PHYTOCHEMICAL SCREENING, EMBRYO-TOXIC, AND TERATOGENIC EFFECTS OF LEAVES, STEM-BARK AND FRUIT RIND OF *Sandoricum koetjape* Linn. EXTRACTS ON ZEBRAFISH (*Danio rerio*) EMBRYOS

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ACCEPTANCE SHEET

This undergraduate thesis entitled **PHYTOCHEMICAL SCREENING, EMBRYO-TOXIC, AND TERATOGENIC EFFECTS OF LEAVES, STEM-BARK AND FRUIT RIND OF *Sandoricum koetjape* Linn. EXTRACTS ON ZEBRAFISH (*Danio rerio)* EMBRYOS**" prepared and submitted by **GLYDEL J. MORALES**, in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN BIOLOGY**, is hereby accepted.

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BIOGRAPHICAL SKETCH

The author, Glydel Jimenez Morales, was born on October 11, 1996 in Alcala Pangasinan and now currently living in Science City of Muñoz, Nueva Ecija, as the second eldest of Harold Cabreros Morales and Rosalinda Jimenez Morales.

She took her primary education at Macayo Integrated School where she was a consistent honor and her secondary education at the Don Ramon E. Costales Memorial National High School. She was photojournalist of the school paper, 2nd place in Math Quiz Bee, 3rd place Sci-DaMath and she won in Science Quiz Bee Regional. Glydel was not only academically inclined but also good in the other fields such as music and sports. In the four years she spent in high school, she became Vice President in Filipino Club, treasurer in Science Club and photojournalist in school paper. In 2013, she was admitted at the Central Luzon State University under the Bachelor of Science in Biology.

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ABSTRACT

MORALES, GLYDEL J., Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **JUNE 2018, PHYTOCHEMICAL SCREENING, EMBRYOTOXICITY AND TERATOGENICITY OF FRUIT RIND, STEM BARK AND LEAVES OF** *Sandoricum koetjape* **Linn. EXTRACTS ON ZEBRAFISH (*Danio rerio*) EMBRYOS**

Adviser: EDEN S. DAVID, Ph.D

Sandoricum koetjape Linn. is a medicinal plant that belongs to Meliaceae family. Phytochemical screening, embryotoxicity and teratogenicity of this plant were evaluated in this study. The phytochemical content was examined using test tube method. The toxic effects of *S. koetkape* or "Santol" were assessed against zebrafish embryos. Leaf, stem-bark and fruit rind extract of *S. koetjape* via hot water extraction and the zebra fish (*Danio rerio*) as the model organism were utilized for the assessment of its teratogenicity and embryo-toxicity potential.

The phytochemical screening revealed the presence of tannins and cardiac glycosides in all parts of *S. koetjape.* Saponins and terpenoids on the other hand, were detected in leaves and stem-bark and absent in fruit rind. In the case of flavonoids, it was detected only in the fruit rind. In this study, both stem-bark and fruit rind 1% to 3% hot water extract (HWE) concentrations recorded 100% mortality as early as 12 hpta while in leaves HWE, only the 3% got 100% mortality at 12 hpta. In this regard, only the 0.5% and 0.1% HWE of all plant parts registered hatchability rate while leaves had 100% delayed development at 48 hpta. The hatchability rates noted in lower concentrations were significantly lower than the control.

The highest heartbeat rates were observed to embryos at 0.1% HWE of the leaves, stem-bark, and fruit rind with 126.33, 98.67 and 135.67 beats per minute, respectively, which are all significantly lower than the control. No visual heartbeat was observed in embryos after 36 hpta in 1% to 3% in three plant parts HWE due to coagulation and delayed development. Growth retardation, stunted-tail and yolk deformities were the abnormalities detected in the embryos. All plant parts of *S. koetjape* showed toxic and teratogenic effects to *D. rerio* embryos.

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