

Evaluation of Toxicity of Crude Phlorotannins and Phloroglucinol Using Different Model Organisms

Publons ID	(not set)
Wos ID	WOS:000801904800001
Doi	10.3390/toxins14050312
Title	Evaluation of Toxicity of Crude Phlorotannins and Phloroglucinol Using Different Model Organisms
First Author	
Last Author	
Authors	Harwanto, D; Negara, BFSP; Tirtawijaya, G; Meinita, MDN; Choi, JS;
Publish Date	MAY 2022
Journal Name	TOXINS
Citation	3
Abstract	<p>Phlorotannins have been proven to contain numerous bioactive compounds that have potential to be applied in variety industries, including cosmetics, functional foods, nutraceuticals, environmental management, and medicine. The larvicidal and growth-inhibiting properties of phlorotannins have been extensively studied in various organisms. However, the toxicity of the phloroglucinol oligomer of phlorotannin is unclear, especially in <i>Artemia salina</i>, <i>Daphnia magna</i>, <i>Lactuca sativa</i>, and <i>Chlorella vulgaris</i>, which are commonly used in many bioassays. Therefore, research using these four organisms should be designed to provide basic information about the toxic effects of phlorotannins and phloroglucinol. This study aimed to evaluate the larvicidal and inhibitory properties of phlorotannins and phloroglucinol on <i>A. salina</i>, <i>D. magna</i>, <i>L. sativa</i>, and <i>C. vulgaris</i>. Phlorotannin extract and phloroglucinol were administered at various concentrations to each test organism. The survival rate of <i>A. salina</i> nauplii and <i>D. magna</i> neonates was observed every 24 h to 72 h, whereas the <i>L. sativa</i> seed germination and inhibition rate of <i>C. vulgaris</i> were observed up to 96 h. The results showed that the 24 h LC50 of phlorotannin on <i>A. salina</i> and <i>D. magna</i> were 10.67 and 1.32 mg/mL, respectively. The germination inhibition of <i>L. sativa</i> was 53.3% with a seed growth of less than 4 mm after 96 h upon exposure to 1 mg/mL of phlorotannin. Freshwater and seawater <i>C. vulgaris</i> experienced yield inhibition of 39.47 and 43.46%, respectively, when 2 mg/mL of phlorotannin was added. These results indicate that phlorotannin affects the survival and growth of the test organisms, so its use as a pesticide, herbicide, and algacide agent for environmental and aquaculture applications can be further studied.</p>
Publish Type	Journal
Publish Year	2022
Page Begin	(not set)
Page End	(not set)
Issn	
Eissn	2072-6651
Url	https://www.webofscience.com/wos/woscc/full-record/WOS:000801904800001
Author	Prof. Dr MARIA DYAH NUR MEINITA, S.Pi