Micro-algal Consortium used as a Better CO_2 Sequestration and Mitigation

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Abstract—*Micro-algal consortium bio-fixation of CO_2 (Carbon- dioxide) is an effective way for CO_2 sequestration and mitigation, addressing the increased stratospheric global warming. Earlier attempts on the subject discussed mainly on the Cyanophycean and Chlorophycean algae not on micro-algal consortium. The specific objective of this study was to characterize two cyanobacteria monoculture i.e. Westeillopsis prolifica and Calothrix sp , two chlorophycean microalgae monocultures i.e. Chlamydomonas reinhardatii and Scenedesmus quadricauda collected from the Varuna river Bhadohi district, U.P. , isolated and characterized it. Besides this three microalgal consortia were developed i.e.-*

Consortia1- (Westeillopsis prolifica+ Calothrix+ Chlamydomonas reinhardatii+ Scenedesmus quqdricauda)

Consortia2- (Chlamydomonas reinhardatii +Scenedesmus quadricauda)

Consortia3-(Westeillopsis prolifica+Calothrix sp.)

This consortia were studied for Growth , Pigment analysis, Biochemical assays and finally after 20 days cultures dried biomass calculated for CO_2 quantity, The results showed that-

Consortia showed 55% more CO_2 level.

Consortia comprising of both chlorophyceae algae showed 31%more CO_2.

Consortia of both cyanobacteria showed 28% more CO_2 level

Thus micro-algal consortium can be used for high temperature tolerance, high light adaptability and reasonably high carbon assimilation rate making it promising for used as a carbon capture, storage and CO_2 mitigating.

Keywords*: Microalgae, Consortium, Mitigation*