

Morpho- Taxonomic Studies of Chara Zeylenica and Chara Vulgaris Based On SEM Studies of Their Oospores, Growing In Fresh Waters of Jammu, J&K

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ABSTRACT: In the present investigation a detailed SEM studies on these two species of Chara, *C.vulgaris* and *C. zeylenica* helped to revealed the detailed variations in ornamentation pattern of fossa wall of oospore. The ornamentation of *C. zeylenica* was reported to be scabrous type, while oospores wall ornamentation of *C. vulgaris* was reported to be granulate type.

Keywords: Chara, *C. vulgaris*, *C. zeylenica*, granulate type, oospore, scabrous type.

I. INTRODUCTION

Charophytes are unique amongst the thallophytes being highly developed (Algae) which is evident through well distinguished root and shoot system further comprising of well developed vegetative and reproductive structures. Vegetative parts have been studied in detail under light microscope but it had helped very little to study the minor details particularly with regard to the reproductive organs especially the mature oospore which exhibit peculiar patterns of ornamentation in the fossa wall as well as pattern of calcification.

Pattern of calcification is specific with respect to different taxa (Langer,1992). Thus scanning electron microscopic studies have revealed characteristic minor details on the reproductive organs which have helped in establishing the taxonomic status of many species of Charales (Mandal et al, 2002).

Present studies have been restricted only to the reproductive structure i.e., zygote which is multilayered, having pigmented wall often encrusted by calcite in two species of Chara i.e., *C.vulgaris* and *C.zeylenica*. Thus, identification keys of Nitella and Chara have been prepared by Mandal et al, (2002).They (op.cit) placed *C.vulgaris* in the category where the oospore ornamentation was with granular with or without pores.

II. MATERIAL AND METHODS

Fresh and healthy plants of *C. vulgaris* and *C. zeylenica* for present study were collected from a number of temporary habitat and permanent habitat such as lakes, streams, ditches, ponds and man-made reservoirs from December, 2007 to April, 2009. The plant material was either handpicked or from deep water, dredger was used. Fresh and healthy plants were brought to laboratory in polythene bags for further culturing and processing. Fully mature plants were selected for the preservation and microscopic studies. Preservation was done using 4%FAA in bell jars. The oospores of the plant were cleaned prior to scanning by following modified Mandal et al., (2002) method.

III. OBSERVATION AND RESULTS

C.zeylenica

Coronulla: In present investigations coronulla of *C.zeylenica* is 120 μ in length, in one row and are of uniform length. Pal et al, (1962) reported that coronulla was 125 μ in *C.zeylenica* .

Oogonium: In the present investigation oogonium of *C.zeylenica* was measured to be 1225 μ in length and 475 μ in width.

Oospore: The oospore wall ornamentation of *C.zeylenica* was reported to be scabrous type (Plate-I; figs.1,2,3). Mandal and Ray (2004) reported that striae of oospore were provided with a ribbon and the wall was granular. Soulie – Marsche (1989) reported a pusticular oospore wall. John et al, (1990) reported a roughened and pitted oospore wall.

C.vulgaris

Coronulla: In present investigations coronulla of *C.vulgaris* is 80 μ in length i.e. uniform in length, in one tier and one & half times longer than the one reported by Pal et al, (1962) .

Oogonium: In the present investigation specimens, oogonium of *C.vulgaris* was measured to be 975 μ long and 650 μ in wide. Pal et al, (1962) reported oogonium of *C.vulgaris* was measured to be 600-800 μ in length and 350-540 μ in width. Thus, the present specimens were much longer in dimensions.

Oospore: The oospore wall ornamentation of *C.vulgaris* and was reported to be granulate type (Plate-I; figs.4,5,6). Mandal and Ray (2002) reported oospore wall showed a low pusticular elevations with apical opening which extended on the surface of striate. Earlier, Mandal and Ray (1999) reported a similar ornamentation pattern for *C.vulgaris* var. nitelloids. John et al, (1990) reported granular to papillar oospore wall. Ray et al, (2001) showed granular to pusticular elevations for *C.vulgaris* found in Sweden.

IV. DICUSSION

The detailed SEM studies on these two species viz., *C.vulgaris* and *C. zeylenica* helped to revealed the detailed variations in ornamentation pattern of fossa wall of oospore. The ornamentation of *C. zeylenica* was reported to be scarbous type (Plate- I, figs 1,2,3). Mandal and Ray (2004) reported that striae of oospore were provided with a ribbon and the wall as granular. Soulie-Marsche (1989) reported a pusticular oospore wall. John et al, (1990) reported a roughened and pitted oospore wall whereas the oospores wall ornamentation of *C. vulgaris* was reported to be granulate type (Plate-I figs.4,5,6). Mandal and Ray (2002) reported oospore wall showed a low pusticular elevation the apical opening of which extended on the surface of striate. Earlier, Mandal and Ray (1999) reported a similar ornamentation pattern for *C.vulgaris* var. Nitelloids. John et al, (1990) reported granular to papillar oospore wall. Ray et al, (2001) showed granular to pusticular elevation for *C.vulgaris*.

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PLATE-I



