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FOUR SPECIES OF THE MYXOMYCETES RECORDED FROMANUDEVI FOREST DIST JALGAON, MAHARASHTRA (INDIA)

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Abstract

During the floristic study of the myxomycetes of this region author come across a number of myxomycetous species. In the present paper four genera with their single species are being described for the first time from this region i.e.1. *Ceratiomyxa fruticulosa* (Mull.) Macbr.2. *Lycogala epidendrum* (L.) Fries. 3. *Arcyria cinerea* (Bull.) Pers. and 4. *Hemitrichia serpula* (Scop.) Rost.

Key Words: Myxomycetes, slime moulds.

Introduction

The Myxomycetes or 'the true slime – moulds' are the fungi like organisms, possess an assimilative phase of free living, multinucleate, mobile mass of protoplasm called as the plasmodium, and a sporulating phase consisting of a mass of spores typically borne in a simple or complex membranous or tough, non-cellular spore case. In addition to spores, often there is a system of free or netted threads forming a capillitium or pseudocapillitium. Manudevi forest the region under investigation is very rich in biodiversity-constitute the districts Jalgaon. The study of myxomycetes was practically neglected from this region. Hence, it was felt to undertake the study.

Materials And Methods

The present work is based on myxomycetous floristic exploration from the region. An extensive and intensive field work was undertaken to collect the maximum number of specimens of myxomycetes. Visits to different localities were made frequently. Localities for visit were selected so as to cover the maximum representation of the area under investigation.

Repeated visits were made to some of the localities for the collection of the specimens. Specimens were collected along with their natural substrates. For the preservation of specimens, empty cigarettes boxes found to be very suitable, convenient, easily available, easy to handle and economical. Paper trays of the proper size were prepared so as to get it fit inside the box tray. As per the spreading of the specimen, its natural substrate was cut into suitable size and glued with the fevicol adhesive in the centre of the paper tray. Each box was provided with field notes of respective specimen. The accession number was written on the specimen box and on the paper tray also, and entered in accession register .After observation; specimen boxes were stored and placed in 'Generic' boxes provided with naphthalene ball to prevent insect entry. Generally specimen boxes were carried to the field to preserve the specimen intact. Sometimes because of heavy collection, specimens were brought to the laboratory on their natural substrate, in a special handling basket, so as not to disturb them. Then they were preserving. In rainy season, the collected specimens were dried in the incubator or and oven at 40'o c. But sun drying was found to be most suitable for maintaining natural characters. Artificial drying sometimes leads to the shrinkage of weak and flaccid stalk, hardening of wet sporangia and cracking of peridium.All the specimens were identified and confirmed with the help of Martin and Alexopoulos (1969) sometimes, Lister (1925),Hagelstein (1944), Farr (1976), were followed. Monographs on Indian Myxomycetes of Thind (1977), Lakhanpal and Mukerji (1981), were of almost indespensible for final confirmation. Concerned literature in this regards were also studied.

Results And Discussion

CERATIOMYXA FRUTICULOSA (Mull.) Macbr.

N. Amer. Slime-Moulds, p. 18, 1899.

Martin, G. W. and C. J. Alexopoulos, **The Myxomycetes,** p. 33-34, 1969.

(PL. I FIG. 1)

Fructification pearly white, in cluster, forming wooly colony. Sporophore 0.40 to 3.0 mm tall, weak, erect or prostrate, hallow, cylindrical, thin walled, broader at the base, 2 to 6 times dichotomously branched, intertwining of fine branches arise just above the base of the sporophore, expanded at dichotomy, bearing clusters of fine branches above, appearing spongy, fine branches with pointed or blunt apex. The entire sporophore is covered with spicules from base to tip on which single spore is borne externally. Spicule hyaline, slender,

pointed, 12.5 to 17 µm long, thin walled, arising from the centre of hexagonal base. Spore-mass pallid, hyaline under transmitted light, globose or oval, thin walled, smooth, 4.1-6.9 x 5.5-11.1 µm in diameter.

Collections Examined: NVC/ 108 ,109,110 Aug. 2015, Manudevi dist Jalgaon. On decaying wood.

Distribution : India : Assam (Chinnapa, 1957 ; Agnihothrudu, 1958) ; Gujrat (Salunkhe, 1995) ; H. P. (Thind and Mann, 1960) ; M.S. (Rokade, 1989 ; Chimankar, 1993 ; Jadhav, 1994; Tembhurne, 2011); M. P. (Kharat, 2000) ; Orissa (Ghosh & Datta, 1960) ; W. B. (Bruhl & Gupta, 1927 ; Thind & Rehill, 1954 ; Thind and Sehgal, 1957).

The present population is similar to Indian population described by Thind and Rehill (1957) for the variety *arbuscula* Berk. And Br., with respect to size of sporophore and braching.

C.fruticulosa (Mull.) Macbr. is marked by white to pearly white, dendroid sporophore in cluster forming wooly colony. Sporophore weak prostrate to erect, cylindrical, dichotomously branched. The entire sporophore is covered with spiny spicule. Each spicule bear single spore externally. Spicule are hyaline, arising from hexagonal base. Spore pallid in mass, hyaline under transmitted light, spore globose or oval. This species is encountered as a mould-like growth on decaying wood. Fructification are usually branched from the base into a small cluster of erect pillars. These pillars (sporophores) remaining simple or become branched and dendroid.

Fructification of *C. fruticulosa* (Mull.) Macbr., shows quite a variety of form as regards in size and branching, and this led to the recognition of its varieties (Lister & Lister, 1925 ; Macbride & Martin, 1934). These varieties are not tenable and represent simply different phase of growth of *C. fruticulosa* (Mull.) Macbr., under different environmental conditions (Hagelstein, 1944 ; Martin, 1949).

2. ***LYCOGALA EPIDENDRUM*** (L.) Fries.

Syst. Myc. **3**, 80, 1829.

Martin, G. W. & C. J. Alexopoulos, **The Myxomycetes**, p. 63-64, 1969.

(FIG. 2)

Fructification aethaloid, grouped on colony, globose to subglobose, grayish to olive brown, 2.5 – 6.9 mm in diameter, and 2.2 – 5.6 mm in height. Cortex thick, leathery, opaque, covered with blackish brown to honey coloured, scattered, circular or discoid, lobed or elongated scales which are upto 1.0 mm in diam.; dehiscence irregular from upper side. Pseudocapillitium abundant, subhyaline to ochraceous, tubular, sparingly branched, marked with transverse folds, unequal in thickness, 2.7 – 12.5 µm in wide, with large swelling and blunt to clavate free ends. Spore grayish brown in mass, ochraceous under transmitted light, globose, 4.2 – 7 µm in diam., reticulate to subreticulate.

Collection Examined: / NVC 101102,103 Aug.- 2015 , Manudevi , dist. Jalgaon. On decaying wood.

Distribution : India : Assam (Agnihothrudu, 1959) ; Gujrat (Salunkhe, 1995) ; H.P. (Thind & Lakhanpal, 1968 ; Lakhanpal and Mukerji, 1981, 1983) ; Kashmir (Thind, 1977) ; Karnataka (Agnihothrudu, 1966) ; M.P. (Kharat, 2000) ; M.S. (Rokade, 1989 ; Chimankar, 1993 ; Jadhav, 1994) ; T.N. (Thind, 1977) ; U.P. & W.B. (Lodhi, 1934).

Lycogala epidendrum (L.) Fr., is characterized by scattered, globose to subglobose, aethalia look like puffball. Cortex thick, covered with blackish brown to honey coloured scale. Dehiscence irregular from upper side. Pseudocapillitium tubular, sparingly branched. Spore brown in mass, globose, reticulate or subreticulate, 4 – 7 µm in diam.

L. epidendrum (L.) Fr. can be compared with *Lycogala conicum* Pers. However later is marked by conical fruiting, capillitum lax, lacking reticulate marking on the cortex and in the possession of brown pseudocapillitial threads marked by faint transverse wrinkles. and spore 5 – 6 um in diam.

3. ***ARCYRIA CINEREA*** (Bull.) Pers.

Syn. Fung., p. 184, 1801.

Martin, G. W. & C. J. Alexopoulos, **The Myxomycetes**, p. 124-125, 1969.

(FIG. 3)

Fructification sporangiate, stipitate, scattered to gregarious, sometimes 2 – 8 sporangia are fascicled or clustered on fused common stalk, grayish –white to ash coloured or cinereous, 1.1 to 2.6 mm tall. Sporangia cylindric, subcylindric or ovate, with obtuse apex,

0.63 – 1.6 x 0.3 – 0.75 mm in diam. Stipe cylindrical, vertically rugose, blackish brown, sometime concolorous to fruiting, 0.4 – 1.2 mm long, expanded at apex forming calyculus, filled with spore like vesicles of 7.9 – 20.8 µm in diam. Hypothallus distinct concolorous to stipe, small, rotate, thin, shining. Peridium early evanscent, often persistent as flakes attached to calyculus ; calyculus concolorous to stipe, shining, small, shallow, externally vertically rugose with dentate margin, inner surface echinulate or warted, 0.24 to 0.35 mm in diam. Capillitium profuse, more or less elastic, firmly attached to the centre of calyculus, long, slender, branched and anastomosing forming network of irregular meshes, threads cinereous marked with spines and rings, also with spindle or rectangular swellings at the junction, free ends blunt or rounded. Spores bluish white in mass, subhyaline under transmitted light, globose, 5.5 – 8.5 µm in diam., marked with few scattered warts, appearing nearly smooth.

Collection Examined: NVC/ 106, 107 Aug. 2015, Manudevi, dist. Jalgaon. On decaying wood.

Distribution : India : Assam (Agnihothrudu, 1959) ; Delhi, (Lakhanpal & Mukerji, 1981) ; Gujrat (Salunkhe, 1995) ; H. P. (Lakhanpal, 1973) ; U. P. (Thind & Sohi, 1956) ; Karnataka (Indira, 1968) ; M. P. (Kharat, 2000) ; M. S. (Nanir, 1984 ; Rokade, 1989 ; Chimankar, 1993 ; Jadhav, 1994; Tembhurne, 2011) ; Orissa (Ghosh & Dutta, 1962) ; T. N. (Agnihothrudu, 1954) ; W. B. (Bruhl & Gupta, 1927 ; Lodhi, 1934).

Extremely variable, species showing all the gradation of characters, from small globose to long subcylindric, scattered to fascicled sporangia, whitish to yellowish in colour ; capillitium marked with spined rings. Sometimes aggregation of one variable would tempt to segregate the population from species complex.

Arcyria cinerea (Bull.) Pers., is compared with *A. promiformis* (Leers) Rost. In *A. promiformis* (Leers) Rost. Sporangia are yellow, more or less ovoid, scattered to clusterd ; short stipitate ; capillitium expands laterally occasionally with clavate or rounded free ends.

4. ***HEMITRICHIA SERPULA*** (Scop.) Rost.

In Lister, **The Mycetozoa,** p. 179, 1894.

Martin, G.W. & C. J. Alexopoulos, **The Myxomycetes**, p. 152-153, 1969.

(FIG. 4)

Fructification plasmodiocarpous, Plasmodiocarps large, branched forming net upto 30.5to 40.5 mm across, bright yellow, to golden yellow, terete ; strands, 0.12 to 0.20 mm wide. Hypothallus inconspicuous. Peridium single, thin, membranous, transparent, thicker and darker towards the base; dehiscence irregular from upper portion, lower portion persistent. Capillitium abundant, yellowish brown to golden yellow, elastic, filamentous, sparsely branched, coiled, filament 3.9 to 12.3 µm in diam., marked with 3 to 6 spiral bands which are connected by striae and bearing prominent straight or curved spines of 2 to 4 µm long, ends of filament blunt or pointed with 3 to 4 spines at the tip. Spore-mass yellow or golden yellow, pale yellow under transmitted light, globose, 11.1 to 15.1 µm in diam., banded reticulate, reticulation complete, coarse, meshes unequal in size.

Collection Examined: NVC/ 104, 105 Aug. 2015, Manudevi, dist. Jalgaon. On dry leaf and decaying wood.

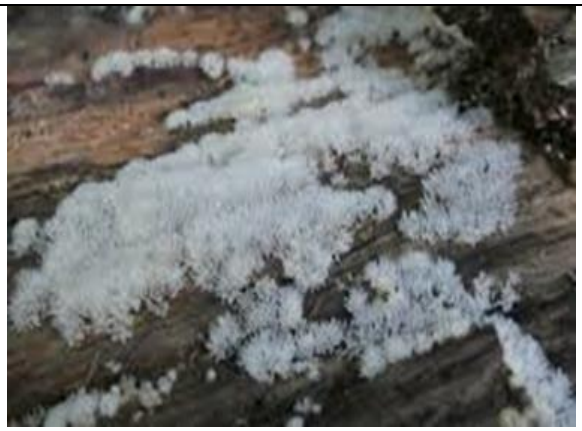
Distribution : India : Assam (Agnihothrudu, 1959) ; Delhi (Singh and Pushpavathy, 1965) ; Gujrat (Salunkhe, 1995) ; H. P. (Lakhanpal, 1974) ; M.S. (Nanir, 1983, 1992 ; Rokade, 1989 ; Chimankar, 1993 ; Jadhav, 1994; Tembhurne, 2011); M. P. (Kharat, 2000) ; Orissa (Ghosh and Dutta,1961) ; U.P. (Thind and Sohi, 1956) ; W. B. (Lodhi, 1934).

H. serpula (Scop.) Rost., appears to be widely distributed in India. It is easily recognized by large, yellow, completely netted plasmodiocarps, spinulose capillitium and with 3-6 spiral, reticulate spores. The spiral bands on capillitium are usually narrow and often interconnected by profuse striae. The reticulate bands on the spores are complete and marked by a few pits.

Literature Cited

1. Dhillon SS and NE Nannanga-Bremekamp, 1978. Notes on some Myxomycetes from North-west part of the Himalaya. K .Ned. Akad. Wet. Proc. C, 81: 141-149.
2. Farr ML, 1976. Flora Neotropics, Mon . 16. Myxomycetes. The New York Bot . Gard . N . Y .Hagelstein R, 1944. The Mycetozoa of N. America , Publ. by Autor Mineola. New York.
3. Kowalski DT, 1970. A new Folicolous species of Licea .Mycologia, 62: 1057.
4. Lakhanpal TN and KG Mukerji, 1981. Indian Myxomycetes . J . Cramer . pp . 530 .

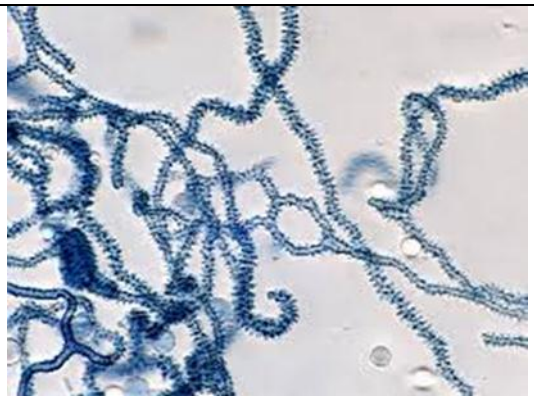
5. Lister A and G, 1925. A Monograph of Mycetozoa. By A. Lister, 1984 (ed . 2 .,1911; ed . 3, 1925, revised by G , Lister) British Museum (Natural History) London.
6. Martin GW and CJ Alexopoulos, 1969. The Myxomycetes , Iowa City press.
7. Martin GW., CJ Alexopoulos and ML Farr, 1983. The Genera ofMyxomycetes. Univ. Iowa Press. Iowa City
8. Nanir SP, 1985. Contribution to the knowledge of Myxomycetes from India-III B. Indian bot. Reptr., 4(1):42- 45.
9. **Nanir SPand BG Rokade, 1987.** Myxomycetes of Marathwada-I (Ceratiomyxomyxales, Liceales and Trichiales) *Mar. Univ. Jour. Sci*. p. **12**.
10. **Nanir SP and BG Rokade, 1993.** Myxomycetes of Jalgaon and Dhule District (Khandesh): India. *Abst. N. C. R.A. P. Pp.* **14**. Abs .



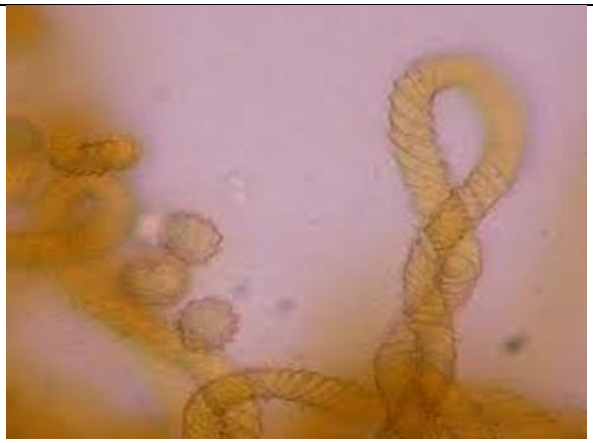
1.Ceratiomyxa fruticulosa (Mull.) Macbr. Habit

2. Lycogala epidendrum (L.) Fries. Habit

a. Arcyria cinerea (Bull.) Pers Habit



b.Capillitium and spores

	
a. Hemitrichia serpula (Scop.) Rost. Habit	**b. Capillitium and spores**