

## The myxomycetes of south-east Maharashtra (India)

Tembhurne R.R.<sup>1</sup>, S. P.Nanir<sup>2</sup>, Sahera Nasarin<sup>3</sup>

<sup>1</sup>Sangola College, Sangola Dist. - Solapur (M. S.) 413307

<sup>2</sup>Former Director Govt. Institute of Science Aurangabad (M. S.) 431004

<sup>3</sup>Head Dept. of Botany Govt. Institute of Science Aurangabad (M. S.) 431004

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**Abstract**—During the floristic study of the myxomycetes of this region author come across a number of myxomycetous species . In this study four species of myxomycetes are being discussed . *Didymium* Schrad., are being discussed with four species. All species are being reported for the first time from this region.

**Keywords**—Myxomycetes , slime moulds

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### I. 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 . South-West of Maharashtra –the region under investigation is very rich in biodiversity-constitute the districts Solapur , Satara , Sangli and Kolhapur . The study of myxomycetes was practically neglected from this region . Hence , it was felt to undertake the study . Out of the investigates carried out , it is the fourteenth paper in this series in which , about four species belongs from single genera are being discussed as under .

### II. MATERIAL AND METHOD

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 cegarates 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 preserved.

In rainy season , the collected specimens were dried in the incubator or and oven at 40°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 ), Hagedorn ( 1944 ), Farr ( 1976 ), were followed . Monographs on Indian Myxomycetes of Thind ( 1977 ), Lakhanpal and Mukerji ( 1981 ), were of almost indispensible for final confirmation . Concerned literature in this regards were also studied.

### III. RESULT AND DISCUSSIONS

1. *Didymium Simlensis* Lakhan. & Muker.*Rev. de Mycologia*, **62**, 1061, 1066, 1970.

**Collection Examined:** RRT/ 8304, 8195, Aug.-2004, Pachagani, Dist.-Satara. On dry leaves of angiospermic plants.

**Distribution : India :** H. P. (Lakhanpal & Mukerji, 1979) ; M. S. (Rokade, 1989) ; M. P. (Kharat, 2000).

The species is characterized by hemispheric to depressed globose sporangia ; stipe cylindric, thick ; hypothallus venulose ; peridium single ; columella prominent, discoid ; capillitium threads flexuous, tips paler ; spores prominently warted, warts in lines forming subreticulations.

The species is closely related to *D. intermedium* Schroet., in having lime duplex in peridium and stalk, strongly warted, subreticulate spores. However distinguished from it by the presence of white, limy, rotate, hypothallus, scattered sporangia and flattened well developed columella. It is also close to *D. squamulosum* (Alb. & Schw.) Fr., but differs it in having duplex lime, smaller columella and strongly warted, subreticulate spores.

2. *Didymium Squamulosum* (Alb. & Schw.) Fries *Symb. Gast.*, p. 19, 1818.

**Collection Examined:** RRT / 8020, 8279, Sept.-2003, Panhala, Dist.-Kolhapur ; 8241, 8245, 8248, 8259, 8260, 8261, 8265, 8269, 8271, 8276, 8277, 8289, 8298, July-2004, Chandoli ; 8510, Aug.-2005, Atapadi, Dist.-Sangli ; 8253, 8212, Aug.-2004, Pachagani, Dist.-Satara ; 8359, Aug.-2004, Pandharpur, Dist.-Solapur. On dry and decaying leaves and twigs of aniospermic plants.

**Distribution : India:** Delhi (Singh & Pushpavathy, 1965 ; Lakhanpal & Mukerji, 1981) ; Gujrat (Salunkhe, 1995) ; H. P. (Lakhanpal, 1973 ; Thind, 1977) ; Punjab (Thind, 1977) ; T. N. (Agnihotrudu, 1956) ; U. P. (Lakhanpal & Mukerji, 1981 ; Thind & Sohi, 1956 ; W. B. (Lodhi, 1954 ; Thind, 1977 ; M. P. (Kharat, 2000) ; M. S. (Nanir, 1978 ; Rokade, 1989 ; Chimankar, 1993 ; Jadhav, 1994).

The species is characterized by depressed globose, white, umbilicate, sporangia; short, stout, rugose, limy stipe; small, rotate, venulose, limy hypothallus; globose or hemispheric columella ; and verrucose spores. *D. squamulosum* (Alb. & Schw.) Fries is closely allied to *D. intermedium* Schroet, which, however, possesses a prominent, branching hypothallus, giving rise to clusters of sporangia, two types of crystals, and spiny, subreticulate spores. It is also close to *D. muscorum* Lakhan. and Mukerji is differentiated in its rotate, thin, smooth or venulose hypothallus ; sometimes more than two sporangia fused together ; stipe vertically rugose ; peridium stellate lime crystals forming thick corrugated crust ; capillitium hyaline or pale brown ; columella globose to hemispheric ; spores strongly warted, warts in small lines and clusters and *D. thindii* Rokade & Nanir, sp. nov. is distinguished by its hypothallus rotate, venulose or smooth when isolated, branched, stranded and raised between sporangia ; scattered sporangia ; stipe longitudinally rugose ; peridium with lime crystals deposited forming uniform rough surface layer ; capillitium dar brown ; columella flat ; spores often with papillae, warted, warts unequal in length, sparsely and unevenly distributed forming clusters and lime of warts.

3. *Didymium thindii* Nanir & Rokade sp. nov.

**Collection Examined:** RRT / 8238, Sept.-2003, Panhala, Dist.-Kolhapur. On dry angiospermic leaves.

**Distribution : India :** M. S. (Rokade, 1989 ; Jadhav, 1995).

*D. thindii* Rokade and Nanir, sp. nov., is distinguished by : 1) depressed globose or discoid sporangia with upper depression, narrow stipe and deep umbilicus below, 2) lighter, more or less rugose weak short stipe, embedded in narrow umbilicus, 3) discoid and lighter columella contain rhomboidal lime crystals, 4) capillitium with cross bars at the bases and tips flattened, 5) peridium floccose towards the upper half, 6) spores often papillate, 10-13 µm in diam., prominently warted with clusters and lines of warts.

*Didymium thindii* Rokade and Nanir, sp. nov. is close to *D. floccosum* Martin, Thind & Rehill, in the nature of floccose peridium, limy stipe, indistinct hypothallus and spore marks, but differentiated by its shorter fruiting and smaller sporangia, lighter stipe and columella, larger spores. The species also shows some resemblances with *D. squamulosum* (Alb. & Schw.) Fr., *D. muscorum* Lakhan. & Muker and *D. simlensis* Lakhan. & Muker. From *D. sqamulosum* (Alb. & Schw.) Fries, *D. thindii* Rokade and Nanir, sp. nov. is differentiated in its smaller and week stipe, lime deposition on peridium, half floccose peridium, swellings of capillitium threads, lime in columella and larger spores. *D. muscorum* Lakhan. & Muker is differentiated by its frequent sessile habit, globose sporangia, corrugated lime deposition, iridescent peridium, truncate or clavate columella. *D. simlensis* Lakhan. & Muker. is segregated in its slilghtly umbilicate sporangia, columella as a thickened sporangial base, smaller spores, stout and narrow stipe.

4. *Didymium verrucosporum* Welden *Mycologia*, 46, 98, 1954.

**Collection Examined:** RRT / 8252, 8282, Sept.-2003 ; 8240, Aug.-2003, Panhala, Dist.-Kolhapur ; 8297, Aug.-2004, Pachagani, Dist.-Satara ; 8466, 8506, 8509, 8512, Aug.-2005, Atapadi, Dist.-Sangli ; 8472, July-2005, Malsiras ; 8507, July-2005, Natepute, Dist.-Solapur. On dry leaf, twigs and straw of angiospermic plants.

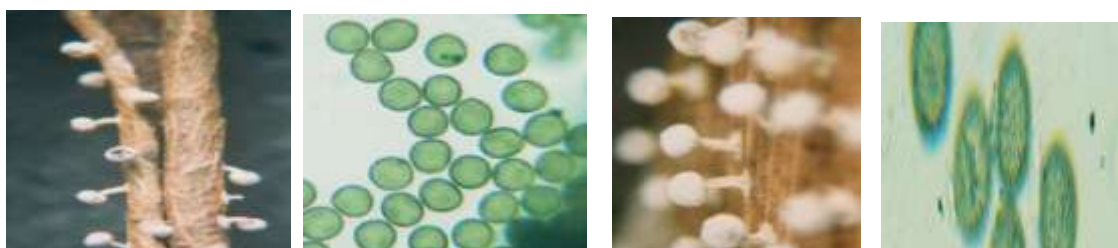
**Distribution : India :** Delhi & H. P. (Lakhanpal, 1973) ; M. P. (Kharat, 2000); Gujrat (Salunkhe, 1995) ; M. S. (Nanir, 1978) ; Rokade, 1989 ; Chimankar, 1993 ; Jadhav, 1994).

*D. verrucosporum* Welden is the member of *D. nigripes* (Link) Fries complex. It is differentiated in its pure white columella and delicate colourless peridium. From *D. iridis* (Ditm.) Fr. it is marked by darker and

strongly warted spores with cluster and lines of warts. The species can be characterized by its nodding sporangia, long, slender subulate stipe, darker towards the base, yellow brown or violaceous capillitium bearing swellings and distinctly warted spores with clusters and lines of warts. Lakhnupal (1973) described the species for the first time from India, in which he did not mention the lines of warts on spore.

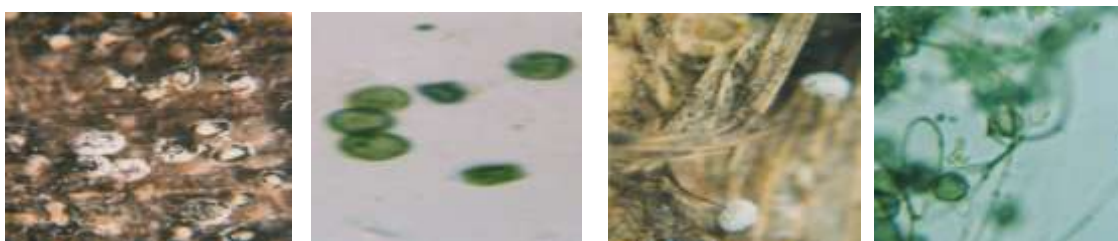
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1. *Didymium simlensis*

2. *Didymium squamulosum*



3. *Didymium thindii*

4. *Didymium verrucosporum*