

Toxicity Test of Nanoemulsions of Nutmeg Fruits and Leaves Essential Oil against Artemia salina Leach and Its Cytotoxicity Test against Breast Cancer Cells T47D

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Author Order	1 of 9
Accreditation	1
Abstract	<p>Nutmeg (<i>Myristica fragrans</i> Hoult) is a widely known spice plant, which has been reported to offer several benefits. Therefore, this study aims to develop and analyze nanoemulsions of nutmeg leaves and fruit essential oil, as well as determine their toxicity and cytotoxicity. Nanoemulsions were formulated with varying concentrations of essential oil, including 0, 1, 2, 4, and 6%. Characterization included organoleptic assessment, pH measurement, type examination, viscosity testing, transmittance analysis, particle size distribution measurement, centrifugation, and freeze-thaw cycle test. Toxicity testing results using the brine shrimp lethality test (BSLT) showed that nanoemulsions were toxic except NF F4 with high toxicity. Cytotoxicity testing on T47D breast cancer cells showed moderate activity for NF F4 nanoemulsions (IC₅₀: 34.363 ppm), while NL nanoemulsions were deemed inactive (IC₅₀: 33576.430 ppm). In addition, the organoleptic characteristics of all nanoemulsions were stable, and most parameters met the desired standards. Based on the results, further studies exploring nanoemulsions with natural products must be carried out to determine their advantages, specifically in the development of sciences.</p>
Publisher Name	Universitas Gadjah Mada
Publish Date	2024-10-01
Publish Year	2024
Doi	DOI: 10.22146/ijc.91077
Citation	
Source	Indonesian Journal of Chemistry
Source Issue	Vol 24, No 5 (2024)
Source Page	1309-1318
Url	https://journal.ugm.ac.id/ijc/article/view/91077/39322
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