

Characterization and identification of polypore fungi collected from forests in Sandakan, Sabah based on the macro- and micromorphology

ABSTRACT

Polypore is a group of fungi from the order polyporales that form fruiting bodies with pores or tubes on the underside. Although tropical rainforests are one of the global biodiversity hotspots, but the diversity of polypore fungi has been little examined especially in Sandakan, Sabah. In addition, polypore fungi probably could be exploited as bio-control agents against phytopathogens, and they should be identified. Thus, the objectives of this study were to (i) investigate the macro- and micro-morphological characteristics of polypore fungi; (ii) identify the polypore fungi based on their macro- and micro-morphologies. Fruiting bodies of polypore fungi were collected from Rainforest Discovery Centre (RDC) and Sandakan Rainforest Park (SRP), located in Sandakan, Sabah. In addition, few samples of polypore fungi were obtained from mushroom farms and oil palm estates. A total 35 polypore fungi were collected, their macro-morphologies were characterized based on 47 characteristics of the fruiting bodies, and then isolated using potato dextrose agar (PDA). Moreover, the in-vitro micro-morphologies of the fungi were characterized based on 37 characteristics of the pure cultures. Dendrograms were generated using unweight pair group of arithmetic averages (UPGMA). The macro-morphological characteristics exhibited high variation (20% to 90%) among the fungi. The fungi were categorized into 29 groups at 90% similarity of their macro-morphologies. While for micro-morphology, the fungi were categorized into 32 groups at 100% similarity. The isolates for micro-morphology showed less than 33% dissimilarity among the fungi. These results indicated that most polypore fungi collected are from family Polyporaceae and Ganodermataceae. Among these family, there are about 10 different genera were identified based on their macro- and micro-morphological characteristics. Either the family, genus, or species of 25 out of 35 polypore fungi (71%) were identified and others remain unidentified based on their macro- and micro-morphological characteristics. Further research should be conducted to study the potential uses of the polypore fungi, such as in bio-control against phytopathogens.