SCREENING OF PECTINOLYTIC AND CELLULOLYTIC ACTIVITY AMONG FUNGI ISOLATES OBTAINED FROM PEPPER (*Piper nigrum* L) RETTED WASTEWATER.

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INTRODUCTION

Pepper (*Piper nigrum* L.) is one of the main agricultural exports in Sarawak that is valued at millions of Ringgit in the international market. Malaysia is among the world major producer and exporter of this cash crop. Even so, only less than 20% are in the form of white pepper despite the fact that it is of higher value when compared to black pepper. The rationale behind this is most likely due to the traditional method of processing favored by the small-scale farmers which made out the majority of producers in Malaysia. Improvement in processing technology which incorporates enzymatic retting technology with pectinolytic enzymes (pectinase) could enhanced the production of white pepper as have been reported by Gopinathan and Manilal (2005) using pectinolytic bacterial strain. Pectinase or pectin-degrading enzymes are produced by bacteria, fungi, higher plants and animals (Zhang, 2006). Pectinase breakdown pectin which is essential in the structural integrity of plant tissues as pectin acts like glue that hold different cells together (Zhang, 2006). These enzymes have been applied in the enzymatic retting of flax fibre (Akin *et al*., 2000). Fungi which produced pectinase have been identified as the key player in the retting of flax (Henriksson *et al*., 1997a; b). A similar approach of enzymatic retting can also be conducted for the removal of pepper pericarp in the production of white pepper as all plants tissues shared the similar basic structural component such as pectin. Cellulase activity is also assessed in this experiment. This paper will contribute to selection of indigenous fungi which produces decorticating enzymes that can then be use for trial laboratory scale enzymatic retting of pepper for the production of white pepper.

MATERIALS AND METHODS

Isolation and Fungi Growth Condition

Mature and ripe peppercorn seeds used in the water retting experiment were obtained from small-scale pepper farm in Penrissen, Sarawak and retted for seven days. Isolation of fungi isolates were performed on malt extract agar (MEA) and potato dextrose agar (PDA) supplemented with antibiotic at 28°C. Water retted peppercorn pericarp were inoculated directly on agar plates and treated (surface sterile). Pure fungal isolates were maintained on MEA and PDA and subculture monthly.

Qualitative Screening for High Pectinase Activity

Pure isolates were screened for pectinase activity by inoculating 5mm mycelia plug on minimal salt (MS) agar supplemented with 1% (w/v) citrus pectin (Martin *et al.*, 2004). After three days incubation at 28°C, the plates were flooded with 2% (w/v) iodine solution (Acuna-Argulles *et al.*, 1994) to detect the clearance zone forming outward of the colony margin which indicates the area where pectin have been degraded. A similar approach was also conducted for screening cellulase activity by