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Sustainable Energy Production from Microalgae in Queshm Island, Persian Gulf

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Abstract : Out of hundreds of microalgal strains reported, only very few of them are capable for production of high content of lipid. Therefore, the key technical challenges include identifying the strains with the highest growth rates and oil contents with adequate composition, which were the main aims of this work. From 147 microalgae screened for high biomass and oil productivity, the Nannochloropsis sp. PTCC 6016, which attained 52% lipid content, was selected for large scale cultivation in Persian Gulf Knowledge Island. Nannochloropsis strain PTCC 6016 belongs to Eustigmatophyceae (Phylum heterokontophyta) isolated from Mangrove forest area of Qheshm Island and Persian Gulf (Iran) in 2008. The strain PTCC 6016 had an average biomass productivity of 2.83 g/L/day and 52% lipid content. The biomass productivity and the oil production potential could be projected to be more than 200 tons biomass and 100000 L oil per hectare per year, in an outdoor algal culture (300 day/year) in the Persian Gulf climate.

Keywords : biofuels, microalgae, Nannochloropsis, raceway open pond, bio-jet
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