EFFECT OF SUPPLEMENTING GLUCOSE ON GROWTH AND FATTY ACID COMPOSITION IN *CHLORELLA* SP. ([illegible])

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EFFECT OF 6-BENZYLAMINOPURINE ON GROWTH AND FATTY ACIDS COMPOSITION IN *CHLORELLA SP.* (UMT-M1)

By
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the requirements for the award of the degree of
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PENGAKUAN DAN PENGESAHAN LAPORAN PITA

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **EFFECT OF 6-BENZYLAMINOPURINE ON GROWTH AND FATTY ACIDS COMPOSITION IN *CHLORELLA* SP. (UMT-M1)** oleh **SITI FARIDAH BT ABDUL RAHMAN**, no. matrik: **UK16795** 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 research report entitled **Effect of 6-Benzylaminopurine on Growth and Fatty Acids Composition in *Chlorella* sp. (UMT-M1)** is the result of my own research except as cited in the references.

Signature : 
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EFFECT OF 6-BENZYLAMINOPURINE ON GROWTH AND FATTY ACID COMPOSITION IN *CHLORELLA* SP. (UMT-M1)

ABSTRACT

Chlorella is single-celled green algae which belong to phylum Chlorophyta. *Chlorella* species is a potential source of a wide spectrum of nutrients, including chlorophyll, carotenoids, minerals, vitamins, and long-chain polyunsaturated fatty acids (PUFAs). External plant growth hormone is one of the alternatives that can use in order to enhance the productivity of microalgae for commercial potential. This study was conducted to determine the effect of 6-benzylaminopurine (BAP); 0.0, 0.7, 1.4, and 2.8mg/L on growth and fatty acids composition in *Chlorella* sp. (UMT-M1). The isolated *Chlorella* sp. (UMT-M1) was cultured and maintained under aeration at culture condition of temperature 25±1°C, 24 hour light illustration and 150µmol photon $m^{-2}s^{-1}$ light intensity in culture room for 42 days. The cells were harvested at late stationary phase by flocculation and analyzed using Gas Chromatography. The growth of *Chlorella* sp. (UMT-M1) was significantly influence by the present of BAP. The cells number increase accordingly with the amount of BAP used in the medium. BAP in *Chlorella* sp. (UMT-M1) culture medium show effect on the production of fatty acids profile. The highest oil content and PUFAs composition was recorded in 0.7mg/L BAP medium; oil content (22.747 ± 1.522 w/w%) and PUFAs composition (35.63 ± 6.81 %). Application of exogenous such as BAP altered the growth and fatty acid profile in *Chlorella* sp. (UMT-M1).

KESAN 6-BENZENAMINOPURIN KEATAS PERTUMBUHAN DAN KOMPOSISI ASID LEMAK DIDALAM *CHLORELLA* SP. (UMT-M1)

ABSTRAK

Chlorella adalah alga hijau yang tegolong didalam filum Chlorofita. *Chlorella* merupakan suatu sumber potensi yang luas dari segi nutrisi, klorofil, karotenoid, mineral, vitamin, dan asid lemak tidak tepu (PUFA). Penggunaan hormon pertumbuhan tumbuhan merupakan salah satu alternatif yang boleh digunakan untuk meningkatkan produktiviti mikroalga untuk komersial. Kajian ini dilakukan untuk menentukan kesan 6-benzilaminopurin (BAP); 0.0, 0.7, 1.4, dan 2.8mg/L terhadap pertumbuhan dan komposisi asid lemak didalam *Chlorella* sp. (UMT-M1). *Chlorella* sp. (UMT-M1) dikultur dalam arasi pada suhu 25±1 °C, pada 24 jam ilustrasi cahaya dan 150μmol photon $m^{-2}s^{-1}$ kepekatan cahaya didalam bilik kultur selama 42 hari. Sel dituai pada lewat fasa stationari dan dianalisis menggunakan Gas Chomatography. Pertumbuhan *Chlorella* sp. (UMT-M1) dipengaruhi secara signifikan oleh kehadiran BAP didalam media. Jumlah sel meningkat dengan jumlah BAP digunakan didalam medium. BAP yang terkandung didalam kultur media *Chlorella* sp. (UMT-M1) menunjukkan kesan terhadap penghasilan asid lemak profil di dalam sel. Kandungan minyak yang tertinggi dan komposisi PUFA yang tertinggi dicatatkan oleh sel *Chlorella* sp. (UMT-M1) yang dikultur didalam media yang mempunyai 0.7mg/L BAP; kandungan minyak 22.747 ± 1.522 % (w/w) dan komposisi PUFA (35.63 ± 6.81%). Penggunaan hormon pertumbuhan tumbuhan luaran dapat merubah pertumbuhan dan komposisi asid lemak di dalam *Chlorella* sp. (UMT-M1).