

## NOTES ON THE FRESH WATER EUGLENOIDES AND DINOPHYCEAE OF UDAIPUR DISTRICT, RAJASTHAN, (INDIA)

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Nineteen taxa have been recorded from the freshwater of Udaipur district belonging to Euglenoides and Dinophyceae. Since work on Euglenoides and Dinophyceae from this region has not yet been done, so it is the need of day to enlist various taxa of this region.

**Key words :** Euglenoides, Dinophyceae, Lakes, freshwater.

Udaipur is located in the center of the saucer shaped valley basin and girdled by Aravali hills. It is known as city of lakes, which is flanked by many artificial lakes like lake Jaisamand (45 km from city, largest lake in Indian subcontinent), lake Pichhola, Fateh Sagar, Swaroop sagar, lake Bari, Uday Sagar. Udaipur is situated towards the south of Rajasthan State on longitude 73°42' East and latitude average 24°35' North and an average at altitude 577 meters from mean sea level. The average humidity recorded during 2004-06 was 25% (max. 47% and min. 3.1%), average rainfall 63.45cm. and the different water bodies are found to be basically alkaline throughout the year. The annual mean maximum temperature varies between min. 4°C in January and max. 45 °C in June. The main drainage of city is Ahar River which originates from Gogunda plateau and after flowing in the city it pours its content including sewage of the city in to Uday sagar lake. The climate of the study area falls within the subtropical monsoon. The work on Indian euglenineae has earlier been carried out by Suxena (1955, 1983); Naidu (1966); Kamat (1964).

### MATERIALS AND METHODS

Samples were collected using planktonic net of various pore sizes. Various sites of lakes and their surrounding area were monitored regularly. Some

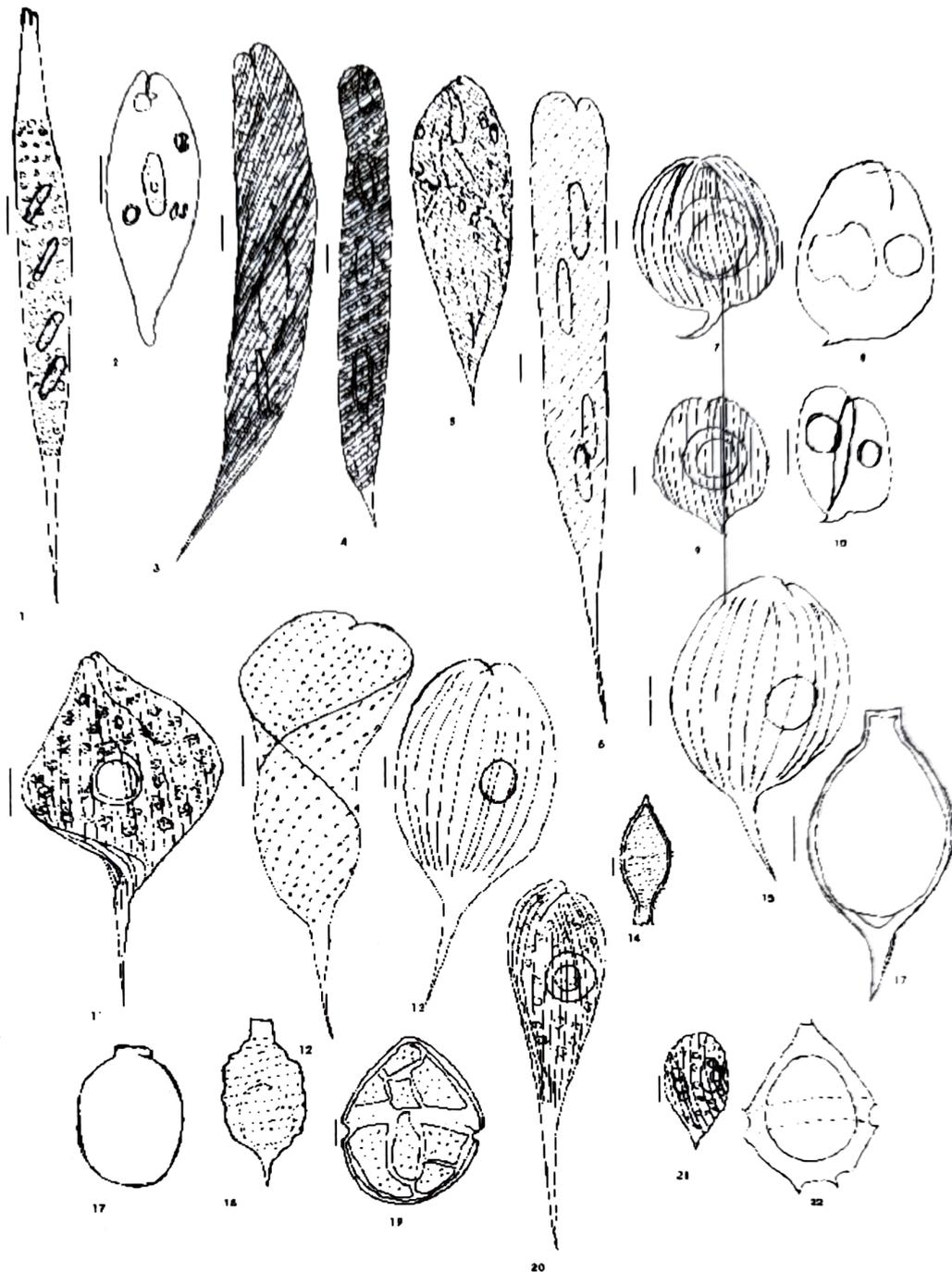
samples were centrifuged or cultured for their taxonomic enumeration. The identification done by standard methods and keys (Fritsch, 1935; Pochmann 1942; Gojdics 1953; Huber-Pestalozzi, 1955; Prescott 1962; Bold and Wynne, 1978; Palmer, 1980; Suxena, 1983). The habitat and their collections described abbreviates are as follow, AL-1. Fateh Sagar, Planktonic collection; AL-2. Swaroopsagar, connecting link to Fateh Sagar and Pichhola Lake; AL-3. Pichhola lake Planktonic collection; AL-4. Doodh Talai, small reservoir, connecting to Pichhola lake; AL-5. Jaisamand lake; AL-6. Lake Bari, Planktonic collection; AL-7. Uday sagar, receive city sewage through Ahar river.

### Taxonomic enumeration

*Euglena acus* Ehr. (Fig. 1; AL-1) : Cells elongate cylindrical, narrowed interiorly with truncate apex, slightly bilobed, narrowed posteriorly to form a shortly pointed caudus, chloroplasts numerous, paramylum two to several elongate rods, cells 145.0 - 170.0  $\mu$  long; 15.0 - 21.0  $\mu$  wide.

*Euglena polymorpha* Dangeard (Fig. 2; AL-2) : Cells broadly fusiform, a little narrowed anteriorly, apex rounded; posterior side gradually narrowed to a pointed caudus, pellicle spirally striated, chloroplasts numerous. cells 47.0 - 52.0  $\mu$  long; 16.0 - 17.0  $\mu$  wide.

*Euglena spirogyra* Ehr. (Fig. 6; AL-2) : Cells elongate cylindrical; anterior end broadly truncate and rounded, posterior end tapering and forms a stout pointed caudus. Pellicle striated, chloroplasts numerous. paramylum two large elongate bodies, cells 155.0 - 170.0  $\mu$  long; 30.0 - 32.0  $\mu$  wide.



Figures 1-22. 1. *Euglena acus* Ehr. 2. *Euglena polymorpha* Dangeard 3. *Euglena oxyuris* Schmarda 4. *Euglena oxyuris* Schmarda var. *minor* Defl. 5. *Euglena viridis* Ehr. 6. *Euglena spirogyra* Ehr. 7. *Phacus orbicularis* Hübner 8. *Phacus anomala* Fritsch and Rich 9. *Phacus orbicularis* Hübner 10. *Phacus curvicauda* Swir. 11. *Phacus tortus* (Lemm.) Skvortzow 12. *Phacus ephippion* Pochmann 13. *Phacus meson* Pochmann 14. *Trachelomonas caudata* (Ehr.) Stein. 15. *Phacus platalao* Drez. 16. *Trachelomonas fluiatilis* Lemmermann var. *rugosa* Prescott 17. *Trachelomonas hispida* Stein var. *punctata* Lemm. 18. *Trachelomonas tombowika* Swir. 19. *Peridinium anglicum*, G.S.West 20. *Phacus lismorensis* Playf. 21. *Lepocinclis ovum* (Ehr.) Lemm. Var. *butschlii* Conrad 22. *Peridinium inconspicuum* Lemm.

Scale denotes to 10µm

*Euglena oxyuris* Schmarda (Fig. 3; AL-3, AL-2) : Cells elongate sub cylindrical, spirally twisted, broadly round at the anterior end, posterior end tapering to a long straight tail, paramylum in the

form of two rod shaped bodies. Cells 34.0 - 37.0 µ broad; 140.0 - 175.0 µ long.

*Euglena oxyuris* Schmarda var. *minor* Defl.

(Fig.4; AL-2) : Cells elongate cylindrical, broadly rounded at the anterior end and tapering towards the posterior end, 185.0-200.0  $\mu$  long and 18.0-24.0  $\mu$  wide.

*Euglena viridis* Ehr. (Fig.5; Al-7) : Cells tumid after broadly rounded anterior end, paramylon many in middle region lorica wavy with minute spines, cells 50.0-55.0  $\mu$  long and 18.0-21.0  $\mu$  wide.

*Phacus anomala* Fritsch and Rich (Fig.8; AL-4, AL-7) : Cells more wide towards posterior end; anterior end broadly rounded with a notch while posterior end terminates in to a small bent tail, paramylon single and dumble shaped, cells 60.0-75.0  $\mu$  long and 40.0-50.0  $\mu$  wide.

*Phacus curvicauda* Swir. (Fig. 10; AL-2) : Cells oval to nearly circular, broadest below the mid region, tapering posterior end to form a short curved tail piece, pellicle striated paramylum two large circular plates, cells 22.0 - 25.0  $\mu$  long; 17.0 - 19.0  $\mu$  broad.

*Phacus ephippion* Pochmann (Fig. 12; AL-2, AL-5) : Cells ovoid broadly rounded at the anterior end; margins folded along the axis of the body giving a saddle like appearance, posterior end produced into a pointed more or less straight tail, pellicle striated, paramylom one, ring shaped, cells 72.0 - 77.0  $\mu$  long, 47.0 - 55.0  $\mu$  broad.

*Phacus lismorensis* Playf. (Fig. 20; AL-3) : Cells slightly widened after broadly rounded end and then gradually tapering, paramylon two discs shaped, cells 110.0-125.0  $\mu$  long with tail and 35.0-47.0  $\mu$  wide.

*Phacus meson* Pochmann (Fig. 13; AL-3) : Body broadly ovoid, anterior end rounded, slightly narrower than the main body, pellicle striated, posterior end gradually tapering into a distinct pointed straight tail, paramylum two, ring shaped, cells 109.0 - 112.0  $\mu$  long, 47.0 - 55.0  $\mu$  wide.

*Phacus orbicularis* Hübner (Fig. 7, 9; AL-2, AL-

3) : Cells ovoid or broadly rounded with a lateral notch on one side, anterior end broadly rounded, posterior end broad, terminating into a short bent tail, paramylum two disc shaped, pellicle striated, cells 39.0 - 45.0  $\mu$  long; 33.0 - 35.0  $\mu$  wide. General appearance and size agrees with the above form but the presence of a lateral notch above the mid region shows agreement with *Phacus pseudoswirenkoi* Prescott (Prescott, 1955, pl. 87, fig. 2)

*Phacus platalao* Drez. (Fig. 15; AL-1): Cells broadly oval rounded interiorly, posterior end tapering to form a curved long sharp tail, pellicle striated, paramylum one plate like, cells 55.0 - 62.0  $\mu$  long, 29.0 - 33.0  $\mu$  wide.

*Phacus tortus* (Lemm.) Skvortzow (Fig. 11; AL-3) : Cells pyriform not spirally twisted and tapering to a long straight caudus, posterior end bilobed at the apex, pellicle striated, paramylum one large circular plate, cells 85.0 - 88.0  $\mu$  long; 51.0 - 55.0  $\mu$  wide.

*Lepocinclis ovum* (Ehr.) Lemm. var. *butschlii* Conrad (Fig 21; AL-5) : Cells flattened, two lateral ring shaped paramylon grain, margin undulated, cells 40.0-45.0  $\mu$  long and 21.0-23.0  $\mu$  wide.

*Trachelomonas caudata* (Ehr.) Stein. (Fig. 14; AL-4, AL-6) : Cells widened at middle, lorica wavy with sharp minute spines. Cells 50.0-55.0  $\mu$  long and 22.0-23.0  $\mu$  wide.

*Trachelomonas fluviatilis* Lemmermann var. *rugosa* Prescott (Fig. 16; AL-5): Cells asymmetrically oval, narrowed above to a short wide neck and posterior end tapering to a straight or little curved caudus, wall yellowish brown, cells 54.5 - 58.0  $\mu$  long; 32.0 - 34.5  $\mu$  broad.

*Trachelomonas hispida* Stein var. *punctata* Lemm. (Fig. 17; AL-6): Cells oval, wall densely punctate yellowish brown, smooth or slightly roughened, cells 24.0 - 30.0  $\mu$  long, 19.0 - 21.5  $\mu$  broad.

*Trachelomonas tombowika* Swir. (Fig. 18; AL-5, AL-7) : Cells fusiform narrowed anterior end to form a short neck and like wise tapering posterior end to form a short caudus, wall brown and irregularly wrinkled. Cells 43.0 - 47.0  $\mu$  long, 24.0 - 27.5  $\mu$  broad.

*Peridinium inconspicuum* Lemm. (Fig. 14; AL-1) : Cells small ovoid with apical region slightly produced and pointed transverse furrow broad, cells 18.0 - 28.0  $\mu$  long; 16.0 - 23.0  $\mu$  broad.

*Peridinium anglicum*, G. S. West (Fig. 19; AL-5.) : Cells small, widened at middle, plates on epivalve and hypo-valve more or less similar in number, transverse furrow wide, cells 55.0-60.0  $\mu$  long and 40.0-45.0  $\mu$  wide.

## DISCUSSION

Various sites of study were found to be rich in algal diversity and *Euglena* species. The richness was found to be more in polluted habitats. *Peridinium anglicum* and *Peridinium inconspicuum* recorded from lake Jaisamand and Fateh Sagar respectively.

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