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**Colonization and succession of epilithic diatom on artificial substrata - with a special reference on usefulness of the assessment of water quality using diatoms -**

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The purpose of the study were to understand the ecological characteristics on the early stage of community formation of epilithic diatoms and to discuss the usefulness of the assessment of water quality using diatoms. The samples were collected from a site of the Kumho River in every day during 70 days from October 13 to December 21 in 2002. Total 126 diatom taxa collected in the study were classified into 114 species and 12 varieties belonging to 26 genera. About 80 % of the taxa collected from the artificial substrata during the whole studying periods were able to observe in the early times until 10th day from the start time of the study. In the study the successional process were divided into the three stages of the early, the middle and the later with a cluster analysis based on the similarities in species composition among the diatom communities. Horizontally positioned species of *Cocconeis placentula* and *C. placentula* var. *lineata* would be divided into the early successional species while *Diatoma vulgare*, vertically positioned species, was considered of the later successional species. Cell densities and species composition of the diatoms on the artificial substrata have been closely similar to them of natural substrata in the same sampling site after 40th day since the study to be started. In comparison between the results of BOD and DAIPo (Diatom Assemblage Index to organic pollution; Watanabe and Asai, 1995) on the assessment of water quality at the sampling site, DAIPo showed much smaller fluctuation range than it of BOD. Therefore it was considered that DAIPo can be able to be utilized a very effective and stable parameter on synthetic assessments of the water quality.