



CENTRAL LUZON STATE UNIVERSITY



**PHYTOCHEMICAL SCREENING, EMBRYO-TOXIC AND TERATOGENIC
EFFECT OF *Persea americana* EXTRACT ON ZEBRAFISH
(*Danio rerio*) EMBRYOS**

KLEA NIÑA P. BALUYOT

An Undergraduate Thesis Submitted to the Faculty of the Department of
Biological Sciences, College of Arts and Sciences, Central Luzon
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COLLEGE OF ARTS AND SCIENCES
Department of Biological Sciences

APPROVAL SHEET

The Undergraduate Thesis entitled: **PHYTOCHEMICAL SCREENING, EMBRYO-TOXIC AND TERATOGENIC EFFECT OF *Persea americana* EXTRACT ON ZEBRAFISH (*Danio rerio*) EMBRYOS** prepared and submitted by **KLEA NIÑA PANGINEN BALUYOT** in partial fulfilment of the requirements for the degree of **BACHELOR OF SCIENCE IN BIOLOGY** is hereby approved and accepted.


EDEN S. DAVID Ph.D.

Adviser

6/9/17
Date Signed


RICH MILTON R. DULAY M.Sc.

Critic

6/9/17
Date Signed


RICH MILTON R. DULAY M.Sc.

Department Research Coordinator

6/9/17
Date Signed

Accepted in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN BIOLOGY**.


EVARISTO A. ABELLA Ph.D.

Department Chair

6/9/17
Date Signed


ANNA MARIA LOURDES S. LATONIO Ph.D.

College Research Coordinator

6/9/17
Date Signed


MYRNA R. UMAGAT Ph.D.

Dean

6/9/17
Date Signed



BIOGRAPHICAL SKETCH

PERSONAL INFORMATION

Name: Klea Niña P. Baluyot
Age: 20
Sex: Female
Birthday: May 14, 1997
Birth place: Bongabon, Nueva Ecija
Status: Single
Nationality: Filipino
Father: Leotiquio P. Baluyot
Mother: Helen P. Baluyot



EDUCATIONAL BACKGROUND

Elementary: Bongabon Central School, Bongabon Nueva Ecija.
(2003-2009)

Secondary: Bongabon National High School, Bongabon Nueva Ecija
(2009-2013)

Tertiary: Central Luzon State University, Science City of Munoz, Nueva Ecija (2013-2017)

SEMINARS AND TRAINING ATTENDED

Symposium of Department of Biological Sciences with the theme **“Current Trends in Food Safety and Quality Assurance”** held at the University Gymnatorium, Central Luzon State University, Science City of Munoz, Nueva Ecija. Given this 30th day of August 2014.

Symposium of the Department of Biological Sciences entitled **HIV: AIDS “Survival of the Fittest. The Human Culture Media”** held at the University Auditorium, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines on November 21, 2015.



Symposium of the Department of Biological Sciences entitled “**Philippine Biodiversity and National Museum**” held at the University Auditorium, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines on March 22, 2016.

2016 Program in Biotechnology Seminar with the theme “**Transferase activity of Lactobacillal and bifidobacterial beta-galactosidases with various sugar as galactosyl acceptors towards the formation of galacto- and hetero-oligosaccharides**” held at Faculty of Science, Maejo University, Thailand on July 13, 2016.

On-The-Job Training Organized by the Program in Biotechnology, Faculty of Science, Maejo University, Thailand. Given on thr 23rd June – 20th July 2016.



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ABSTRACT

BALUYOT, KLEA NIÑA P. Bachelor of Science in Biology, Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, June 2017. **PHYTOCHEMICAL SCREENING, EMBRYO-TOXIC AND TERATOGENIC EFFECT OF *Persea americana* EXTRACT ON ZEBRAFISH (*Danio rerio*) EMBRYOS.**

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The evaluation of embryo-toxicity and teratogenicity activities of *P. americana* leaves, fruit rind and stem bark HWEs using zebrafish embryos as animal experimental model was conducted in this study. Mortality and hatchability of embryos were exposed to different concentrations. Meanwhile, the heartbeat was only examined at pharyngula stage. Furthermore, the morphological abnormalities of zebrafish embryos were recorded at 48-72 hpta.

Test tube methods following the protocol of Sofowara (1993), Trease and Evans (1989) and Harborne (1973) were used for the phytochemical analyses. Various phytochemicals, including tannins, saponins, flavonoids and terpenoids, are present in the leaf, stem-bark and fruit rind of *P. americana*.

A 100% mortality was observed at 1% or higher concentration of leaf and stem-bark and at 0.5% of fruit rind at 48 hpta. LC₅₀ values are estimated using a probit regression analysis. *P. americana* leaves, stem-bark and fruit rind extracts showed LC₅₀ values of 562, 774 and 348 mg/ml respectively.



No hatchability was observed in 0.5% and higher concentrations of *P. americana* leaf, stem-bark and fruit rind HWEs. Only 25% of hatchability was noted in leaf extract at 0.1% concentration whereas a 75% hatchability was recorded in 0.1% fruit rind HWE and 83.33% hatchability was observed in leaf HWE in the same concentration. In terms of heartbeat, 1% and higher concentrations of *P. americana* HWEs had no heartbeat since 100% mortality was observed after 36 hours of exposure.

Generally, coagulation and absence of heartbeat were the observed toxic effects. Growth retardation, limited movement, malformation of head and tail were the most observed teratogenic effects of *P. americana* leaves, stem-bark and fruit rind HWEs to the developing embryos of zebrafish. These significant effects of the plant HWEs strongly indicate their promising potential as source of anticancer agents