

ISOLASI DAN KARAKTERISASI KAPANG *OLEAGINOUS* DARI TANAH KEBUN RAYA BATURRADEN JAWA TENGAH, INDONESIA

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INTISARI

Kapang *oleaginous* berpotensi sebagai alternatif pengganti energi fosil dan sebagai bahan baku produksi biodiesel. Kapang *oleaginous* diduga dapat tumbuh pada substrat yang kaya karbon. Tujuan penelitian ini adalah mendapatkan isolat kapang dari tanah kebun Raya Baturraden, Jawa tengah, Indonesia, mengetahui jenis kapang *oleaginous* yang didapatkan, mengetahui konsentrasi lipid kapang dan mengetahui profil asam lemak kapang *oleaginous*. Isolasi kapang dilakukan dengan media TEA, purifikasi dilakukan dengan media PDA dan media produksi dilakukan dengan media semisintetik, tiga isolat penghasil lipid tertinggi diidentifikasi morfologi berdasarkan literatur dari Watanabe 2002 dan diidentifikasi molekular dengan ITS region dan disquensing. Profil lipid tiga isolat penghasil lipid tertinggi dianalisa menggunakan GC-MS. Sembilan belas kapang diperoleh dari hasil isolasi dan empat diantaranya menghasilkan lipid lebih dari 20%. Isolat kapang *oleaginous* BR.2.2, BR.2.3, BR.3.3 dan BR.4.4 secara berurutan menghasilkan konten lipid 28,44%, 21,06%, 21,76% and 28,27%. Identifikasi molekular tiga isolat penghasil lipid tertinggi menunjukan bahwa BR.2.2 tidak dapat teridentifikasi, BR.3.3 merupakan anggota *Brevistachys* sp. dan BR.4.4 merupakan anggota *Cerrena* sp. Profil asam lemak BR.2.2 adalah 60,47% *saturated fatty acid* (SFA), 21,12% *monounsaturated fatty acid* (MUFA), dan 5,0% *polyunsaturated fatty acid* (PUFA); BR.3.3 adalah 36,85% *saturated fatty acid* (SFA), 17,47% *monounsaturated fatty acid* (MUFA), dan 1,59% *polyunsaturated fatty acid* (PUFA); sedangkan BR.4.4 adalah 70,48% *saturated fatty acid* (SFA), 19,62% *monounsaturated fatty acid* (MUFA), dan 0,56% *polyunsaturated fatty acid* (PUFA). Disarankan untuk melakukan penelitian lebih lanjut untuk meningkatkan produksi lipid dari strain-strain tersebut.

Kata kunci: *Kapang, Oleaginous, Biodiesel, Lipid, Identifikasi*

**ISOLATION AND CHARACTERIZATION OF *OLEAGINOUS*
FILAMENTOUS FUNGI FROM SOIL IN BATURRADEN BOTANICAL
GARDEN CENTRAL JAVA, INDONESIA**

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ABSTRACT

The *oleaginous* filamentous fungi have the potential as alternative to fossil fuel and as a feedstock for biodiesel production. The oleaginous filamentous fungi are known to be able to grow on substrate carbon. The purposes of this study were to obtain *oleaginous* filamentous fungi from soil in the Baturraden Botanical Garden, Central Java, Indonesia, to obtain the species oleaginous filamentous fungi from soil in Baturraden Botanical Garden, determine concentration lipid filamentous fungi and determine lipid profile. Filamentous fungi isolation was carried out using TEA media, purification using PDA media and production lipid using semisynthetic media, the three highest lipid-producing isolates were identified morphologically based on literature from Watanabe 2002 and identified by molecular method with ITS region gene sequence of Sanger DNA sequencing. The fatty acid profile of three isolates producing high lipid was identified using GC-MS. The result showed that four of nineteen fungi can accumulate lipid more than 20%. The lipid content found in BR.2.2, BR.2.3, BR.3.3 and BR.4.4 were 28,44%, 21,06%, 21,76% and 28,27%, respectively. Three isolates produce high lipid was identified as unclassified for BR.2.2, *Brevistachys* sp. for BR.3.3 and *Cerreana* sp. for BR.4.4. The fatty acid profile of BR.2.2 showed 60,47% saturated fatty acid (SFA), 21,12% monounsaturated fatty acid (MUFA) and 5,0% polyunsaturated fatty acid (PUFA) and BR.3.3 showed 36,85% saturated fatty acid (SFA), 17,47% monounsaturated fatty acid (MUFA) and 1,59% polyunsaturated fatty acid (PUFA) while BR.4.4 showed 70,48% saturated fatty acid (SFA), 19,62% monounsaturated fatty acid (MUFA) and 0,56% polyunsaturated fatty acid (PUFA). It is recommended to conduct further research to increase lipid production from these strains.

Keyword: *Oleaginous, Filamentous fungi, Lipid, Biodiesel*