

## Variations and Hybridization Compatibility of Single Basidiospore Isolates of *Pleurotus sajor-caju* (Fr.) Sing

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### ABSTRACT

*Pleurotus sajor-caju* (Fr.) Sing, a mushroom of the family Pleurotaceae, is gaining popularity due to its high nutrient content and capability of growing on various agricultural wastes. There is a need to breed new strain of *P. sajor-caju* to meet the rising demands of the increasing human population. Strain improvement is achievable through selection and hybridization. Unfortunately, there is limited information regarding the genetic variations of *P. sajor-caju* in Malaysia. Therefore, this study is of interest to document the morphological variations of single basidiospore isolates and to generate hybrids. A total of 200 single basidiospore isolates (SB) obtained from a commercialized strain of *P. sajor-caju* were obtained from local supermarket in Kuching, Sarawak, and cultured individually on potato dextrose agar. These 200 SBs were characterized morphologically and divided into three main groups based on colony morphology i.e. scattered, rough and smooth. Variations can still be observed in each main group. From each main group, SBs representing the variations were further categorized based on their colony diameter growth after 7 days of post inoculation (CD-7dpi), i.e. slow growing CD-7dpi (SGCD-7), medium fast growing CD-7dpi (MFGCD-7) and fast growing CD-7dpi (FGCD-7). Ten FGCD-7 and ten SGCD-7 isolates were selected for hybridization. The selected SBs were hybridized in all possible pairings without repetition. Sixteen hybridized isolates were recognized and characterized based on CD-7dpi. For all FGCD-7 pairings, SGCD-7 pairings, and between FGCD-7 and SGCD-7 pairings, hybridized isolates had higher CD-7dpi than at least one of its parents were identified. The new hybridized isolates are interesting materials for future study.

Keywords: *Pleurotus sajor-caju*, single basidiospore isolate variations, hybrid

### INTRODUCTION

Mushrooms are becoming one of the main food sources which have acquired more attention particularly in the Asian countries (Rosli & Solihah, 2012). The cultivation of mushroom had taken place since prehistoric times especially in the eastern countries for their nutrient content and flavour (Sadler, 2003). The most widely cultivated mushrooms are from the genus *Pleurotus* or oyster mushrooms (Imran *et al.*, 2011).

*Pleurotus sajor-caju*, commonly known as Dhingri oyster or grey abalone oyster mushroom, is one of the well-known cultivated *Pleurotus* species. This species is currently gaining popularity, due to its nutrient contents (Schneider *et al.*, 2011; Pala *et al.*, 2012; Rosli & Solihah, 2012). In addition, *P. sajor-caju* is reported to possess medicinal values such as preventing atherosclerosis (Schneider *et al.*,

2011), lowering cholesterol level and affecting glycemic response (Rosli & Solihah, 2012).

With the growing demand of *P. sajor-caju* and their huge acceptance for food products, there is a need for strain improvement. Strain improvement by conventional breeding can resolve these tasks. In order to develop new strain having desirable traits, the first step would be to generate and characterize the single basidiospore isolates. The presence of variations among the single basidiospore isolates is crucial for producing intra or interstrain hybrids (Gupta *et al.*, 2011). However, the information on the range of morphological variations for single basidiospore isolates is insufficient for *P. sajor-caju*. This study attempted to isolate and characterize as much as possible single basidiospore isolates with different morphologies. Also in this study, hybridized isolates were produced by hybridizing selected single basidiospore and were characterized.