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An Investigation on Protozoan Diversity in α-Mesosaprobic Zone of a Man-made Canal at Chulalongkorn University

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In early twentieth century, two German hydrobiologists, R. Kolkwitz and M. Marsson, developed saprobic system for the water quality classification. Four saprobic zones according to biochemical oxygen demand (BOD) value were divided later. These zones are oligosaprobic, β-mesosaprobic, α-mesosaprobic and polysaprobic zones which their BOD values are 1-2.5, 2.5-5, 5-10 and 10-50 mg/l, respectively (Curds, 1992). The study of protozoan biodiversity in these saprobic zones suggested that species present and species richness of some protozoans are specific to proper environmental condition and the biological, physical and chemical changes have effects on the structure of protozoan communities (Patterson, 1996 and Foissner, 1999). That is some of them may act as the bioindicator for water quality, especially ciliated protozoans (Bick, 1972). The objective of this study is to investigate species diversity in α-mesosaprobic zone of Chulalongkorn University.

Under the following physical factors, average values of water temperature, air temperature, pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) are 27.3°C, 28°C, 7-8, 1.76 mg/l, 7.6 mg/l and 114 mg/l, respectively. The water resource is classified as α-mesosaprobic zone. An observation and sampling the protozoans from a freshwater of Chulalongkorn University in Bangkok, three major classes and

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TABLE 1. List of protozoans found in α-mesosaprobic zone of Chulalongkorn University.

Class	Species	Numbers per 2.5 cm^3 of drop water
Flagellata	*Euglena acus*	28
	E. deses	86
	E. gracilis	6
	E. oxyuris (Figure 1D)	12
	Peranema sp.	3
	Phacus helikoides (Figure 1A)	25
	P. longicauda	106
	P. pleuronectes	28
	P. tortus (Figure 1C)	88
	Trachelomonas sp.	1
	Unidentified species	1
Ciliata	*Coleps octospinus*	3
	Coleps sp. (Figure 1H)	12
	Euplotes sp.	1
	Unidentified species 1 (Figure 1E)	1
	Unidentified species 2	2
	Unidentified species 3	1
	Unidentified species 4	1
	Unidentified species 5	3
	Unidentified species 6	1
Sarcodina	*Amoeba* sp.	1
	Arcella sp. (Figure 1B)	3
	Difflugia sp.	2
	Raphidiophrys sp. (Figure 1F)	46
	Unidentified species 1 (Figure 1G)	1
	Unidentified species 2	1
	Total	463

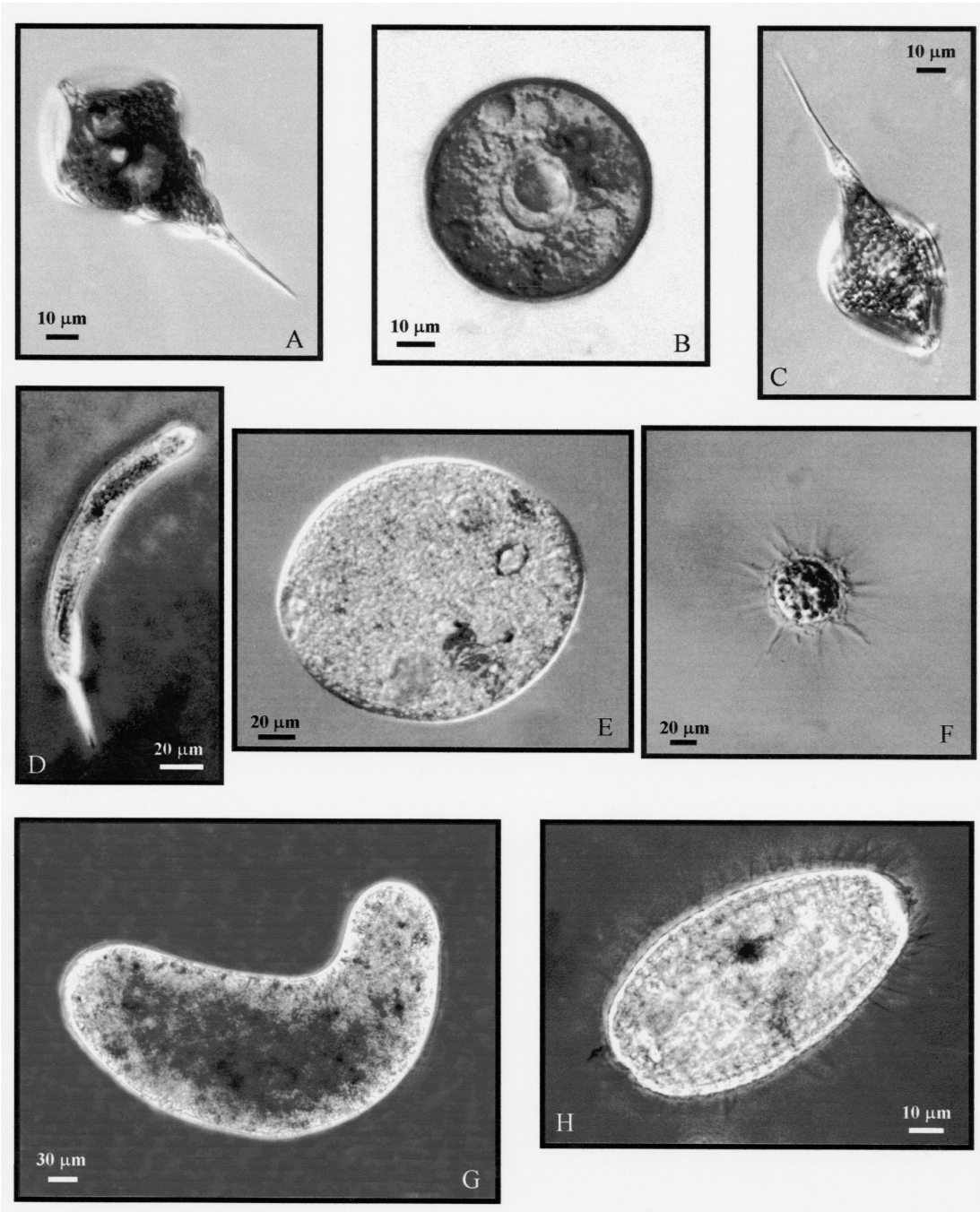

FIGURE 1. (A) *Phacus helikoides*; (B) *Arcella* sp.; (C) *Phacus tortus*; (D) *Euglena oxyuris*; (E) Unidentified ciliate species 1; (F) *Raphidiophrys* sp.; (G) Unidentified amoeba species 1; (H) *Coleps* sp.

26 species of protozoan were identified (Table 1).

They are Flagellata, Ciliata and Sarcodina, which account for 82.9, 5.4 and 11.7 percent, respectively. Dominant genera in each group found in a relatively large number compared to other members in the same group. Among these, 82.1 percent are photosynthetic protozoans, such as *Euglena* spp. (Figure 1D) and *Phacus* spp. (Figure 1A and 1C) (99.0 percent of all flagellates). The presence of photosynthetic protozoans as a dominant group reflects the high level exposure to direct sunlight (Dogiel, 1965). *Coleps* sp. (Figure 1H) and *Raphidiophrys* sp. (Figure 1F) are major genera found in the ciliata and sarcodina group, respectively. There are several unidentified ciliated species (Figure 1E), because of the complicated morphological characteristics and the poor study on protozoan diversity in Thailand. The present investigation contributed seen to be the first report on protozoan community and species diversity in Thailand water even in an artificial canal. Further studies are needed to do review taxonomy as well as identify the factors that influence diversity in order to use protozoa as an bioindicator in the near future.

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