

ABSTRACT
ASSESSMENT OF THE AQUATIC TOXICITY AND BIODEGRADABILITY
OF COCONUT METHYL ESTER

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The ecological effects of coconut methyl ester (CME) to the aquatic environment through ecotoxicity and ready biodegradability tests were investigated. The ecotoxicological testing employed the trophic level approach, where the test organisms used in the acute, static, and non-renewal tests were *Selenastrum capricornutum* Printz, *Scenedesmus bijugatus*, *Daphnia magna* and *Oreochromis niloticus*. The 96-hour effective concentrations causing 50% algal growth inhibition (EC50s) for CME using *Selenastrum capricornutum* and *Scenedesmus bijugatus* were determined as 2.90 to 2.99 mg/L and 2.48 to 3.07 mg/L, respectively. For the acute toxicity test using *Daphnia magna*, the 48-hr EC50s were obtained as 9.1 to 11.6 mg/L. On the other hand, CME appeared as not acutely toxic to *Oreochromis niloticus*. The 96-hour lethal concentration causing death to 50% of the population (LC50) was determined as 195 to 241 mg/L of CME. Since the exposure concentration-response relationships in all tests may be ascribed to the physical effects caused by undissolved CME rather than its chemical toxicity, the results warrant careful interpretation. Nonetheless, in actual environmental conditions in case of environmental release, these may give a more realistic effect. Ready biodegradability tests also demonstrated that CME is readily biodegradable in the aquatic environment. During a 28-day period, the maximum percent degradation reached was 92.4% of its theoretical oxygen demand (ThOD).