OPTIMIZATION OF LIQUID CULTURE CONDITION AND FUNCTIONAL ACTIVITIES OF *Ganoderma lucidum (W. Curt. Fr.) P. Karst*

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ACCEPTANCE SHEET

This undergraduate thesis entitled **OPTIMIZATION OF LIQUID CULTURE CONDITION AND FUNCTIONAL ACTIVITIES OF *Ganoderma lucidum (W. Curt. Fr.) P. Karst*** prepared and submitted by **ARTHUR GRISHA C. RIVERA**, in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN BIOLOGY (MICROBIOLOGY)**, is hereby accepted.

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BIOGRAPHICAL SKETCH

The author of this thesis is Arthur Grisha C. Rivera. He was born in Baler, Aurora on August 21, 1996. He finished his elementary in Dipaculao Central School with an Exemplary Award in Character last 2010 and his secondary in Aurora National Science High School with Third Honorable Mention, Best in History, Boy Scout of the Year Bronze Award and Regional Population Commission Quiz Bee 3rd place last 2014. In his tertiary, he chose to study in Central Luzon State University where he took Bachelor of Science in Biology. Along with this, he also took Bachelor of Theology in Metrolight San Jose Baptist Church. Mr. Rivera has also co-authored three research articles that focused on teratogenicity, optimization and domestication of tropical mushrooms. He ranked first place in Philippine Science Consortium Biology Quiz Bee in Pangasinan State University held last November 28-29, 2017. He attended various seminars regarding health, current technology, food, and environmental awareness in Central Luzon State University entitled Current Trends in Food Safety and Quality Assurance last 2014; HIV: AIDS "Survival of the Fittest. The Human Culture Media" in 2015; "Philippine Biodiversity and the National Museum", "Healthy Eating, Active Living: Sharing Best Practices of Nutrition Education in the Community", "Role of Biologists in the Environmental Impact Assessment and Management Projects in 2016; and "Special lecture on Cryo: Banking of Animal Genetic Resources" in 2017.

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ABSTRACT

RIVERA, ARTHUR GRISHA C., Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **FEBRUARY 2019, OPTIMIZATION OF LIQUID CULTURE CONDITION AND FUNCTIONAL ACTIVITIES OF *Ganoderma lucidum (W. Curt. Fr.) P. Karst.***

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Understanding the physiology of *Ganoderma lucidum* in the development of liquid culture technology is crucial in terms of cultivation, consumption and potential drug discovery. Hence, this study was conducted to provide baseline information regarding to its nutritional and physiological requirement, mycochemical profile, radical scavenging activity, and total phenolic content. Results show that *G. lucidum* has a broad nutritional and physiological requirement although thrive highest in coconut medium, pH 5, room temperature (28 °C), continuous dark in both agitated and static condition. Both mycelia from static and agitated media produced essential oils, sugars, phenols, anthraquinones, anthrones, tannins, flavonoids, steroids, alkaloids and coumarins. Production of triterpenes and fatty acids in mycelial was stimulated by agitated condition. On the other hand, the mycelial mat produced in agitated condition exhibited the highest radical scavenging activity (43.21%) and highest total phenolic content (50.88 mg /g GAE sample).

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