

**SCREENING AND CHARACTERIZATION OF LACCASE-  
PRODUCING FUNGI ISOLATED FROM INDUSTRIAL  
SOIL SAMPLES OF CAVITE**

**THESIS**

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**SCREENING AND CHARACTERIZATION OF LACCASE-PRODUCING  
FUNGI ISOLATED FROM INDUSTRIAL SOIL SAMPLES  
OF CAVITE**

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## ABSTRACT

**NATI, CLAIRE M. Screening and Characterization of Laccase Producing Fungi Isolated from Industrial Soil Samples of Cavite.** Undergraduate Thesis. Bachelor of Science in Biology, major in Microbiology. College of Arts and Sciences. Cavite State University, Indang, Cavite. June 2019. Adviser: Prof. Sherine M. Cruzate.

Laccase is a promising enzyme produce by wide range of organisms that has a potential application in industry, biotechnology, and treatment of various indusrial wastes. Hence, this study aimed to screen and characterize laccase producing fungi from different industrial soil samples of Cavite. Screening of laccase producing fungi was done through colorimetric measurement using tannic acid and naphthol as synthetic substrates. A total of 15 fungal isolates showed positive laccase production as indicated by the colored halo zones around their colonies when grown on PDA containing tannic acid. These isolates were identified belonging to five genera: *Paecilomyces*, *Curvularia*, *Fusarium*, *Penicillium*, *Acremonium* and five fungal isolates were not identified due to the variations in their morphotypes. Further screening test revealed that eleven and three isolates exhibited laccase production when grown on PDA with increasing concentrations of tannic acids and  $\alpha$ -naphthol, respectively.

Among the laccase- producing fungi, DSY52 was observed to be the most potent isolate when tannic acid was used as synthetic substrate while DPS6 was the only laccase producing fungi that can tolerate high concentrations of  $\alpha$  –naphthol. However, the produced colored zone was smaller compared to tannic acid. Only *Paecilomyces* spp. (DPS7) and DPS4 were able to produce laccase on both substrate indicators.

The results of this study confirmed the presence of laccase- producing fungi in the industrial soils of Cavite, and their laccase production varied depending on the substrate used.

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# **SCREENING AND CHARACTERIZATION OF LACCASE-PRODUCING FUNGI ISOLATED FROM INDUSTRIAL SOIL SAMPLES OF CAVITE**

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## **INTRODUCTION**

Industrial wastes are one of the top sources of environmental pollution. Across the world, different types of toxic chemicals from untreated or improperly treated industrial effluents enter into the *in situ* environment due to industrial development (Shaman & Wheeler, 2007). In the Philippines, a number of rivers in different part of the country have received some attention lately due to severe contamination. For instance, the Marilao River which runs through the Bulacan Province and into Manila Bay was considered as the top 6 polluted river in the world list. This river was found to be contaminated with several kinds of heavy metals and chemicals from tanneries, gold refineries, dumps, and textile factories (Marrone, 2016). This was further confirmed by the report of Conserve Energy Future (2018) where the water pollution in the country mostly comes from waste water from the different industries. Consequently, the environmental and health effects of the waste materials released from the textile and