EFFECTS OF LIGHT EMITTING DIODE (LED) ON THE MYCELIAL BIOMASS AND ANTIOXIDANT ACTIVITY OF *Lentinus tigrinus* AND *Lentinus sajor-caju*

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ACCEPTANCE SHEET

This undergraduate thesis entitled "**EFFECTS OF LIGHT EMITTING DIODE (LED) ON THE MYCELIAL BIOMASS AND ANTIOXIDANT ACTIVITY OF *Lentinus tigrinus* AND *Lentinus sajor-caju***" prepared and submitted by **JOYCE ANN F. SALAZAR**, 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 is a simple girl with big dreams. She was the eldest daughter of Florence F. Salazar and Johnny S. Salazar, who was born on September 19, 1997 at San Vicente, Llanera, Nueva Ecija. She was baptized as Roman Catholic and named Joyce meaning "light in every person's life".

She was formally started her education in San Vicente Elementary School, San Vicente Llanera, Nueva Ecija. At year 2010, she finished her primary education as a class Valedictorian. She took her secondary education in San Ricardo National High School, San Ricardo, Talavera, Nueva Ecija, wherein she was an honor student from first year to fourth year. By year 2014, she graduated high school with honor and given a Leadership award.

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ABSTRACT

SALAZAR, JOYCE ANN F., Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **JUNE 2018, EFFECTS OF LIGHT EMITTING DIODE ON THE MYCELIAL BIOMASS AND ANTIOXIDANT ACTIVITY OF *Lentinus tigrinus* AND *Lentinus sajor-caju***

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Light is one of the most important environmental factors influencing mushroom quality including nutrient content as well as the effects on growth and development. In this study, the effect of three different colors of light emitting diode (LED) such as red, green, and blue light and other illumination conditions on the mycelial biomass of *L. tigrinus* and *L. sajor-caju* were evaluated. The highest yield of mycelial biomass and highest antioxidant activity were the basis of determining the best illumination condition. In addition, the effects of different incubation periods under the best LED on the mycelial biomass and antioxidant activities of these mushrooms were also investigated.

Fluorescent light is the best illumination condition for *L. tigrinus* mycelial biomass production (0.32 g). Moreover, this is comparable with red and blue LED. In terms of volume loss, fluorescent light recorded the highest volume loss spent (16.40ml/50ml). The alternating light and dark condition recorded the highest percentage (86.64%) while blue LED had the highest scavenging activity among the three color of LEDs (84.52%). Blue LED was considered as the best LED and was used in the mycelia incubated for 19 days produced the highest mycelial dry weight of *L. tigrinus* (0.26 g). The mycelia grown for 16 days showed the highest DPPH radical scavenging activity (84.91%).

Moreover, red LED is the best illumination condition for *L. sajor-caju* mycelial biomass production (0.30 g) and produced the highest volume loss (13.20ml/50ml). On the other hand, blue LED recorded the highest percentage of radical scavenging activity (78.08%) and considered as the best LED used in the mycelia incubated for 19 days that produced the highest mycelial dry weight of *L. sajor-caju* as well as the highest DPPH radical scavenging activities (52.87%).

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