

## New Five Species of the Myxomycetes recorded from the South-East Region of 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. *Physarum* Pers., are being discussed with five species, *Physarum panchaganiensis* Nanir & Tembhurne sp. nov. marked by its fruiting sporangiate sessile, peridium double; *Physarum panhalensis* Nanir & Tembhurne sp. nov. sporangiate fruiting and short plasmodiocarp, pearly white; *Physarum pusillum* (Berk & Curt.) G. Lister globose or slightly flattened sporangia, cylindrical stalk; *Physarum tessellatum* Martin & Farr sessile sporangia, capillitium abundant and *Physarum vernum* Somm. Ex. Fries fructification sessile sporangiate to plasmodiocarps, grayish white. All species are being reported for the first time from this region.

**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. 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, about nine species belongs from five genera are being discussed as under.

### MATERIALS 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 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 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), Lister (1925), Hagelstein (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.

## RESULTS AND DISCUSSION

**1. *Physarum pachaganiensis*** Nanir & Tembhurne sp. nov.

**COLLECTION EXAMINED:** RRT/ 8236, Aug.-2004, Pachagani, Dist.-Satara. On living angiosperm leaves.

**DISTRIBUTION: INDIA:** M. S.

Distinct features of the species are – 1) fruiting sessile. 2) sporangia ovate to heart shaped. 3) yellow in colour. 4) peridium double, both the layer appressed, smooth. 5) capillitium with small limy nodes. 6) hypothallus absent. 7. spores large 11 – 14 µm in diam., with compression and equatorial ridge.

*Physarum pachaganiensis* Nanir & Tembhurne sp. nov.; is marked by fruiting sporangiate sessile; sporangia clusters with turmeric yellow; peridium double; hypothallus inconspicuous; capillitium lax, nodes white; spore black in mass, violaceous brown by transmitted light. *Physarum* spp-II is compared with *Physarum leucophaeum* Fries. However *Physarum leucophaeum* Fries is characterized by fruiting sporangiate stipitate; sporangia scattered with grayish white; Peridium single; hypothallus prominent; capillitium abundant nodes pinkish white; spore brown in mass, pinkish brown by transmitted light.

As there are specimens, it is pending for further investigation and collection of more samples.

**2. *Physarum panhalensis*** Nanir & Tembhurne sp. nov.

**COLLECTION EXAMINED:** RRT/ 8021, July-2003, Panhala, Dist.-Kolhapur.

**DISTRIBUTION: INDIA:** M. S.

Distinct feature of the species are – 1) fruiting sporangiate and short plasmodiocarps. 2) milky or pearly white. 3) peridium smooth folded or corrugated, thick, milky or pearly white. 4) heavy deposit of lime at folds. 5) massive deposition of pearly white hypothallus which form more or less cushion below the fruiting and extend beyond fruiting. 6) nodes are large and mostly globose discoid and smooth.

In spores character and fruiting habit it is very close to *P. cinereum* Schum., *P. ovisporum* G. Lister, *P. vernum* Somm. ex Fries and *P. sessile* Brandza. But none

of these species have the characters of peridium, hypothallus and nodes exhibited by this species.

As there is an only single specimen, it is pending for further investigation and collection of more samples.

**3. *Physarum pusillum*** (Berk & Curt) G. Lister

*Mycetozoa*, 2<sup>nd</sup> ed., 64, 1911.

**COLLECTION EXAMINED:**

RRT / 4341, Sept.-2004, Kolegaon, Dist.-Solapur; 8453, Aug.-2005, Khanapur, Dist.-Sangli. On dry leaves and straw of angiospermic plant.

**DISTRIBUTION: INDIA:** Delhi, H.P. (Lakhanpal and Mukerji 1981); Gujrat (Salunkhe 1995); M.P. (Kharat 2000); M.S. (Patil and Mishra 1977; Nanir 1978; Rokade 1989; Chimankar 1993; Jadhav 1994), Punjab, W.B. (Thind 1977); T.N. (Indira 1975); U.P. (Thind and Manocha 1957).

The species can be distinguished by its globose or slightly flattened sporangia with brown or orange thickened base; thin peridium; cylindrical stalk; absence of columella or pseudocolumella; spores 9-12 µm in diam. Thind (1977), reported spore size upto 13 µm, with clusters of warts and fruiting upto 1.8 mm tall. The populations studied in the present work are quite similar to Indian population.

*P. pusillum* (Berk. & Curt.) G. Lister can be compared with *P. dudlianum* Lakhanpal & Mukerji. However, *P. dudlianum* Lakhanpal & Mukerji, is characterized by prominent pseudocolumella, depressed globose umbilicate sporangia, long capillitial nodes and larger and less prominently marked spores.

**4. *Physarum tessellatum*** Martin & Farr

*Lloydia*, **22**, 300, 1960.

**COLLECTION EXAMINED:**

RRT / 8043, 8335, 8380, Sept.-2003, Panhala, Dist.-Kolhapur; 8477, Oct.-2005, Pratapagad, Dist.-Satara. On dry leaves and bark of angiospermic plants.

**DISTRIBUTION: INDIA:**

Delhi (Thind, 1977); Gujrat (Salunkhe 1995); H.P. (Lakhanpal & Mukerji 1983); M. P. (Kharat 2000); M. S. (Jadhav 1994).

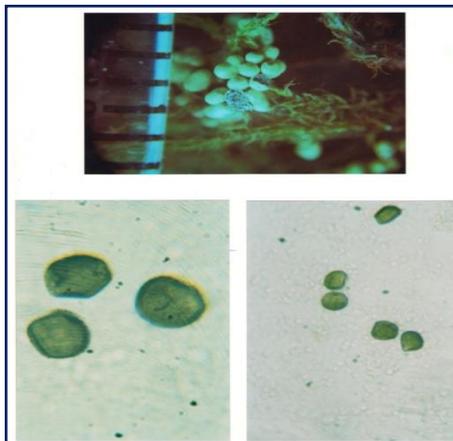
*P. tessellatum* Martin & Farr and *P. spumarioides* Lakhanpal & Mukerji, are close in habit and absence of columella. *P. tessellatum* Martin & Farr, is marked by sessile sporangia, the capillitium is abundant, peridium double, columella absent, spore mass brown, spores distinctly warted with compression ridges. *P. spumarioides* Lakhanpal & Mukerji, is differentiated by, the scanty capillitium, single peridium, well developed pseudocolumella, spore mass black, prominently warted with conspicuous lines of warts.

**5. *Physarum vernum*** Somn.ex. Fries  
in Fries Syst. Myc, 3, 146, 1829.

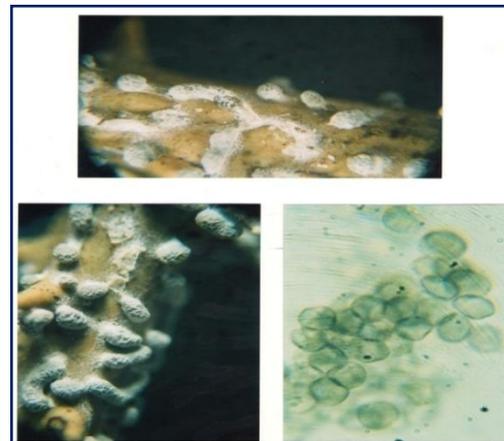
**COLLECTION EXAMINED:** RRT / 8312, 8376, July – 2004, Kolegaon, Malsiras, Dist.-Solapur; 8452, 8464, 8497, Aug. - 2005, Khanapur, Dist. - Sangli; 8496, July-2005, Malsiras, Dist. - Solapur. On dry leaf, root and straw of angiospermic plant.

**DISTRIBUTION : INDIA :** Delhi (Singh and Pushpavathy 1966); H. P. (Lakhanpal 1973); Karnataka, (Indira 1968); M.P. (Kharat 2000); M. S. (Rokade 1989; Chimankar 1993; & Jadhav 1994); Gujrat (Salunkhe 1995); T. N. (Agnihotrudu 1954); U. P. (Thind and Manocha 1957); Lodhi (1934).

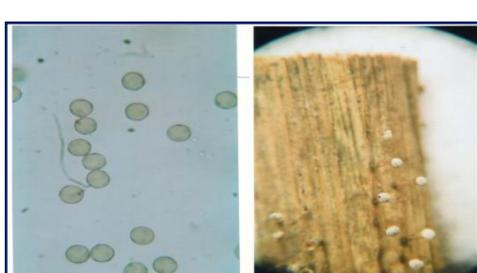
Fig. 1: Photo plate New Five Species of the Myxomycetes



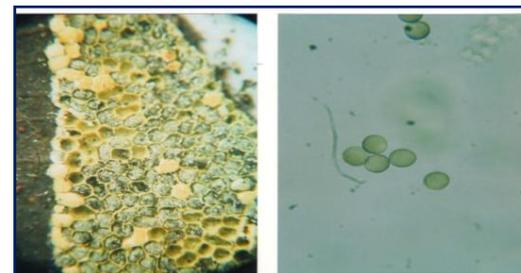
1. *Physarum panchaganiensis*



2. *Physarum panhalensis*



3. *Physarum pusillum*



4. *Physarum tessellatum*

Comparative comparison and similarities of *P. vernum* Somn. ex. Fries, *P. ovisporum* Lister and *P. cinereum* (Batch) Per. *P. vernum* Somn. ex. Fries, marked by fructification sessile sporangiate to plasmodiocarpous, grayish white to ash colored, scattered to gregarious; Plasmodiocarp small, rarely branched, terete: Sporangia globose, subglobose or ellipsoidal on broad base; Hypothallus inconspicuous; Peridium single; Columella absent; Capillitium abundant; Spores dark violaceous brown in mass, minutely and uniformly warted, warts in small lines, *P. cinereum* (Batch) Per. characterized by fructification sporangiate to plasmodiocarpous, white to grayish white, scattered to gregarious; Plasmodiocarps small, straight or curved with few branched, small segmented, terete, constricted at the base; Sporangia globose to subglobose; Hypothallus inconspicuous; Peridium single; Columella absent, rarely white, limy

pseudocolumella may be present; Capillitium abundant; Spores mass brown, minutely warted, warts in small short lines and *P. ovisporum* Lister marked by fructification primarily sessile sporangiate tending to be plasmodiocarpous, white to grayish white, scattered to gregarious; Plasmodiocarps small, terete, simple to branched; Sporangia globose, oval or obovoid on broad base; Hypothallus inconspicuous; Peridium single; Often massed together forming limy pseudocolumella; Spores black in mass, minutely warted, warts in small lines

The species is widely distributed. It resembles to *P. cinereum* (Batch.) Pers., for their number of characters. However *P. vernum* Somn. ex. Fries is plasmodiocarpous, peridium is single, thin, membranous, transparent with small, spherical or irregular lime globules; spores darker, larger and prominently warted.

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