

A b s t r a c t

T i t l e	The growth inhibition of cyanobacteria, <i>Microcystis aeruginosa</i> by antibiotics with cell counting and fluorescence measurements
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[summary] <p>Pharmaceutically active compounds are often detected in environments at low concentrations. To evaluate the effect of these compounds on ecosystem the use of green algae is often recommended in the official examination method, though the cyanobacteria is considered to be more sensitive to chemicals than the green algae. The antibiotics, which show selective toxicity only for procaryotes, may have an influence on the ecosystem through the inhibition of the multiplication of the cyanobacteria.</p> <p>In this study, to evaluate the toxicity of antibiotics, two methods of the fluorescence intensity measurement and the cell number measurement are applied for the cyanobacteria, <i>Microcystis aeruginosa</i>, a representative specie in fresh water in Japan. Antibiotics used in this study are ampicillin (ABPC), tetracycline (TC), meropenem (MEPM), gentamicin (GM), levofloxacin (LVFX), and ciprofloxacin (CPFX).</p> <p>As a result of the toxicity test, LVFX suppressed the growth of the cyanobacteria at the lowest concentration and the estimated EC50 value was 0.003 mg/l. In addition, the estimated EC50 values were dependent on the method of the measurement. The growth ratio obtained from the fluorescence intensity was higher than that obtained from the number of the cells in the cases of LVFX and CPFX which interfere the DNA replication and the size of the cells was increased by the exposure to the antibiotics from the microscopic observation. On the other hand, in the cases of TC and GM, which interfere protein-synthesis, a tendency was observed that the size of the cyanobacteria cell decreased even at lower concentration than EC50.</p>	