Farouk K El-Baz et al., J Biotechnol Biomater 2018, Volume 8
DOI: 10.4172/2155-952X-C5-100



## Growing *Scenedesmus obliquus* microalgae in photobioreactor for biomass and biodiesel production

**Farouk K El-Baz** and **Sayeda M Abdo**
National Research Centre, Egypt

The aim of this study is to investigate the biomass and oil production capacity of *S. obliquus* grown in outdoor photobioreactors (PBR) under nitrogen repletion and starvation conditions. The volume of PBR was 4000 liters as a demo unit with the facility of computerized controlled system. The results showed that, the maximum biomass achieved with the highest dilution rate (0.25%) was 43.2 $gm^{-2}d^{-1}$. This was detected when the dry weight was 2.1 g/L. The maximum oil content reached to 26%±0.23 after 29 days under N repletion. However under nitrogen starvation, the oil content was dramatically increased and reached to 41.9%±0.6 after 8 days. Fatty acids profile showed that, both saturated and unsaturated acids were detected. The major saturated fatty acids were palmitic and stearic acids. The unsaturated fractions were detected as palmitoleic, oleic, linoleic and linolenic acids. The fatty acids with four or more double bonds were not detected. Total saturated fatty acids represented 60.47% and 67.43% under nitrogen repletion and nitrogen starvation respectively. The use of photobioreactor for the production of algae is economically feasible, where there is a large amount of sun energy available, which provides a great saving for energy. A high quality of biodiesel could be produced from microalgae *S. obliquus* and used efficiently and environmentally safe in conventional diesel engine

### Biography

Farouk K El-Baz has completed his PhD from Cairo University, Cairo. He is a Professor of Biochemistry, the Principal Investigator of biodiesel production from algae as a renewable energy source project - which is funded by EU. He is also the PI of Industrial Pharmaceutical Alliance (NRC) sponsored by the Academy of Scientific Research and Technology, Egypt. He is the Director of Algal Technology Unit/NRC, Cairo, Egypt. He has published 152 papers in international journals; he has supervised 18 theses, and serving as the Reviewer of many international journals.

fa_elbaz@hotmail.com