conferenceseries.com

4th International Conference on

APPLIED MICROBIOLOGY, ANTIBIOTICS, ANTIMICROBIALS AND BENEFICIAL MICROBES

May 20-21, 2019 Tokyo, Japan

## Clarence M Ongkudon

*University Malaysia Sabah, Malaysia*

### Screening of lignin-degrading microorganisms from Sabah Biodiversity for optimum ligninolytic potential

Lignin is a complex aromatic polymer that intertwining between cellulose and hemicellulose fibers in plant. However, lignin as a by-product during biomass processing is often regarded as nuisance since it retards access to carbohydrates. Recently, there has been much interest in utilization of lignin as petroleum substitutes. In nature, there are diverse groups of microbes that are capable of degrading lignin-rich biomass either in synergistic or competitive manners. Therefore, the use of enzyme cocktails produced from microbial consortia may offer a promising approach to degrade lignin efficiently. The main goal of this research is to search for lignin degrading microbial strains from Sabah biodiversity. Degradation assays to identify suitable isolates for the efficient breakdown of lignin was done on 107 fungi isolates. The results showed that 85 fungi isolates decolorized RBBR (0.01%) effectively compared to Phanarochaete crysosporium. The highest decolorization by F45 with 100% loss of RBBR used. Out of these 85 fungi isolates, a total of 37 and 7 fungi isolates showed higher lignin peroxidase and laccase enzymatic activities, respectively compared to Phanarochaete crysosporium. However, further analysis is required to assess their lignin degrading capability by using real lignin substrate (Kraft lignin).

### Biography

Clarence M. Ongkudon who graduated with PhD in Bioprocess Engineering from Monash University, Australia in 2011 is the coordinator of the Bioengineering Research Group (BERG) in Biotechnology Research Institute (BRI) of University Malaysia Sabah, Malaysia. Dr. Clarence has contributed significantly to the field of bioprocess and biochemical engineering where he develops and creates valuable biomolecules from complex cellular materials in the form of therapeutic vectors and products for vaccination and gene therapy application. Dr. Clarence's most significant contribution to this research field has been the creation of patentable intellectual properties and new knowledge in the field of biomolecule recognition/purification. This has resulted in 2 international patents within the last 5 years. Dr. Clarence has developed an integrated design and downstream process technology that allows a single-stage rapid purification of homogeneous and supercoiled plasmid DNA vaccine on analytical, semi-preparative and preparative scales. This body of work has been a major breakthrough in bioprocess engineering, as purification of plasmid DNA for product development can now be performed rapidly at high throughput with reduced number of unit operations required in downstream processing and increased productivity. This has sparked interests from numerous internationally renowned companies including Boehringer Ingelheim, Qiagen, Promega, Gen Script, Pall, Millipore and Sartorius. Dr. Clarence has published extensively for the past 3 years (over 20 journal and conference publications) in the fields of upstream and downstream processing of therapeutic biomolecules, baculovirus and recombinant proteins. Dr. Clarence aims to create a platform for collaborative projects that work at the cutting edge of biotechnology - drawing together knowledge from medicine, engineering and science in order to tackle biotechnology problems in Malaysia and the world at large.

clarence@ums.edu.my

**Notes:**