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Optimization of growth of *Spirulina platensis* in photo-bioreactor for production of bioactive constants; 2-lipophilic constituents

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In batch ten liter photo-bioreactor, *Spirulina platensis* microalgae were cultured in zarrouk medium containing different Nitrogen concentrations at pH 9.8 incubated for 15 days. The pH and biomass in algae cultures grow at different N₂ concentration (N-limitation, N-optimal and N-rich medium) for production of total lipids and its fatty acids profile and total carotenoids contents. BCs was comparatively studied in biomass after 16 days. Among all *S. platensis* cultures, the concentration of total lipid content extracted by dichloromethane/methanol (1:1, v/v, with 1:30 microalgae dry weight to solvent ratio) by different extraction methods cold Col, sonication Son and microwave Mic in N-limitation cultures were increased significantly compared with that in both N-optimal and N-rich culture. According to the lipid yields, the order of extraction efficiency on *S. platensis* could be ranked Mic>Son>Col. In comparative studied for its fatty acid profiles among all of microalgae cultures analyzed by GC/MS, the most abandoned fatty acids were palmitic acid (C16:0) and myristic acid (C14:0) belonging to saturated fatty acids (SFA); oleic (C18:1) and palmitoleic acid (C16:1) belonging to mono unsaturated fatty acids (MUFA). Also, TL of *Spirulina* contained significant amounts of linoleic acid and γ -linolenic acid. Moreover, *S. platensis* cultivated in N-limitation media (45.54 mg/g), total carotenoids TCAR contents were higher than that found in both N-optimal (11.2 mg/g) and N-rich culture (6.23 mg/g).

Biography

Gamal El-Baroty, Biochemistry Department, Cairo University, PhD in 1988 My Scopus H-index and Google Scholar are 11 and 18; respectively. I have 100 research papers. I have close to thirty five years' experience in Natural products, pollution chemistry and chemical instrumentation analysis all in the US (Environmental Research Center at the University of Nevada, 1990-1991 and Texas S. University, interval from 1991-2009) and in Egypt. I am thoroughly familiar with the operation of a large variety of analytical instruments used for monitoring pollution and identification of natural products. These include gas chromatography, GC/MS, GC/MS/MS, mass spectroscopy MS, infrared spectroscopy FT-IR, high-pressure liquid chromatography HPLC, capillary gas chromatography, super-critical fluid chromatography SCFC atomic absorption spectrophotometer AA, electrophoresis, and selective ion electrodes, ICP, ICP-MS, LC-MS-MS. I participated in many funded projects at Cairo University, Nevada and Texas Southern University, where testing a wide variety of environmental organic pollutants and heavy metals in water, plant and animal tissues were performed. I have a longstanding experience in lipid chemistry, marine chemistry, biochemistry and chemistry of essential oils, as a result I received many local and international grand in varied area including: biodiesel, food functional, bioactive substances from wild plant and spices. I received too many prestige's National Awards.

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