Myxomycetes develops worldwide in every places from tropical regions to frigid regions in the world. It has been reported about many species from the world until now. Morphological features of Myxomycetes vary from the regions and environmental conditions. However, these varied features are not defined enough because the development of Myxomycetes is accidentally occurred and it is very difficult to find and collect in the field because a mature sporangium is so fragile and easily disappear by the wind and rainfall. Even though Myxomycetes develops any places in the world, generally Myxomycetes develops in high temperature and high humidity regions. A certain species characteristically develops at a margin of remaining snow in an early spring season. Basically substrate...
of Myxomycetes is a rotten wood, a fallen leaf and a fallen twig. Some kinds of species may be observed on a living herb and wood. Rare species may be also observed on a non-living thing. However, a study for Myxomycetes is not enough in ecological and plant geographical approach. It has been taken clear out taxonomical features and its localities of the species belong to Genus *Stemonitis* mainly collected in Japan, some specimens from the World in this study.

The materials used in this study are collected in Japan and foreign countries for years from 1970 to 1986. A dried specimen of a sporangium has been used in this study. The number of specimens used in this study is about individuals, these were mainly collected in Japan, some specimens were collected from Belgium, Canada, Korea and the USA. A collected specimen was preserved in a stock box after dring in natural condition. Kinds of specimens collected in a dripping area were artificially dried using an electric dring oven. The morphological and taxonomical observation of a sporangium did using a light microscopy, but the observation of the surface ornamentation of a spore has been used a scanning electron microscopy (SEM). The preparation of a specimen for SEM operation is as followings. Dried spores or a sporangium were mounted on an aluminum specimen stub with a double faced adhesive tape and sealed with silver paste after dehydration of the sample. Using an Eiko ion coater, a specimen was coated with about nm of gold palladium. The coated specimen was observed with a Hitachi H-SEM at kv accelerating voltage. The taxonomical systematics of Myxomycetes has been carried out by some Myxomycetal researchers. In this study, it was used the systematics proposed by Martin and Alexopoulos (1970). Literatures of Y. Emoto (1964), M. L. Farr (1994), T. N. Lakhampal and K. G. Mukerji (1989), G. Lister (1975), G. W. Martin (1985), G. W. Martin and C. J. Alexopoulos (1975), G. Massee (1978), N. E. Nannenga-Bremekanp (1995), K. S. Thind (1993), Y. Yamamoto (1992) and other books have been used to identified the specific name of collected specimens. A collecting locality is arranged from northern to southern part in Japan, after that, arranged foreign countries. For the sign of specific number, it is indicated that GWM is G. W. Martin, HTN is T. Hatano, the author, HWK is H. W. Keller, TEB is T. E. Brooks and UEU is U. H. Eliasson. The description of a world distribution is from literatures of Choe (1993), Emoto (1964), Farr (1994), Hatano (1990), Lakhampal and Mukerji (1989), Lister (1975), Martin and Alexopoulos (1975), Thind (1993) and Yamamoto (1992). A distribution is orderly arranged from a continent to a country and a local point. The country name is alphabetically arranged.

**Descriptions of species**

It includes a taxonomical description, a collection locality and a world distribution of species belong to the Genus *Stemonitis* treated in this study.
Stemonitis axifera (Bull.) Macbr.

Fructification: crowded, often forming large colonies, sporangiate, stipitate. Sporangium: cylindrical, acuminate at the apex, slender, erect or slightly bending, fasciculate, deep brown, ferruginous or rusty brown, becoming paler after the dispersion of spores, ༼ 1-3 ༽ mm in height. Stalk: erect, rigid, slender, subulate, cylindrical, arising from the membranous hypothallus, slightly expanding at the base and gradually tapering upwards, black, shining, ༼ 1-3 ༽ mm in height. Peridium: fugacious. Dehiscens: irregularly breaking. Hypothallus: abundant, membranous, thin, round, shining, silvery brown. Columella: prominent, cylindrical, tapering upwards, nearly reaching the apex of the sporangium and branching freely below the apex to form primary stout branches of the capillitium, black. Capillitium: consisting of an internal network and a peridial network of branches. Branch: arising around the surface of the columella, usually thick, rather stout, tapering outwards, branching and anastomosing to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. Mesh of internal network: large, variable in shape and size, usually ༼ 1-3 ༽ mm in diameter, polygonal, small, delicate, smooth, close, without free-ends, persistent, violaceous brown or reddish brown. Spore: globose, nearly smooth, minutely warted, ferruginous or deep brown in the mass, pallid or violaceous brown by transmitted light, ༼ 1-3 ༽ mm in diameter.

SEM aspects of spore surface ornamentation: scattered with many warts, ༼ 1-3 ༽ mm in diameter, ༼ 1-3 ༽ mm in height, being numerous fine hollows and fine ridges except warts on the surface, with fine networks composed by fine ridges.

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World distribution: Widely distributed and abundant in temperate and tropical regions; Africa, Asia, Europe, North America, Oceania, South America; Argentina, Brazil, Canada, Ceylon, Chile, Colombia, Costa Rica, Dominica, Ecuador, Guadeloupe, Haiti, Honduras, India, Jamaica, Japan, Martinique, Mexico, Nicaragua, Panama, Puerto Rico, Rep. Dominicana, Switzerland, Trinidad, Uruguay, USA, Venezuela; Great Britain, Java.

Stemonitis confluens Cooke & Ellis.

Fructification: densely clustered, often forming large colonies, sporangiate, stipitate. Sporangium: usually completely united except the tip and the base, flexuous, fasciculate, black or fuscous, 1.5–2.0 mm in diameter, 2.0–3.0 mm in height. Stalk: stout, short, sometimes very short, black, shining. Peridium: fugacious except the connected portions of the sporangium. Hypothallus: membranous, thin, shining, silvery brown. Columella: medately flexuous, often not reaching to the apex of the sporangium, fuscous or black. Capillitium: consisting of an internal network and a peridial network of branches. Branch: arising around the surface of the columella, branching and anastomosing to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. Mesh of internal network: large, variable in shape and size, with membranously broadened and angled expansions. Mesh of peridial network: usually incomplete, large, fuscous, grayish black. Spore: globose, spinulose, brownish black in the mass, purplish brown by transmitted light, 1.8–2.0 μm in diameter.

SEM aspects of spore surface ornamentation: scattered with many spines, 0.05–0.1 μm in diameter, 0.1–0.2 μm in height, with slight fine hollows except spines on the surface.

Stemonitis flavogenita Jahn

Fructification: densely clustered, sporangiate, stipitate. Sporangium: cylindrical, obtuse at the apex, erect, slightly narrowed at both ends, slightly bending, usually short-stalked, sometimes near sessile, dark brown, becoming lighter after the dispersion of spores, 2-3 mm in diameter, 1-3 mm in height. Stalk: erect, rigid, slender, subulate, cylindrical, short, sometimes very short, expanding at the base, gradually tapering upwards, arising from the membranous hypothallus, black, shining, 0.1 mm in height. Peridium: often inconspicuous, fagacious. Dehiscens: irregularly beaking. Hypothallus: well developed, membranous, thin, round, reddish brown, slivery brown or colorless, shining. Columella: prominent, cylindrical, thick, slender, gradually tapering upwards, nearly reaching the apex of the sporangium with a membranous cupulate expansion, black. Capillitium: consisting of an internal network and a peridial network of branches, Branch: arising around the surface of the columella, usually thick, rather stout, tapering outwards with many broadened and angled expansions, branching and anastomosing to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. Mesh of internal network: large, loose, with many membranously broadened and angled expansions. Mesh of peridial network: delicate, sometimes with spine-like free ends, often fugacious at the maturity in the upper portion of the sporangium, polygonal or irregular, 2-3 mm in diameter. Spore: globose, faintly warted, dull brown or ferruginous in the mass, pale ferruginous or lilaceous brown by transmitted light, 2-3 μm in diameter.

SEM aspects of spore surface ornamentation: scattered with many spines, 1-2 μm in diameter, 0.5-1 μm in height, with slight hollows except spines, usually smooth except spines and hollows on the surface.

A Study of Taxonomy and Distributions of Genus Stemonitis (Myxomycetes)


World distribution: Africa, Asia, Europe, North America, Oceania, South America; Argentina, Bohemia, Brazil, Costa Rica, Dominica, Ecuador, France, Germany, Hungary, India, Jamaica, Japan, Panama, Roumania, Sweden, Switzerland, Trinidad, Venezuela, USA.

**Stemonitis fusca Roth**

*Fructification*: densely clustered, usually forming large colonies, often tufted, sporangiate, stipitated. *Sporangium*: cylindrical, obtuse at the apex, slender erect or bending, deep fuscos, black or purplish black, becoming pallid after the dispersion of spores, □ □ □ □ mm in diameter, □ □ □ □ mm in height. *Stalk*: cylindrical, slender, rigid, erect, slightly expanding at the base, black, shining, □ □ □ □ mm in height. *Peridium*: often inconspicuous, fugacious, *Dehiscens*: irregularly breaking. *Hypothallus*: membranous, thin, well developed, colorless, silvery brown. *Columella*: prominent, cylindrical, thick, slender, gradually tapering upwards, almost reaching the apex and branching below the apex of the sporangium to form primary branches of the capillitium. *Capillitium*: consisting of an internal network and a peridial
Takami HATANO

network of branches. Branch: arising numerously around the surface and the top of the columella, usually stout, thick, tapering towards the tip, sometimes with broadened and angled expansions, branching and anastomosing freely to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. Mesh of internal network: variable in shape and size, with many membranously broadened and angled expansions. Mesh of peridial net: delicate, small, with many spine-like free ends, polygonal or round, irregular in size, \( \frac{1}{2} \) mm in diameter. Spore: globose, warted, sometimes faintly reticulated, purplish black or dark fuscous in the mass, pale purplish brown or purplish gray by transmitted light, \( \frac{1}{2} \) mm in diameter.

SEM aspects of spore surface ornamentation: consisting of small reticulations \( \frac{1}{2} \) mm in diameter, composed of perforated wall, about \( \frac{1}{2} \) mm in the thickness, \( \frac{1}{2} \) mm in height, smooth without the walls.

A Study of Taxonomy and Distributions of Genus Stemonitis (Myxomycetes)


World distribution: Common in temperate and tropical regions; Africa, Asia, Europe, North
America, Oceania, South America; Antigua, Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Ecuador, French Guiana, Guadeloupe, India, Jamaica, Japan, Mexico, Nicaragua, Panama, Puerto Rico, Rep. Dominicana, Tobago, Trinidad, Uruguay, USA, Venezuela; Hawaii, U. S. Virgin Isls.

**Stemonitis herbatica** Peck

*Fructification:* sporangiate, stipitate, occasionally almost sessile, densely clustered into tufts, densely gregarious. *Sporangium:* cylindrical, obtuse, erect to bent, obtuse to apex, dark brown, army brown, \( \text{mm in diameter, mm in height. Stalk: } \) short, erect, solid, expanded at the base, black, fuscous to black, shining. \( \text{mm in height. Peridium: } \) evanescent. *Dehiscens:* Irregular. *Hypothallus:* prominent, sometimes rather inconspicuous, membranous, reddish brown, silvery, shining. *Columella:* prominent, thick, central, simply a prolongation of the stalk, gradually tapering to the apex, flexuous above, sometimes not reaching to the apex, black. *Capillitium:* dense, arising from the entire columella, often with expanded nodes, *Primary branches:* prominent, numerous, branching and anastomosing to form an irregular internal net, \( \text{mm in diameter. Surface net: } \) paler, the meshed small, polygonal, violaceous brown. *Spore:* globose, minutely but, distinctly warted, dark brown in mass, violaceous brown or paler by transmitted light, \( \text{mm in diameter.} \)

SEM aspects of spore surface ornamentation: scattered with fine warts \( \text{mm in diameter, } \)


World distribution: Cosmopolitan; Africa, Asia, Europe, North America, Oceania, South America; Antigua, Argentina, Belize, Brazil, Ceylon, Costa Rica, Dominica, Fiji, Guadeloupe, Guatemala, India, Japan, Mexico, Puerto Rico, Rep. Dominicana, USA, Venezuela; Great Britain, Hawaii, Java.

**Stemonitis hyperopta** Meylan

*Fructification*: Densely gregarious, crowded in small clusters, sporangiate, stipitate. *Sporangium*: cylindrical or elongated ovoid, obtuse at the apex, erect or slightly bent, rusty pink or pale purplish brown, becoming pallid with the dispersion of spores, 0.2-0.3 mm in diameter. 0.1 mm in height. *Stalk*: slender, rigid, erect, short, slightly expanded at the base, black, shining, 0.2-0.3 mm in height. *Peridium*: often inconspicuous, fugacious, *Dehiscens*: irregularly breaking. *Hypothallus*: membranous, thin, well developed, small, round, sometimes inconspicuous, usually colorless, dark brown. *Columella*: prominent, slender, short, erect, rigid, subulate, gradually tapering upwards, almost reaching to the apex of the sporangium. *Capillitium*: consisting of an internal network and a peridial network of branches. *Branch*: arising around the surface of the columella, numerous, tapering towards the tip, freely branching and anastomosing to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. *Mesh of internal network*: irregular in diameter. *Mesh of peridial network*: close, rather delicate, flexuous, without free-ends, fugacious at the upper portion of the sporangium, persistent at the lower portion of the sporangium at the maturity, irregular in diameter, 0.2-0.3 mm in diameter. *Spore*: globose, warted, purplish brown in the mass, pale purplish brown or pale purplish gray by transmitted light, 0.1-0.15 mm in diameter.

SEM aspects of spore surface ornamentation: composed of fine reticulation, 0.02-0.03 mm in diameter, vein-like ridges, 0.02-0.03 mm in thickness, 0.01-0.02 mm in height, smooth without reticulations
and ridges on the surface.


World distribution: Africa, Asia, Europe, North America, Oceania, South America; Argentina, Chile, Dominica, Germany, India, Jamaica, Japan, Korea, Puerto Rico, USA; Great Britain.

_Stemonitis nigrescens_ Rex

_Fructification:_ gregariously or loosely clustered, sometimes densely clustered in small colonies, sporangiate, stipitate. _Sporangium:_ cylindrical, obtuse at the apex, bent, sometimes erect, purplish brown, becoming lighter after the dispersion of spores, shining, 0.01–0.02 mm in diameter, 0.02–0.04 mm in height. _Stalk:_ cylindrical, erect, rigid, gradually tapering upwards, black, shining, 0.01–0.02 mm in diameter. _Peridium:_ often inconspicuous, fugacious, _Dehiscent:_ irregularly breaking. _Hypothallus:_ well developed, membranous, thin, shining, silvery, sometimes reddish brown or reddish black. _Columella:_ prominent, cylindrical, thick, slender, gradually tapering upwards, almost reaching to the apex of the sporangium, divided to form branches of the capillitium just below the apex of the sporangium, black or purplish black, shining. _Capillitium:_ consisting of an internal network and a peridial network of branches. _Branch:_ arising at the tip and around the surface of the columella, stout, gradually tapering upwards, bearing angled membranous expansions, branching and anastomosing to form an internal
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network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. Mesh of internal network: flexuous, large, irregular, mesh of peridial network, small, irregular, delicate, lax, sometimes incomplete or lacking, often with spine-like free-ends, falling away early at the upper portion, dark brown, deep purplish brown. Spore: globose, marked with fine and small reticulations, dark brown to black in the mass, pale to purplish brown by transmitted light, ㎛ in diameter.

SEM aspects of spore surface ornamentation: composed of fine reticulations ㎛ in diameter, composed of partially thickened and perforated wall about ㎛ in thickness and ㎛ in height, basically smooth without reticulations.


World distribution: Asia, Europe, North America, Oceania, South America; Australia, Brazil, Chile, Dominica, India, Ireland, Jamaica, Japan, Panama, Puerto Rico, USA; Wales.

Stemonitis pallida Wingate

Fructification: gregarious or scattered, sometimes clustered or densely clustered, sporangiate, stipitate. Sporangium: cylindrical, erect or bent, slender, obtuse at the apex, tapering towards both ends, purplish brown, dark brown or blackish brown, becoming palid after the dispersion of spores, ㎛ in diameter, ㎛ in height. Stalk: cylindrical, rigid, gradually tapering upwards, black or dark purplish brown, shining, ㎛ in height. Peridium: often inconspicuous, fugacious, sometimes persistent small fragments after the breaking of membranes at the dehiscence. Dehiscens: irregular breaking. Hypothallus: membranous, thin, round, brown or silvery gray, shining. Columella: prominent, cylindrical, slender, gradually tapering upwards, almost reaching to the apex of the sporangium and divided abruptly to form branches of the capillitium below the apex of the sporangium, black, shining. Capillitium: consisting of an internal network and a peridial network of branches. Branch: arising around the surface of the columella, stout, tapering towards the tip, often with broadened and angled expansions, branching and anastomosing to form abundant internal networks at the surface of the sporangium. Mesh of internal network: large, irregular, often with a few broadened nodular expansions. Mesh of peridial network: dense, flexuous, small, delicate, usually polygonal, often incomplete and lacking at the top, fugacious at the upper portion and persistent at the lower portion at maturity. Spore:
globose, minutely warty or nearly smooth, dark brown in the mass, reddish gray or pale purplish brown by transmitted light, 10–15 mm in diameter.

SEM aspects of spore surface ornamentation: scattered with fine warts 5–10 µm in diameter, 1–2 µm in height, almost smooth without warts.


World distribution: Asia, Europe, North America, Oceania; Argentina, Brazil, England, India, Jamaica, Japan, Korea, Malaysia, Mexico, Moldavia, New Caledonia, Panama, Puerto Rico, Taiwan, Trinidad, USA, Venezuela; Galapagos Isls., Malay peninsula.

Stemonitis smithii Macbr.

Fructification: clustered or crowded, often densely crowded, sporangiate, stipitate. Sporangium: subcylindrical or cylindrical, erect or bent, obtuse at the apex, tapering towards both ends, light brown, becoming paler after the dispersion of spores, 10–20 µm in diameter, 1–2 µm in height. Stalk:
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cylindrical, slender, rigid, erect, smooth, slightly expanded at the base, gradually tapering upwards, black, shining. ²⁻³₀ mm in height. **Peridium**: often inconspicuous, fugacious. **Dehiscent**: irregularly breaking. **Hypothallus**: membranous, thin, dark brown or brown. **Columella**: prominent, thick, cylindrical, stout, slender, flexuous at the upper portion, gradually tapering upwards, divided to form branches of the capillitium below the apex of the sporangium, dark purplish brown or black. **Capillitium**: consisting of an internal network and a peridial network of branches, **Branch**: arising at the tip and around the surface of the columella, numerous, thick, stout, tapering towards the tip, bearing broadened and angled expansions at the axil, branching and anastomosing to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. **Mesh of internal network**: delicate, small, regular, polygonal, ²⁻³₀⁻³₂ mm in diameter, light brown, **Spore**: globose, minutely warted or nearly smooth, brown or purplish brown in the mass, pale purplish brown, almost colorless by transmitted light, ²⁻³₀⁻³₂ mm in diameter.

**SEM aspects of spore surface ornamentation**: obviously warted, ²⁻³₀⁻³₂ mm in diameter, ²⁻³₀⁻³₂ mm in height, composed of finely reticulated networks formed by numerous very fine hollows and delicate vein-like ridges without warts.\n
**Localities collected**: HTN ¹⁻³⁻¹⁻³ Mt. Nonoboriyama, Ogisucho, Suzukashi, Mie pref., HTN ¹⁻³⁻¹⁻³ Anagura, Misatomura, Agegun, Mie pref., HTN ¹⁻³⁻¹⁻³ Sakakibaracho, Hisaishi, Mie pref., HTN ¹⁻³⁻¹⁻³ Ogawacho, Kameyamashi, Mie pref., HTN ¹⁻³⁻¹⁻³ Haze, Ichishicho, Ichishigun, Mie pref., HTN ¹⁻³⁻¹⁻³ Mt. Yazusan, Ichishicho, Ichishigun, Mie pref., HTN ¹⁻³⁻¹⁻³ Mt. Sanjogadake, Tenkawamura, Yoshinogun, Nara pref., HTN ¹⁻³⁻¹⁻³ Ohara, Ureshinocho, Ichishigun, Mie pref., HTN ¹⁻³⁻¹⁻³ Futamata, Hakusancho, Ichishigun, Mie pref., HTN ¹⁻³⁻¹⁻³ Izeki, Misugimura, Ichishigun, Mie pref., HTN ¹⁻³⁻¹⁻³ Mie Univ. forest, Kawakami, Misugimura, Ichishigun, Mie pref., HTN ¹⁻³⁻¹⁻³ Izawanomiya Shirine, Isobecho, Shimagun, Mie pref., HTN ¹⁻³⁻¹⁻³ Yokowacho, Isehi, Mie pref., HTN ¹⁻³⁻¹⁻³ Kuki, Owaseshi, Mie pref., HTN ¹⁻³⁻¹⁻³ Hase, Sonobecho, Fugaigun, Kyoto pref., HTN ¹⁻³⁻¹⁻³ Onoyama, Inagawacho, Kawabegun, Hyogo pref., UE ¹⁻³⁻¹⁻³ Holiday Island, Carroll Co., Arkansas, USA.

**World distribution**: Cosmopolitan; Africa, Asia, Europe, North America, Oceania, South America; Canada, Ceylon, Chile, Guatemala, India, Jamaica, Japan, New Zealand, Nicaragua, Panama, Scotland, Switzerland, USA; Hawaii, Java.

**Stemonitis splendens** Rost.

**Fructification**: densely crowded, very large clustered, forming large colonies, densely fasciculated, sporangiate, stipitate. **Sporangium**: cylindrical or long cylindrical, bent, obtuse to acuminate at the apex, nearly black, blackish brown, fuscous, deep purplish brown, becoming brown or dark brown after the dispersion of spores, ²⁻³₀⁻³₂ mm in diameter, ²⁻³₀⁻³₂ mm in height. **Stalk**: slender, long, erect, expanded at the base, rigid, black or blackish brown, shining, ²⁻³₀⁻³₂ mm in height. **Peridium**: often inconspicuous, fugacious. **Dehiscent**: irregularly breaking. **Hypothallus**: well developed, membranous, thin, widely
expanded, purplish brown, silvery, shining. *Columnella:* prominent, thick, cylindrical, long, stout, firm, gradually tapering upwards, reaching near the apex of the sporangium divided into the capillitium, black. *Capillitium:* consisting of an internal network and a peridial network of branches, *Branch:* arising at the tip and around the surface of the columella, usually thick, stout, tapering towards the tip, sometimes with broadened and angled expansions, branching anastomosing to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. *Mesh of internal network:* large, irregular, round or polygonal, incomplete or absent in the agglutinated sporangia. *Mesh of peridial net:* smooth, sometimes with spines. *Spore:* globose, faintly and densely warted, purplish brown or black in the mass, pale reddish brown, pale purplish brown or pale purple by transmitted light, 1–2 mm in diameter.

SEM aspects of spore surface ornamentation: composed of many fine spines 0.1–0.2 mm in diameter, 0.1–0.2 mm in height, numerous very fine hollows or fine reticulations without fine spines.

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Stemonitis ubifera Macbr.

Fructification: sporangiate, stipitate, clustered or gregarious, sometimes densely clustered, often recumbent. Sporangium: cylindrical, slender, obtuse at the apex, blackish brown or deep fuscous brown, $\frac{3}{4}$-$\frac{3}{8}$mm in diameter, $\frac{3}{4}$-$\frac{3}{8}$mm in heigt. Stalk: cylindrical, slender, rigid, expanded at the base, gradually tapering upwards, black or dark brown, shining, $\frac{3}{4}$-$\frac{3}{8}$mm in height. Peridium: often inconspicuous, fugacious. Dehiscens: irregularly breaking. Hypothallus: well developed, membranous, thin, round, purplish brown or silvery, shining. Columella: prominent, cylindrical, stout, gradually tapering upwards, reaching near the apex of the sporangium, divided into the capillitium, deep purplish brown or black, Capillitium: consisting of an internal network and a peridial network of branches. Branch: arising at the tip and around the surface of the columella, stout, tapering towards the tip, bearing broadened membranous expansions at the axil, branching and anastomosing to from an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium.
Mesh of internal network: large, irregular. Mesh of peridial network: complete, variable in shape and size, 10-20 μm in diameter, with many free-ends, purplish to fuscous brown. Spore: globose, minutely spinulose, often clustered 5-10 or more, dark brown or black in the mass, purplish gray or pale purplish brown by transmitted light, 10-20 μm in diameter.

SEM aspects of spore surface ornamentation: reticulated 10-20 μm in diameter, composed of a perforated wall about 2-5 μm in thickness, 10-20 μm in height, almost smooth without walls.

Localities collected: HTN 東京都 Osawayama, Umegadani, Shimizushi, Shizuoka pref., HTN 東京都 Chitosegaoka, Tsushi, Mie pref., HTN 東京都 Takaoyama, Nishitakatocho, Hisaishi, Mie pref., HTN 東京都 Hiyoriyama, Iwasakicho, Iseiki, Mie pref., HTN 東京都 Rurikei, Sonobecho, Funai gun, Kyoto pref., HTN 東京都 Tano, Takatsukishi, Osaka pref., GWM 美国 Iowa city, Iowa, USA.

World distribution: Africa, Asia, North America; India, Japan, Taiwan, USA.

Stemonitis virginiensis Rex

Fructification: sporangiate, stipitated, scattered or grouped in small clusters, Sporangium: cylindrical or elongated ovate, slightly acuminate at the upper portion, purplish brown, 10-20 μm in diameter, 10-20 μm in height. Stalk: slender, rigid, black, shining, 10-20 μm in diameter. Peridium: evanescent. Dehiscens: irregular. Hypothallus: membranous, round, thin, dark brown. Columella: prominent, cylindrical, gradually tapering upwards, reaching near the apex of the sporangium and divided into the capillitium, dark brown or black. Capillitium: consisting of an internal network and a peridial network of branches, Branch: arising at the tip and around the surface of the columella, tapering towards the tip, branching and anastomosing to form an internal network, more branching and more anastomosing to form a peridial network at the surface of the sporangium. Mesh of peridial network: close, slender, small, sometimes with spinules, sometimes incomplete, early falling at the upper portion of the sporangium, brown to dark brown. Spore: globose, marked with fine reticulations, brown in the mass, pale purplish brown by transmitted light, 10-20 μm in diameter.

SEM aspects of spore surface ornamentation: reticulated, 10-20 μm in diameter, composed of perforated tall walls about 2-5 μm in thickness and 10-20 μm in height, smooth without walls.

Species belong to the Genus *Stemonitis* were taxonomically and morphologically studied and following points were clarified in this study. Representative taxonomical characteristics of species are shown at Tab. These characteristics are very important to discuss in taxonomical classification.

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<th>Species</th>
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<th>Sporangium Size</th>
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<th>Sporangium Adhesion</th>
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<td>Usually curving</td>
<td>Clustered</td>
<td>Solitary</td>
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<tr>
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<td>Solitary</td>
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<td>Solitary</td>
</tr>
<tr>
<td>S. flavogenita</td>
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<td>Solitary</td>
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</tr>
<tr>
<td>S. fusca</td>
<td>Cylindrical</td>
<td>Rusty brown</td>
<td>Solitary</td>
<td>Clustered</td>
<td>Solitary</td>
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<td>Cylindrical</td>
<td>Deep brown</td>
<td>Clustered</td>
<td>Solitary</td>
<td>Solitary</td>
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<tr>
<td>S. hyperopta</td>
<td>Cylindrical</td>
<td>Light brown</td>
<td>Clustered</td>
<td>Solitary</td>
<td>Solitary</td>
</tr>
<tr>
<td>S. nigrescens</td>
<td>Cylindrical</td>
<td>Deep brown</td>
<td>Clustered</td>
<td>Solitary</td>
<td>Solitary</td>
</tr>
<tr>
<td>S. pallida</td>
<td>Cylindrical</td>
<td>Rusty brown</td>
<td>Solitary</td>
<td>Clustered</td>
<td>Solitary</td>
</tr>
<tr>
<td>S. smithii</td>
<td>Cylindrical</td>
<td>Deep brown</td>
<td>Clustered</td>
<td>Solitary</td>
<td>Solitary</td>
</tr>
<tr>
<td>S. splendens</td>
<td>Cylindrical</td>
<td>Light brown</td>
<td>Clustered</td>
<td>Solitary</td>
<td>Solitary</td>
</tr>
<tr>
<td>S. ubifera</td>
<td>Cylindrical</td>
<td>Rusty brown</td>
<td>Clustered</td>
<td>Solitary</td>
<td>Solitary</td>
</tr>
<tr>
<td>S. virginiensis</td>
<td>Cylindrical</td>
<td>Deep brown</td>
<td>Clustered</td>
<td>Solitary</td>
<td>Solitary</td>
</tr>
</tbody>
</table>

The shape of sporangium of the species is cylindrical and stipitated. In a long size of sporangium, usually it is curving from under to upper portion. A sporangium of *S. axifera*, *S. flavogenita*, *S. fusca* and *S. splendens* is conspicuously crowded but, a sporangium of *S. confluens* and *S. pallida* is solitary or gregarious. Usually many sporangia make a cluster, but each sporangium independently occurred, but sporangium of *S. nigrescens* is tightly adhesive each other. The color of a sporangium is classified roughly into two categories. One is deep to light brown, ferruginous or rusty brown as *S. axifera*, *S.
flavogenita and S. smithii. Another one is black or fuscous as S. confluens, S. fusca, S. nigrescens, S. splendens and S. ubifera. The average diameter of a sporangium of these species is \( \frac{3}{4} \text{mm} \). The diameter of a sporangium is \( \frac{3}{4} \text{mm} \) in a thin case, \( \frac{3}{4} \text{mm} \) in a thick case. The average length of a sporangium of these species is \( \frac{3}{4} \text{mm} \), \( \frac{3}{4} \text{mm} \) in short case, \( \frac{3}{4} \text{mm} \) in long case. Especially the sporangium of S. splendens is very long and it is up to \( \frac{3}{4} \text{mm} \). The average length of stalk of these species is \( \frac{3}{4} \text{mm} \), \( \frac{3}{4} \text{mm} \) in short case, \( \frac{3}{4} \text{mm} \) in long case. The stalk of S. pallida is comparatively long against the length of sporangium. The diameter of a mesh of capillitial threads is varied in every species. It is averagely \( \frac{3}{4} \text{mm} \) in diameter. The mesh of S. fusca, S. flavogenita or S. herbatica is smaller, \( \frac{3}{4} \text{mm} \) in diameter. The mesh of S. splendens and S. ubifera is evidently larger, about \( \frac{3}{4} \text{mm} \) in diameter. The spore shape of these species is globose. The average diameter of a spore is \( \frac{3}{4} \text{um} \), the spore of S. axifera and S. smithii is smaller than another species. The spore of S. fusca, S. confluens and S. ubirera is larger than another species. Each spore of most species is usually not combined as a cluster, but the spore of S. ubirera and S. confluens is usually or very often united in a cluster. Spore is very small, \( \frac{3}{4} \text{mm} \) in diameter and the fine surface ornamentation of a spore could not be found by a light microscopy. It was used a scanning electron microscopy to observe a fine surface ornamentation. As the result, it was confirmed three types of wart, spine and fine reticulation on a spore surface. Wart type is S. axifera, S. herbatica, S. pallida and S. smithii. Spiny type is S. confluens, S. flavogenita and S. splendens. Fine reticulated type is S. fusca, S. hyperopta, S. nigrescens, S. ubifera and S. virginiensis. Martin and Alexopoulos (1962) reported that S. ubifera has wart ornamentation, but it was confirmed reticulation patterns on a surface in this study. About the surface without a spine, a wart and a reticulation, S. pallida has no ornamentation and smooth, S. confluens and S. flavogenita has numerous fine hollows, S. axifera, S. smithii and S. splendens have numerous fine hollows and fine vein-like ridges that form fine reticulations. The arrangement of collection localities of these species in Japan and some foreign countries are taken in this study. The numbers of collection points are shown at Tab. Specimens of S. splendens, S. fusca and S. axifera were collected at so many places of \( \frac{3}{4} \text{localities} \) or more. The adaptability of this species might be high accommodation to environmental factors. S. flavogenita, S. herbatica and S. pallida were collected about \( \frac{3}{4} \) points. The adaptability of these species might be a little less than former species. The collection numbers of S. nigrescens and S. ubifera is extremely less than other species. It means that the development and its growth of these species strongly controlled in a locality. The arrangement of world distributions of these species is also taken out in this study under the representative six literatures. Literatures for a world disturbibution has reported from everywhere of the world. It is not enough to mention the distribution using only these literatures, but the representative literatures were used in this study and it might be indicated enough approximate condition of a world distribution. As this result, it is indicated that S. splendens and some species are worldwide distribution species and S. ubifera and some species are regulated species to develop in the world. The number of world distributions has a correlative relation with a number of localities in Japan, and species which
develop worldwide also occurs a lot in Japan.


Thind, K. S. The Myxomycetes of India. 219pp. New Delhi.

A Study of Taxonomy and Distributions of Genus Stemonitis (Myxomycetes)

黒entina属（変形菌）の分類学的・分布学的研究

羽多野 隆 美

（平成 年 月 日受理 最終原稿平成 年 月 日受理）

【要旨】
黒entina属の変形菌黒entina種の胞子囊について分類学的な特徴の解析を行い、これらの特徴を明らかにした。本研究は変形菌の本属を分類学的に研究する上できわめて重要である。また、産地学的検討を行い、これらの種がどの地域で発生や生育しやすいかについての検討をおこなった。このことは変形菌の分布を明らかにする上で大変重要である。以上のように精査して検討した結果、次のことを明らかにすることができた。

黒entina属の変形菌黒entina種の胞子囊の直径は、高さは、柄の長さは、細毛体の網目の直径は、胞子の直径はであった。
胞子囊はS. axiferaのように群生するものの、S. pallidaのようにまばらに生育するものなどがあった。単独で生育する種は認められなかった。胞子表面の細部を走査型電子顕微鏡で観察した結果、胞子の表面には、いち形突起（黒entina種）、トゲ状突起（黒entina種）、帯状隆起による網状突起（黒entina種）があることが確認された。胞子の突起のない表面部分は、平滑なもの、微孔を有するもの、微細な鋭状隆起による網状構造のあるもの等存在することがわかった。

日本国内における採集地を精査して、それぞれの種の生育地を明らかにした。S. fuscaなどは環境に対する適応性が高く多くの生育地が認められた。S. herbaticaなどは採集個体数も少なく環境に対する適応性が低いことが予想された。世界各地からの代表的な研究報告をもとに本研究で取り扱った黒entina種の世界における分布状態を整理した。この結果、S. splendensは世界共通種であること、S. ubiferaは生育環境が極めて限定されていることがわかった。世界において幅広く生育する種は日本においても各地で幅広く生育していることが確認された。

キーワード：変形菌、Stemonitis属、分類、胞子囊、分布