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Lihat Sebelah

EFFECT OF KINETIN ON GROWTH AND FATTY ACID COMPOSITION IN *CHLORELLA* SP. (UMT-M1)

By

NUSAIBAH BINTI MD DISA

A PITA report submitted in partial fulfillment of

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PENGAKUAN DAN PENGESAHAN LAPORAN PITA

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **EFFECT OF KINETIN ON GROWTH AND FATTY ACIDS COMPOSITION IN *CHLORELLA* SP. (UMT-M1)** oleh **NUSAIBAH BINTI MD DISA**, no. matrik: **UK17332** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi ljazah **SARJANA MUDA SAINS (SAINS BIOLOGI)**, Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that this PITA research report entitled **'Effect of Kinetin on Growth and Fatty Acid Composition in *Chlorella* sp. (UMT-M1)'** is the result of my own research except as cited in the references.

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THE EFFECT OF KINETIN ON GROWTH AND FATTY ACID COMPOSITION IN *CHLORELLA* SP. (UMT-M1)

ABSTRACT

The effect of the kinetin on growth and fatty acid composition of *Chlorella* sp. (UMT-M1) were conducted. Three different concentrations used were 0.7, 1.4 and 2.8 mg/l kinetin. The microalgae cultured at 25°C and 24h of 150μmol photon m^{-2} s^{-1} for light illustration. The growth of the *Chlorella* sp. in the medium treated with kinetin was observed. The 1.4 mg/l of kinetin recorded the highest number of cells, 1.86 ± 0.08 ($x10^7$ cells/ml), after 42 days of cultivation in aeration condition, while the control show the lowest number of cells which was 1.31 ± 0.07 ($x10^7$ cells/ml). The total oil content was increased accordingly as the concentration of kinetin increased. The total saturated fatty acid (SFAs) was decreased as the concentration of kinetin increased, while both mono-unsaturated (MUFAs) and polyunsaturated fatty acid (PUFAs) were increased accordingly. The major selected fatty acid was found in *Chlorella* sp. treated with kinetin were C16:0, C16:1, C17:0, C18:0, C18:1, C18:2, C18:3n3 and C20:0. Thus, it was concluded that kinetin can enhanced the growth of the *Chlorella* sp but has no significant different between fatty acid composition. Further studies must carry out to determine how biochemical stimulatant affects the fatty acid biosynthesis.

KESAN KINETIN TERHADAP PERTUMBUHAN DAN KOMPOSISI ASID LEMAK DI DALAM *CHLORELLA* SP. (UMT-M1)

ABSTRAK

Kesan kinetin terhadap pertumbuhan dan komposisi asid lemak di dalam *Chlorella* sp (UMT-M1) telah dilakukan. Terdapat tiga kepekatan kinetin yang berbeza telah digunakan iaitu, 0.7, 1.4 dan 2.8 mg/l kinetin. Mikroalga dikultur pada 25 ° C dan 24h 150µmol photon m^{-2} s^{-1} untuk cahaya ilustrasi. Pertumbuhan *Chlorella* sp. di dalam media yang mengandungi kinetin diperhatikan, 1.4 mg/l kinetin mencatatkan jumlah sel yang tertinggi, 1.86 ± 0,08 (x10^7 sel / ml), selepas 42 hari di kultivasi dalam keadaan aerasi, manakala kawalan menunjukkan jumlah sel yang terendah iaitu1.31 ± 0,07 (x107 sel / ml). Kandungan minyak total meningkat apabila kepekatan knetin meningkat. Total asid lemak tepu (SFAs) mencatatkan penurunan apabila kepekatan kinetin meningkat, manakala kedua-dua asid lemak menunjukkan sebaliknya. Asid lemak utam yang telah dipilih ditemui di dalam *Chlorella* sp yang dirawat dengan kinetin adalah C16: 0, C16:1, C17:0, C18: 0, C18: 1, C18: 2, C18: 3n3 dan C20: 0. Oleh hal yang demikian, dapat disimpulkan bahawa kinetin dapat meningkatkan pertumbuhan *Chlorella* sp tetepi tidak mempunyai perbezaan yang signifikan antara komposisi asid lemak. Penyelidikan yang lebih lanjut perlu dilakukan untuk menentukan bagaimana kinetin memberi kesan terhadap biosintesis asid lemak.