GENE EXPRESSION LINKED TO ANTIVIRULENCE ACTIVITY OF THE *ILONGOT-EĠONGOT* ETHNOBOTANICALS FROM BAYANIHAN, MARIA AURORA, AURORA AGAINST BIOFILM FORMATION IN *Pseudomonas aeruginosa*

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

BACHELOR OF SCIENCE IN BIOLOGY
(Major in Microbiology)

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ACCEPTANCE SHEET

This undergraduate thesis entitled **"GENE EXPRESSION LINKED TO ANTIVIRULENCE ACTIVITY OF THE *ILONGOT-EGONGOT* ETHNOBOTANICALS FROM BAYANIHAN, MARIA AURORA, AURORA AGAINST BIOFILM FORMATION IN *Pseudomonas aeruginosa*"** prepared and submitted by **REBECCA I. SANTOS** in partial fulfilment of the requirements for the degree of **BACHELOR OF SCIENCE IN BIOLOGY (MICROBIOLOGY)** is hereby accepted.

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BIOGRAPHICAL SKETCH

The author, Rebecca Ileto Santos, was born in San Jose City, Nueva Ecija on March 13, 1998 as the fourth and youngest child of her parents Ricardo Bravo Santos and Cristina Manalastas Ileto. She currently lives in Rufina Homes III, Brgy. Malasin, San Jose City, Nueva Ecija. She attended elementary in San Jose West Central School, San Jose City on 2010 and finished high school at Gracious Shepherd Christian Academy, San Jose City on 2014. She graduated from college at Central Luzon State University in June 2018 with a degree in Bachelor of Science in Biology, Major in Microbiology.

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ABSTRACT

SANTOS, REBECCA I., Bachelor of Science in Biology Major in Microbiology, Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines. 2018. **GENE EXPRESSION LINKED TO ANTIVIRULENCE ACTIVITY OF THE *ILONGOT-EHGONGOT* ETHNOBOTANICALS FROM BAYANIHAN, MARIA AURORA, AURORA AGAINST BIOFILM FORMATION IN *Pseudomonas aeruginosa*.**

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With the widespread appearance of antibiotic-resistant bacteria, demand for novel strategies to control infectious diseases is greatly increasing. The discovery that the use of quorum-sensing (QS) systems is highly significant in many bacteria to coordinate virulence such as biofilm development has indicated an advanced and promising target for antimicrobial drugs.

Ethanolic extracts of selected Philippine Ilongot-Egongot ethnobotanicals were screened for their quorum sensing inhibition activity against biofilm formation in *P. aeruginosa* clinical isolate and P. aeruginosa BIOTECH 1335: *Stachytarpeta jamaicensis*, *Adenanthera intermedia* (leaves and seeds), *Mikania micrantha*, *Hyptis suaveolens*, *Premna odorata, Cymbopogan winterianus, Phyllanthus urinaria, Dillenia philippinensis*, *Hydrocotyle vulgaris*, *Senna alata, Urena lobata, Ceiba pentandra, Ficus sp., Eleusine indica, Diplazium esculentum* and Talahib (no known scientific name).

Seven ethanolic extracts namely *M. micrantha*, *H. suaveolens* flowers, *H. vulgaris*, *A. intermedia*, *E. indica* leaves, *D. esculentum* and talahib have inhibitory effect on *P. aeruginosa* clinical isolate biofilm formation. Moreover, significant decrease in biofilm

formation was shown in twelve of the ethanolic extracts against *P. aeruginosa* BIOTECH 1335. These were *S. jamaicensis., Mikania micrantha, H. suaveolens* flowers, *H. vulgaris, U. lobata, C. pentandra, A. intermedia, E. indica* roots, *E. indica* seeds, *D. esculentum, H. suaveolens* leaves and Talahib.

Three out of four plant extracts, namely *M. micrantha*, talahib and *A. intermedia* significantly downregulated the *lasR* in the *P. aeruginosa* clinical isolate and *P. aeruginosa* BIOTECH 1335. This indicate the potential of these ethnobotanicals for therapeutic approach in inhibiting bacterial virulence, without developing resistance.

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