 1972, p.15.;

R. Imazeki, and T. Hongo, 1965, p.93; S. Ito, 1959, p.458; Singer, R. 1962, p.766.

Habitat: scatter or grow in stock in the woods, in Summer and Autumn

Edibility: unpleasant.

Distribution: Suweon, Kwangneung, Mt. Chiri, and Mt. Hanla.

**7. *Russula pectinata* (Bull) Fr.** (달팽이 무당 버섯)

Lee, Y.W. 1959, P. 4; Lim, J.H. 1968, p.10;

Lim, and Kim, 1972, p.15; Charles, M. and R.K. Macadam, 1973, p.202; S.Ito, 1959, p.460; Singer, R. 1962, p.716.

Habitat: on the ground in the woods, in Summer and Autumn.

Edibility: uncertain

Distribution: Kwangneung

**8. *Russula sororia* (Fr.) Romell** (회갈색 무당 버섯)

Lee, J.Y.1975, p.28.; R. Imazeki, and T. Hongo, 1965, p.93; S. Ito, 1959, p.461; Singer, R. 1962, p.766.

Habitat: on the ground in rawn or in the mixed woods, in Summer and Autumn.

Edibility: uncertain

distribution: Suweon, Kwangneung.

**9. *Russula cenceis* Imai** (흙무당 버섯)

Lim, J.H. 1968, p.10; Lim, and Kim, 1972, p.15;

R. Imazeki, and T. Hongo, 1965, p.93; S. Ito, 1959, p.461.

Habitat: on the ground in the mixed woolds, in Summer and Autumn

Edibility: uncertain (very acrid)

Distribution: Suweon, and Kwangneung

**10. *Russula ochroleuca* (Secr.)Fr.**(노란조개버섯)

Lee and Lee, 1957, p.9; Lee et al 1959, p.78;

Lim, J.H. 1968, p.10; Lim and Kim, 1972, p.15;

Charles, M. and R.K. Macadam, 1973, p.202; S. Ito, 1959, p.462; Singer, R. 1962, p.766.

Habitat: solitary or at times gregarious. on the ground in mixed wooods, in Summer.

Edibility: unpleasant (It is quite peppery, but loses pepperiness in Cooking.)

Distribution: Kwangneung.

**11. *Russula violeipes* Quel**

Kim, D.S., Kim, Y.S., Park, Y.H. and T. Hongo,

1975, p.32; Singer, R. 1963, p.770; *Russula citrina* Gill; S. Ito, 1959, p.463;

Habitat: solitary on the ground in the mixed woods, in Summer and Autumn

Edibility: uncertain

Distribution: Suweon, and Kwangneung.

**12. *Russula cyanoxantha*. (Schaeff) Fr.**

Lee, J.Y. 1973, p.53; Charles, M. and R.K.

Macadam, 1973, p.198; M.C. Cooke, 1891 p.186; K. Imazeki, and T. Hongo, 1965, p.108; R. Imazeki,

and T. Hongo, 1965, p.94; S. Ito, 1959, p.463; Singer, R. 1962, p.767.

Habitat: on the ground in the latifoliate trees, in Summer and Autumn

Edibility: Edible

Distribution: Suweon, Kwangneung and Taekwanryung.

**13. *Russula cutefracta* Cooke** (청버섯)

Lee and Lee, 1957, p.10; Lee, J.Y. 1957; Lee et

al, 1959, p.77; Lim, J.H. 1968, p.10; Lee, J.Y. and Cho, D.H. 1976, p.12; Lim, 1972, p.15; S. Ito,

1959, p.464; Singer, R. 1962, p.768.

Habitat; on the ground in the woods, in Summer and Autumn

Edibility: uncertain

Distribution: Kwangneung

**14. *Russula vesca* Fr.** (조각무당 버섯)

Kim, D.S., Kim, Y.S.m Park, Y.H. and T. Hongo,

1975, p.32; Charles, M. and R.K. Macadam, 1973, p.198; M.C. Cooke, 1891, p.185; R. Imazeki, and T.

Hongo, 1965, p.106; Singer, R. 1962, p.768.

Habi-tat: scatter or gregarious in the broad-leaf

trees, in Summer and Autumn.

Edibility: edible

Distribution: Suweon, Kwangneung, and Mt. Chiri.

15. *Russula furcata* Pers (청버섯 아재비)

Lee and Lee, 1958, p.10; Lee et al.1959, p.79; Lim, J.H. 1968, p.10; Lim and Kim, 1972, p.15; *Russula furcata* Fr.; Charles, M. and R.K. Macadam, 1973, p.199; S. Ito, 1959, p.465; Singer, R. 1962, p.768, 769.

Habitat: on the soil in the mixed woods; in Summer and Autumn.

Edibility: uncertain

Distribution: Kwangneung

16. *Russula crustosa* Peck. (흙기와 버섯)

Lim, J.H. 1968, p.10; Lim, and Kim, 1972, p.15; R. Imazeki, and T. Hongo, 1965, p.54; S. Ito, 1959, p.465; Singer, R. 1962, p.770.

Habitat: solitary on the ground in broad leaves trees, in summer and Autumn

Edibility: edible

Distribution: Suweon, Kwangneung, Mt. Chiri and Taekwanryung.

17. *Russula virescens* (Zanted.) Fr. (기와 버섯)

uyeki, 1919, 1936; Kaburagi, 1940, p.348; Takagi 1943, p.20; Lee and Lee, 1957; Lee, J.Y. 1957; Lee et al. 1959, p.78; Lim, J.H. 1968.; Smith, A. H. 1963, p.247; Christensen, C.M. 1955, p.90; Charles, M. and R.K. Macadam, 1973, p.194; M.C. Cooke, 1891, p.184; R. Imazeki, and T. Hongo, 1965, p.94; S. Ito, 1959, p.466; Singer, R. 1962, p.770.

Habitat: solitary on the ground in mixed woods. in Summer and Autumn.

Edibility: edible

Distribution: Suweon, Kwangneung, Taekwanryung, Mt. Chiri, and Mt. Hanla.

18. *Russula punctata* (Gill.) Mairae: (가지버섯)

Lee and Lee, 1957, p.8; Lee, J.Y. 1957; Lee et al. 1959, p.74; Lim, J.H. 1968; Lim and Kim, 1972, p.15; Charles, M. and R.K. Macadam, 1973, p.204; Singer, R. 1962, p.777.

*Russula amoena* Quél; Ito, 1959, p.466.

Habitat: on the ground in th emixed woods, in

Summer and Autumn

Edibility: edible

Distribution: Kwangneung.

19. *Russula flavida* frost et Peck. (노랑무당버섯)

Kim D.S., Kim, Y.S., Park, Y.H. and T. Hongo, 1975, p.32; Charles, M. and R.K. Macadam, 1973, p.197; R. Imazeki and T. Hongo 1965, p.93; S. Ito, 1959, p.467; Singer, R. 1962, p.770.

Habitat: solitary or gregarious in the forests, in Summer and Autumn

Edibility: uncertain

Distribution: Suweon, Kwangneung, Taekwanryung. Mt. Chiri, and Mt. Hanla.

20. *Russula lepida* Fr.

Lee, J.Y. (1973), p.53; Charles M. and R.K. Macadam, 1973, p.195; R. Imazeki, and T. Hongo, 1965, p.92; S. Ito, 1959, p.469; Singer, R. 1962, p.767, 771.

Habitat: on the ground in the forests, in Summer and Autumn

Edibility: edible

Distribution: Kwangneung

21. *Russula xerampelina* (Seck.) Fr. (포도무당버섯)

Kim, D.S., Kim, Y.S., Park, Y.H. and T. Hongo. 1975, p.32; Kim, Kim, Choi, and Shim, 1976, p.19.; R. Imazeki, and T. Hongo, 1965, p.94; S. Ito, 1959, p.470; Singer, R. 1962, p.771, 772.

Habitat: on the ground in the ground in the pine trees, in Summer and Autumn.

Edibility: edible

Distribution: Suweon and Kwangneung

22. *Russula atropurpurea* (Korbh.) Britz (참가지버섯)

Kaburagi, 1940, p.356; Takagi, 1943, p.20; Lee and Lee, 1958, p.9; Lee, J.Y. 1957; Lee et al, 1959, p.77; Lim, J.H.1968; Lim, and Kim, 1972, p.15; Christensen, C.M. 1955, p.86; Charles, M. and R.K. Macadam, 1973, p.206; S. Ito, 1959, p.471; Singer, R. 1962, p.774.

Habitat: solitary on the ground in oak trees, in Summer and Autumn.

Edibility: uncertain

Distribution: Kwangneung, Mt. Chiri

**23. *Russula emetica* (Fr.) S.F. Gray.** (무당버섯)

Uyeki, 1956; Kaburagi, 1940, p. 359; Takagi, 1943, p. 34; Lee, J.Y. 1957, p. 9; 1958, p. 11; Lee et al. 1959, p. 76; Lim, J.H. 1968, p. 19; Lim and Kim, 1972, p. 15; Smith, A.H. 1963, p. 249; Christensen, C.M. 1955, p. 88; S. Ito, 1959, p. 471; Singer, R. 1962, p. 765, 773, 773, 775.

Habitat: solitary or some times gregarious in the latifoliate trees, in Summer and Autumn.

Edibility: uncertain

Distribution: Suweon, Kwangneung, and Mt. Chiri.

**24. *Russula fragilis* (Pers.) Fr.** (애기무당버섯)

Kaburagi, 1940, p. 361; Takagi, 1943, p. 20; Lee, J.Y. 1957; Lee et al; 1959, p. 76; Lim, J.H. 1968, p. 10; Lee, J.Y. and Cho, D.H. 1976, p. 12; Charles, M. and R.K. Macadam, 1973, p. 203; S. Ito, 1959, p. 473; Singer, R. 1962, p. 775.

Habitat: solitary on the ground in mixed woods, in Summer and Autumn

Edibility: uncertain

Distribution: Suweon, and Kwangneung.

**25. *Russula fragilis* (Pers.) Fr. var. *nivea* Cooke** (흰무당버섯)

Lee and Lee, 1957, p. 8; Lee, J.Y. 1957; Lee et al, 1959, p. 779; Lim, J.H. 1968, p. 10; Lim and Kim, 1972, p. 12; S. Ito, 1959, p. 474;

Habitat: solitary on the ground in pine trees, in Summer and Autumn

Edibility: poisonous(?)

Distribution: Kwangneung

**26. *Russula integra* (L.) Fr.** (붉은무당버섯)

Takagi, 1943, p. 23; Lee, J.Y. 1957; Lee and Lee, 1957, p. 8; 1958, p. 9; Lee, et al. 1959, p. 75; Lim, J.H. 1968, 10; Charles, M. and R.K. Macadam, p. 973, p. 204; M.C. Cooke, 1891, p. 187; S. Ito, 1959, p. 475; Singer, R. 1962, p. 778.

Habitat: on the ground in the needle-leaf trees, in Summer.

Edibility: edible

Distribution: Kwangneung

**27. *Russula rubra* (Krombh.) Bress**

Kaburagi, 1940, p. 360; Lee, J.Y. 1957; Lim, J.H.

1968, p. 10; Lee, J.Y. 1975, p. 28; Charles, M. and R.K. Macadam, 1973, p. 196; S. Ito, 1959, p. 475; Habitat: solitary or gregarious on the mixed woods, in Summer and Autumn

Edibility: uncertain

Distribution: Kwangneung

**28. *Russula alutacea* (Pers.) ex Schw.) Fr.**

(가죽껍질 무당버섯)

Kim, Kim, Choi, and Schim, 1976, p. 19; Charles, M. and R.K. Macadam, 1973, p. 207; H.C. Cooke, 1891, p. 187; S. Ito, 1959, p. 459; Singer, R. 1962, p. 777.

Habitat: on the ground in the needle-leaf trees, in Summer and Autumn

Edibility: uncertain

Distribution: Kwangneung

**29. *Russula chamaeleontina* Fr. Var. *sensu***

**Kanuffm** (변덕장이작은무당버섯)

Kim, Kim, Choi, and Shim, 1976, p. 19; Charles, M. and R.K. Macadam, 1973, p. 212; Singer, R. 1962, p. 777, 775.

Habitat: solitary on the ground in the needle-leaf trees, in Summer and Autumn

Edibility: uncertain

Distribution: Kwangneung

### Unrecorded species

**30. *Russula adusta* (Fr.) Fr.** (흙갈색 무당버섯)

Charles M. and R.K. Macadam, 1973, p. 188; R. Imazeki, and T. Hongo, 1965, p. 106; Singer, R. 1962, p. 764.

Pileus generally 5—10cm. across, convex, margin at first inflexed, but when mature plane or depressed in center, viscid when wet weather, whitish at first, often tinged with greyish brown

Flesh solid, but brittle, whitish becoming brownish gray or blackish when bruised, nearly tasteless and scentless, Gills decurrent, crowded, 3—10mm. wide, at first white then dingy, not redding when touched. Stem. 2.5—5x 1—1.5cm, commonly attenuated down ward, firm, solid, whitish, becoming black when touched, Spores eggshape or subglobose, beseted with short bristles, 7—8 $\mu$  diameter.

In pine and mixed woods on Summer and Autumn.  
R. audusta is solitary but often in small troops.

Edibility: edible

Distribution: Suweon, Kwangneung, Taekwanryung.

31. *R. sanguinea* Fr. (혈색무당버섯)

Charles, M. and R.K. Macadam, 1973, p.191; R. Imazeki, and T. Hongo, 1965, p. 94;

*Russula rosacea* (Bull.) S.F. Gray cm. Fr.; S. Ito, 1959, p.474; Singer, R. 1962, p. 775.

Pileus 4—8cm. broad, blood red, acute margin, at first obtuse to convex, then depressed and commonly convexed or swelled on one side than the other.

Gills adnate or truly decurrent, very crowded, very narrow, somewhat forked, shining white.

Fleshy firm, white, acrid.

Stem stout, at first contracted at the apex, then equal, slightly striate, slightly reddish.

Spores 7—8x 6—7u. diameter, deposit cream color.

Habitat: gregarious or in small clumps, on the ground in coniferous woods, later Summer to Autumn

Edibility: uncertain. Poisonous, Stevenson. Krapp says that he has experienced grave inconveniences from eating it, but Charles and R. Macadam stated that *R. sanguinea* is one of the best

Distribution: Kwangneung, Mt Chiri, Taekwanryung.

32. *R. laurocersi* Melzer. (밀집색무당버섯)

R. Imazeki, and T. Hongo, 1965, p. 106; S. Ito, 1959, p. 459; Singer, R. 1962, p. 776.

Pileus 4—7cm. wide, hemispherical when young, later convex to flat, sometimes slightly depressed in the center, surface sticky when moist, yellow orange to yellowish brown, coarsely striate for the margin.

Flesh white, taste acrid, odor putrid.

Gills adnate-decurrent, free, close, white later becoming dingy brown, exuding small watery drops in wet weather.

Stipe 3—6x1—1.5cm, equal, hollowed, white then becoming dingy yellow to dingy brown,

Spores almost globose, echinulate, minute, 8—10u diameter,

Habitat: scattered to gregarious on the ground in

deciduous woods, in Summer to Autumn.

Edibility: uncertain. Kauffman states that this species is suspected of being poisonous. but Gussow and Odell in "Mushrooms and Toadstools" consider it edible.

Distribution: Kwangneung, Mt. Chiri, Taekwanryung

### Acknowledgments

We wish to express our cordial thanks to every member of applied mycology at the Institute of Agricultural Sciences for providing the facilities to carry out this work.

### 摘 要

韓國에 自生하는 野生버섯의 分布狀을 調査하기 위해, 水原, 光陵, 大關嶺, 智異山 및 漢拏山에서 무당버섯屬에 對하여 調査한 結果, 韓國未記錄種 3種이 分類되었으며 記錄種 29種을 包含하여 32種을 4亞屬에 配置記載하였다.

또한 韓國 未記錄 3種과 4亞屬에 對하여 우리나라 이름을 命名하였다.

### References

Charles, M. and R.K. Macadam, (1973); one Thousand American Fungi, Dover Publication, 185—215.  
Christensen, C.M. (1955); Common Fleshy Fungi, Minneapolis. 84—90.  
M.C. Cooke (1891); British Edible Fungi, London 183—187.  
Imazeki, R. and T. Hongo (1965); Coloured Illustration of Fungi of Japan. Hoikusha, 90—94.  
Imazeki, R., T. Hongo, and K. Tubaki (1970); Common Fungi of Japan In Color. Hoikusha.  
Ito, S. (1959); Mycological Flora of Japan. Yokendo 2: 449—479.  
Kaburagi, (1940); Korea Forest Eyuriment Station; Soen Man Sil Yong|Im Eob Pyeon Ram (Korean and Manchurian Practical Manual of Forestry). Yokendo, Tokyo. 341.  
Km, B.K., D.H. Kim, E.C. Choi and M.JiShim. (19



- 76); Taxonomic Investigation on Korean Higher Fungi(II), Kor.J. Mycol. Vol. 4, p.17—25.
- Kim, D.S., Kim, Y.S., Park, Y.H., and T. Hongo (1975); Taxonomic study on Korean Basidiomycetes. Kor. J. Mycol. Vol. 3, 31—33.
- Kim, Y.S. (1976); The Taxonomic study on the Genus *Amanita* in Korea. Kor. J. Mycol. Vol. 4, 1—10.
- Lee, E.R., and H.S. Jeong (1972); Floral Studies on the Basidiomycetes in Korea, Floral Studies on some Taxa of Plants and Faunal Studies on some Taxa of Animals in Korea, R—72—82, 67—68.
- Lee, J.Y., Y.W., Lee and J.H. Lim (1959); Coloured Illustrations of Fungi of Korea, Bae Munl Gak. 73—80.
- Lee, J.Y. (1957); The List of the Fungi of Korea. Swoul High School.
- Lee, J.A. (1975); The Common Names of Korean Higher Fungi. Kor. J. Mycol. Vol. 3, p.27—30.
- Lee, T.S. and Y.W. Lee (1957); Bulletin of Forest Experiment Station, A List of the Korean Fungi Part 1, Central Forest Experiment. 8—10.
- \_\_\_\_\_, and \_\_\_\_\_, (1958); A List of the Korean Fungi, Part II, Central Forest Experiment Station, 9—12.
- Lee, Y.W. (1959); A List of the Korean Fungi, (Part III) Central Forest Experiment Station, 4.
- Lim, J.H. (1968); The Total list of the Fungi of Korean Mycological Institute, 9—10.
- \_\_\_\_\_, and Kim, B.K. (1972); Taxonomical Investigations society of Pharmacogony, 3 : 15.
- Okada, M. (1932); The 25th Anniversary Bulletin of Suweon. Agaricultural and Forestry College (in Japanese), Suweon, Korea. 378—391.
- Ree, W.M. (1935); J. Korean Forestry Society, 11.
- Singer, R. (1962); The Agricalesin Modern Taxonomy, Meinbein. 757—779.
- Smith, A.H. (1963); Mushroom Hunter's Field Guide. University of Michigan. 247—249.
- Takagi, K. (1943); SeonSan Ya Sang Guin Sim Gam. 13—14.
- Tosco, U. and A. Fanelli (1972); Mushrooms and Toadstools. Crescentbooks, 13 : 23.

- Uyeki, H. (1936); Bulletin of Suweon Agricultural and Forestry College, No. 5, Appendix 1—3.
- Yoshiro Imazumi (1967); Standard soil color charts.

Explanation of the plates

- A. *Russula sanguinea* Fr.  
 B. *Russula adusta* (Fr.) Fr.  
 C. *Russula laurocerasi* Melzer.

A.



B.



C.



