

Table S1: Water quality parameters before and after microalgal cultivation for 6 days with continuous supply of different concentrations of CO₂.

Sample Identity	Total Organic Carbon (µM)	NO₂⁻+ NO₃⁻ (µM)	PHOSPHATE (µM)	AMMONIA (µM)	SILICATE (µM)	Turbidity (NTU)
Untreated Effluent	272.7	331	1894	41278	ND	75.8
Diluted Effluent (15% v/v)	130.6	224	894	6167	ND	33.7
Microalgal cultivation (5% CO₂)	110	118	543	2154		6.8
Microalgal cultivation (10% CO₂)	99.5	45.5	385	1084	ND	5.4
Microalgal cultivation (20% CO₂)	105	88.78	584	1985		6.2
Max % Reduction (10% CO₂)	23.46	79.68	63.64	82.42	ND	84

Table S2: Comparison on maximum biomass productivity and CO₂ biofixation rate reported of different *Chlorella* species.

Microalga	CO ₂ Concentration (%)	Maximum Biomass productivity (g L ⁻¹ d ⁻¹)	CO ₂ utilization rate (g L ⁻¹ d ⁻¹)	Reference
<i>Chlorella pyrenoidosa</i>	5	0.31	0.251	Sydney et al., 2010
<i>C. vulgaris</i>	10	0.104	ND	Yoo et al., 2010
<i>C. pyrenoidosa</i>	10	0.144	0.288	Tang et al., 2011
<i>Chlorella</i> sp WT	25	0.2	0.376	Chiu et al., 2011
<i>Chlorella</i> sp	20	0.271	0.510	Zhao et al., 2014
<i>Chlorella</i> sp	5	0.314	0.287	Yadav et al., 2015
<i>C. fusca</i>	10	0.08	0.25-0.36	Duarte et al., 2017
<i>C. minutissima</i>	10	0.15	0.25	Freitas et al., 2017b
	20	0.16	0.274	
<i>Chlorella</i> sp	Air level	0.0507	0.0953	Ansari et al., 2017
<i>C. vulgaris</i> NIOCCV	5	0.11	0.15	Present study
	10	0.264	0.43	

Table S3: Total lipid content and fatty acid composition (relative %) of *C. vulgaris* NIOCCV cultivated with the supply of different CO₂ concentrations.

	Continuous CO₂ supply		
	5%	10%	20%
Total lipid content (%)	28.5±2.1	38±2.8	18±2.8
Fatty acid composition	Relative (%) content		
C16:0	32.12±3.69	26.26±0.43	24.82±0.68
C18:0	1.50±0.14	1.5±0.14	1.475±0.16
C20:0	1.69±0.61	2.13±1.04	1.415±0.07
C16:1 n-9	2.72±0.05	3.93±0.19	2.89±0.72
C18:1	4.675±0.23	6.06±0.19	4.145±0.07
C16:2	13.73±1.18	15.95±0.56	16.73±0.14
C16:3	8.21±0.52	7.46±0.1	7.825±0.54
C18:2	21.78±0.15	22.23±1.37	24.22±0.02
C18:3	13.045±0.28	11.75±0.75	12.46±0.63

TableS4: Fuel properties of *C. vulgaris* NIOCCV cultivated mixotrophically with different CO₂ concentrations in comparison with different biodiesel standards.

Property	Biodiesel properties after cultivation with different CO ₂ concentrations			Biodiesel standards		
	5 %	10 %	20 %	ASTM D-6751	EN 14214	IS 15607
SV (mg g ⁻¹)	161.202	152.949	147.724			
IV (g I ₂ per 100 g)	82.059	81.82	84.584	ND	<120	<115
CN (min.)	61.695	63.576	64.216	47	51	51
CFPP (°C max.)	1.297	0.823	-1.915	region specific	region specific	6
OS (h min.)	5.977	6.061	5.806	3	8	6
Viscosity (mm ² s ⁻¹)	2.658	2.541	2.541	1.9-6.0	3.5-5.0	2.5-6.0
Density (g cm ⁻³)	0.681	0.649	0.628	ND	0.86-0.9	0.86-0.9
Linolenic acid methyl ester (% max)	13.045±0.28	11.75±0.75	12.46±0.63	ND	12	12