

**BIOPROSPECTING AND EVALUATION OF ACUTE TOXICITY OF
MARINE MICROALGAE *NANNOCHLOROPSIS OCEANICA*
EXTRACTS IN ZEBRAFISH (*DANIO RERIO*) EMBRYOS AND
LARVAE**

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INTRODUCTION: The microalga *Nannochloropsis oceanica* is known for producing bioactive compounds with potential anticancer, anti-inflammatory, and neuroprotective effects. Among its constituents are polyunsaturated fatty acids such as EPA and DHA, as well as antioxidant pigments like astaxanthin and β -carotene. However, to ensure the safe use of these natural compounds in biotechnological applications, it is essential to evaluate their toxicological profiles. **OBJECTIVE:** This study aimed to investigate the chemical and toxicological profiles of chloroform (EOC) and methanolic (EOM) extracts of *N. oceanica* using the zebrafish (*Danio rerio*) preclinical model. **MATERIALS AND METHODS:** The microalgal biomass was extracted using organic solvents. The dried extracts were diluted in DMSO at concentrations of 65 mg/mL (EOC) and 80 mg/mL (EOM). Zebrafish embryos at 3 hours post-fertilization (hpf) were exposed to concentrations ranging from 17 to 133 μ g/mL for a period of 120 hpf, following OECD Test Guideline No. 236 (adapted). The following parameters were assessed: survival rate, hatching rate, morphological deformities, heart rate, locomotor activity, and reactive oxygen species (ROS) production. All experimental procedures were approved by the Animal Ethics Committee of FURG (protocol no. 23116.020903/2023-18). **RESULTS AND CONCLUSION:** The extracts exhibited a wide range of fatty acids and phenolic acids, with variations between the fractions. Toxicity analyses revealed a significant reduction in embryonic survival, with LC₅₀ values of 54.46 μ g/mL (EOC) and 88.88 μ g/mL (EOM). Delays and inhibition of hatching were observed from 39 μ g/mL (EOC) and 59 μ g/mL (EOM). The incidence of morphological deformities increased in a dose-dependent manner for both extracts. EOC induced oxidative stress at 26 μ g/mL, whereas EOM did not significantly alter ROS levels. Heart rate and locomotor activity analyses showed no relevant changes. EOM exhibited no observable toxicity up to 59 μ g/mL, likely due to its high content of phenolic compounds, such as gallic, protocatechuic, and hydroxybenzoic acids, identified by HPLC and associated with antioxidant activity. These findings suggest the potential of EOM for pharmacological and nutraceutical applications in zebrafish experimental models.

Keywords: Embryotoxicity; natural products; zebrafish