Microalgae: A future perspective

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During the past decades , microalgae has been known as source for biofuel production. In our study, the samples was obtained from Weston park pond (Sheffield,uk) and identified. The neutral lipid content of both Auxenochlorella and chlorella was measured using fluorescent dye Nile Red. The effects of stress conditions on Natural lipid accumulation by both microorganism to evaluate the comparative potentials for production of biodesel. The highest percentage TAG content found in Axenochlorella occurred after the period of three weeks in the cells grown at 0.8MNaCL it was 24% whereas in chlorella it occured after 4 weeks in the cells grown at 1MNacl which was 26%. Natural lipid accumulation increased significantly with nitrogen starvation it was 44% in Auxenochlorella while in chlorella it was 70% so the percentage neutral lipids was much higher under nitrogen stress than under salinity stress.

Further work on Fatty acid Methyl Esters (FAME) conversion Yield was examined using a direct transesterification method and the composition of fatty acids was investigated using GC-MS. The FAMs found in Auxenochlorella and Chlorella cells grown under normal conditions were the same and mainly consisted of palmitic acid (C16:0), Oleic acid (C18:1) and linolenic acid (C18:3).At increased salinity, the FAME composition did not change except for the addition of stearic acid (C18:0) for Auxenochlorella. In nitrogen-stressed cells, Oleic acid becomes the major FAME for both organisms. For biodiesel production, saturated or mono-unsaturated fatty acid are favoured so the composition of FAME in Auxenochlorella and Chlorella is reasonably well suited to biodiesel production.

13th International Conference on Biofuels & Bioenergy; February 19-20, 2020; Dubai, UAE

Citation: Jordan M (2020); Microalgae: A future perspective, Biofuel 2020, February 18-19, 2020; Dubai, UAE