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Metabolic Potentials of Biofilm and Aeration Tanks of RABC System

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Qualitative and quantitative metabolic potentials of microbial communities were investigated under aerobic and anaerobic conditions with Biolog GN2 plate for samples of biofilm and aeration tanks from a advanced wastewater treatment system, RABC (rotating activated *Bacillus* contactor) system. More defined qualitative and quantitative relatedness of active microbial communities were derived from simple matching and pairs *t*-test of daily variation than that of mere optical densities. Among biofilm and two aeration tanks, metabolic potential was higher in biofilm ($p<0.01$) and two aeration tanks represented 78% similar metabolic potential. Actively used carbon sources were different meaning the change of active communities at each wastewater treatment step. Aerobic and anaerobic incubations of same samples showed the different metabolic fingerprinting patterns representing the activities and roles of microaerophilic and/or anaerobic communities in wastewater treatment system.

Key words: biolog plate; metabolic fingerprinting; RABC (rotating activated *Bacillus* contactor); wastewater

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Estrogenic Activities in Fractions from Ethanol Extract of Doljaban (*Porphyra suborbiculata*)

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In order to evaluate estrogenic compounds in natural products, the MCF7 cell based *in vitro* assay system has been established. We used this system to detect estrogenic activities in various fractions from ethanol extract of Doljaban (*Porphyra suborbiculata*), a marine brown alga. Fractions from ethanol extract of Doljaban were prepared by the systematic extraction procedure with solvents such as hexane, methanol, ethyl ether, butanol and H_2O. Fractions were subjected to evaluate estrogenic activity using *in vitro* assay system. The aqueous extract showed the highest estrogenic activity among the extracts. Estrogenic activity of a 500 μg/ml aqueous fraction was higher than that of a 10^{-9} M standard solution (17β-estradiol). Estrogenic activity of a 50 μg/ml aqueous fraction was similar than that of a 10^{-9} M standard solution. Treatments of aqueous fraction of Doljaban extract increased the transcriptional activity 1.45-fold, compared to no treatment. On the other hand, hexane, methanol, ethyl ether, butanol extracts extract revealed no statically increased activities, compared to no treatment. These observations suggest that the aqueous fraction of Doljaban extract possesses estrogenic actions and could be developed as estrogenic supplements for postmenopausal disorder.

Key words: brown alga; Doljaban; estrogen activity; *in vitro* assay system; *Porphyra suborbiculata*