CENTRAL LUZON STATE UNIVERSITY

PHYTOCHEMICAL SCREENING, EMBRYOTOXICITY AND TERATOGENICITY OF FRUIT RIND, STEM BARK AND LEAVES OF *Chrysophyllum cainito* Linn. EXTRACTS ON ZEBRAFISH (*Danio rerio*) EMBRYOS

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An Undergraduate Thesis Submitted to the Faculty of the Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, In Partial Fulfillment of the Requirements for the Degree

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APPROVAL SHEET

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ARMEL DRIZ ALVARAN

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDIX TABLES

LIST OF APPENDIX FIGURES

ABSTRACT

ALVARAN, ARMEL D. Bachelor of Science in Biology, Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City off Munoz, Nueva Ecija, Philippines, June 2017. **PHYTOCHEMICAL SCREENING, EMBRYOTOXICITY AND TERATOGENICITY OF FRUIT RIND, STEM BARK AND LEAVES OF *Chrysophyllum cainito* Linn. EXTRACTS ON ZEBRAFISH (*Danio rerio*) EMBRYOS.**

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Chrysophyllum cainito Linn. is a medicinal plant that belongs to Sapotaceae family. Phytochemical screening, embryotoxicity and teratogenicity of this plant were assessed in this study. The phytochemical content was analyzed using a test tube method. Toxic and teratogenic effects of hot water etracts of *C. cainto* were assessed using *D. rerio* embryo model.

Results revealed the *C. cainito* contained saponins, tannins, terpenoids, and cardiac glycoside. Moreover, hot water extract of *C. cainito* plant parts were tested against *Danio rerio* embryos. Stem bark HWE exhibited the highest mortality rate to *D. rerio* embryos which had 100% at 0.5% and higher concentrations followed by fruit rind HWE with 100% mortality at 1% and higher concentrations at 48 htpa and leaves HWE with 100% mortality rate at 2% and 3% concentration after 12 htpa. The lethal concentration of fruit rind extract was estimated at 575 mg/ml, while leaves extract had 461 mg/ml and stem bark extract had

313 mg/ml. Thus, it was indicated that fruit rind had low toxicity while stem bark and leaves both had moderate toxicity level.

The heartbeat rate in 0.1% concentration of stem bark was of 107.33/min which is significantly lower than the control, while 0.5% concentration of fruit rind registered a mean of 59.33/min while, mean heartbeat rate of 11.33/min and 70/min were recorded in 0.5% concentration and 0.1% concentration of leaves HWE, respectively.

On the other hand, all plant parts HWE exhibited 0% hatchability of the embryo at 0.5% and higher concentrations. Significantly, fruit rind registered 100% rate in 0.1% concentration, followed by 0.1% of leaf extracts with 33.33% and 0.1% of stem bark HWE with 25% hatchability after 48 hpta.

Teratogenic effects were also investigated and it was found out that growth retardation and limited movement marked as the most teratogenic effect of *C. cainito* HWE. The different morphological abnormalities observed were head malformation, tail malformation and scoliosis.

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