

ABSTRACT

The acute toxicity of linear alkylbenzene sulphonate (LAS) surfactant and copper ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) and their mixtures to Puntius gonionotus (Bleeker) fingerling was investigated to determine the lethal concentration by using modified static bioassays under laboratory conditions. Five toxicity tests were conducted : two for single toxic substance, LAS and copper; and three for their mixture in various toxicity ratios: 1:1, 1:2 and 2:1.

The results indicated that the toxic levels of LAS and copper were different with the 96-hr. LC_{50} and the 95% confident intervals were 5.88 (5.68-6.08) mg/l MBAS for LAS and 91.96 (79.45-106.45) $\mu\text{g/l}$ for copper. The toxicity of copper varied considerably according to the concentration and time. In the case of LAS, the toxicity depended on concentration and initial exposure time; thereafter, fish developed resistance to LAS.

The mixture of LAS and copper were synergistic with each other in every toxicity ratio and expressed both less-than and more-than additive effects, and the 96-hr. LC_{50} and 95% confident intervals were 0.53 (0.35-0.80), 0.36 (0.24-0.55) and 0.50 (0.32-0.77) toxic units for 1:1, 1:2 and 2:1 toxicity ratios, respectively. Acute toxicity of each toxicity ratio was not significantly different but the mode of action of each was influenced by the proportion of the LAS and copper in the mixture solution.