Document details

‹ Back to results | 1 of 1

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Toxicity study on Clinacanthus nutans leaf hexane fraction using Danio rerio embryos (Article) (Open Access)

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Abstract

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Clinacanthus nutans, an herbal shrub belonging to the Acanthaceae family, is traditionally used as a functional food to treat various ailments in Malaysia and Indonesia. Although the polar fraction of this plant shows non-toxic effect, the toxicity of the non-polar extract is not reported so far. The present study aimed to assess the toxic effect and determine the lethal concentration of this non-polar fraction using zebrafish embryos. The n-hexane fraction was partitioned from the crude extract of C. nutans obtained using 80% methanolic solution. After spawning of the adult male and female zebrafish, the eggs were collected, transferred into a 96-well plate and incubated with the n-hexane fraction at concentrations of 15.63 μg/ml, 31.25 μg/ml, 62.5 μg/ml, 125 μg/ml, 250 μg/ml and 500 μg/ml in 2% DMSO. The survival and sublethal endpoint were assessed, the mortality and hatchability rates were calculated based on microscopic observation, while the heartbeat rate was measured using DanioScope software. The median lethal concentration (LC_{50}) of the C. nutans n-hexane fraction, which was determined using probit analysis, was calculated to be 75.49 μg/mL, which is harmful. Moreover, gas chromatography-mass spectrometry (GC–MS) analysis revealed the presence of palmitic acid, phytol, hexadecanoic acid, 1-monopalmitin, stigmast-5-ene, pentadecanoic acid, heptadecanoic acid, 1-linolenoylglycerol and stigmasterol in the n-hexane fraction. © 2019 The Authors

SciVal Topic Prominence

Topic: Acanthaceae | Antioxidants | Nutans leaves

Prominence percentile: 68.957

Chemistry database information

Substances

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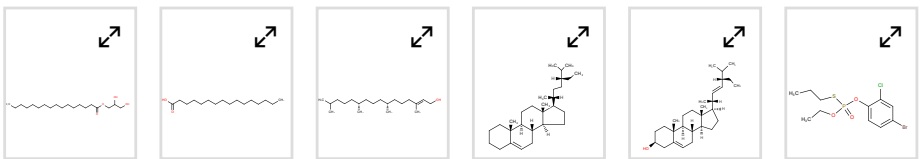

Author keywords

Clinacanthus nutans | Danio rerio | DanioScope | Median lethal concentration | Probit analysis | Teratogenicity

Indexed keywords

EMTREE drug terms: heptadecanoic acid | hexane | palmitic acid | pentadecanoic acid | phytol | stigmasterol

EMTREE medical terms: adult | animal experiment | Article | Clinacanthus nutans | controlled study | embryo | female | LC50 | male | nonhuman | phytotoxicity | plant leaf | priority journal | spawning | teratogenicity | zebra fish

Chemicals and CAS Registry Numbers:

heptadecanoic acid, 506-12-7; hexane, 110-54-3; palmitic acid, 57-10-3; pentadecanoic acid, 1002-84-2; phytol, 150-86-7; stigmasterol, 83-48-7

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	2016-05908	
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