

Isolasi mikroalga thraustochytrids penghasil asam dokosaheksanoat (DHA) = Isolation of thraustochytrids microalgae which produce docosahexaenoic acid (DHA)

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Abstrak

Asam dokosaheksanoat (DHA) merupakan asam lemak omega-3 esensial yang berperan penting terhadap kerja otak, jaringan saraf serta retina. Saat ini, mikroalga mendapat perhatian sebagai sumber alternatif yang potensial dalam menghasilkan asam lemak omega-3, yang biasanya didapatkan dari produk ikan. Sebagai sumber DHA konvensional, minyak ikan memiliki kandungan DHA yang rendah, yang dapat memicu penangkapan ikan berlebihan (over fishing) apabila dibutuhkan jumlah DHA yang banyak. Mikroalga Thraustocytrids ditengarai sebagai mikroalga yang sangat potensial dalam menghasilkan DHA.

Penelitian ini bertujuan untuk mendapatkan isolat mikroalga Thraustocytrids yang mampu menghasilkan (DHA). Mikroalga Thraustochytrids diisolasi dari guguran daun mangrove yang terletak di Kawasan Mangrove Lampung dengan metode direct planting. Mikroalga yang tumbuh diamati morfologinya dengan mikroskop cahaya. Koloni Thraustochytrids yang tumbuh dipurifikasi hingga dihasilkan koloni tunggal yang selanjutnya diperbanyak dan dibuat biomasnya. Asam lemak diekstraksi dan dimetilasi dengan metode direct transesterification serta diidentifikasi kandungan DHANYA dengan menggunakan Kromatografi Gas-Spektrofotometri Massa.

Hasil identifikasi menunjukkan terdapat DHA pada sampel minyak mikroalga Thraustochytrids. Keberadaan DHA dipastikan oleh kecocokan fragmentasi massa DHA sampel dan fragmentasi massa DHA pada database spektrum massa NIST (National Institute of Standards and Technology).

Docosahexaenoic acid (DHA) is an omega-3 fatty acid that is essential for the proper functioning of the brain, neural tissues and retina. In recent years, microalgae have gained attention as a potential alternative source of omega-3 fatty acid, which are commonly sourced from fish stocks. Fish stocks, as the conventional source of DHA have a very low concentration of DHA, which could bring overfishing issue as an impact of getting a high concentration of DHA. Thraustochytrids is known as a potential microalgae source of DHA.

The purpose of this study is to isolate a Thraustochytrids microalgae that can produce DHA.

Thraustochytrids microalgae were isolated from fallen mangrove leaves at Lampung Mangrove Zone with direct planting technique. The morphology of growing microalgae was observed with light microscope. The growing Thraustochytrids colony was purified until a single colony was obtained. The selected colony was cultured and was dried to make its biomass. Fatty acid was extracted and methylated using direct transesterification method. The presence of DHA in microalgae isolate was identified with Gas Chromatography- Mass Spectrophotometer.

The result of DHA identification proved that the isolate of Thraustochytrids microalgae was contained DHA. The presence of DHA in the microalgae oil sample was confirmed by the similarity of DHA mass fragmentation in the sample and DHA mass fragmentation in NIST (National Institute of Standards and Technology) Library Database.