

**BACTERIAL CULTURE AND MOLECULAR DETECTION OF ZONOTIC
Salmonella typhimurium AND *Escherichia coli* IN ORGANIC
FERTILIZER AND LIQUID SUPPLEMENTS FROM
SELECTED ORGANIC FARMS IN LUZON**

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An Undergraduate Thesis Submitted to the Faculty of the College of Veterinary
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DOCTOR OF VETERINARY MEDICINE

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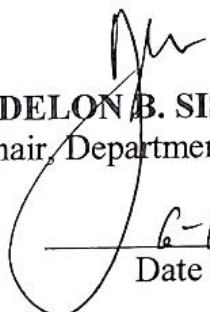
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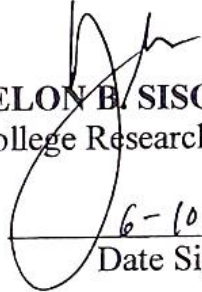
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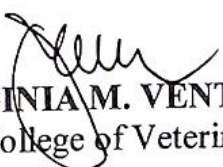
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BIOGRAPHICAL SKETCH

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ABSTRACT

PAGAR, VIENNA MARIE JOYCE D., College of Veterinary Science and Medicine, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **June 2019**, **BACTERIAL CULTURE AND MOLECULAR DETECTION OF ZONOTIC *Salmonella typhimurium* AND *Escherichia coli* IN ORGANIC FERTILIZER AND LIQUID SUPPLEMENTS FROM SELECTED ORGANIC FARMS IN LUZON**

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The study aimed to detect the presence of *Escherichia coli* and *Salmonella typhimurium* in organic fertilizer and liquid supplements. The study detected the presence of *Escherichia coli* and *Salmonella typhimurium* using bacterial culture and polymerase chain reaction and determined which method is best to detect the presence of both zoonotic organisms in organic solid fertilizer and liquid supplements collected from different organic farms in Luzon. This was done by comparing the conventional method of bacterial culture and molecular method using polymerase chain reaction.

In the bacterial culture, the samples were subjected to primary enrichment using Buffered Peptone Agar and Rappaport-Vassiliadis Soya Peptone Broth. The enriched broth was then processed and grown in selective and differential medias such as Xylose-Lysine Deoxycholate Agar (XLD), Eosin Methylene Blue Agar (EMB) and MacConkey Agar (MC). As for the PCR, the nucleic acid extraction was done using iNtRON i-genomic Stool DNA extraction kit and quantified using IMPLN P330 Nanophotometer for both organic and liquid fertilizer. The target genes such as *invA* gene for *Salmonella typhimurium* and the *glxK* gene for *Escherichia coli* were amplified using BioRad T100 thermal cycler. The amplified PCR products was subjected to electrophoresis and was viewed under UV light

where it was scored in accordance to the target amplicon sizes 218 bp for *Salmonella typhimurium* and 206 bp for *Escherichia coli*.

Bacterial culture results for organic fertilizer showed 40% positivity rate for putative *Salmonella typhimurium* while 73% positivity rate for putative *Escherichia coli*. On the other hand, the result for the percent positivity rate of liquid supplement for *Salmonella typhimurium* is 6% while putative *Escherichia coli* has 27%. Polymerase Chain Reaction (PCR) test results for organic solid fertilizer rendered a 67% positivity rate for *Salmonella typhimurium* and 47% positivity rate for *Escherichia coli*. For liquid supplement, the positivity rate for *Salmonella typhimurium* is 47% and 53% for *Escherichia coli*.

Keywords: Organic fertilizer; *Salmonella typhimurium*; *Escherichia coli*; Polymerase Chain Reaction (PCR)

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