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ELECTRONIC SUPPLEMENTARY INFORMATION

Low cost and scalable process for harvesting of microalgae using commercial grade flocculant

Gargi Goswami[a,Ψ], Ratan Kumar[a,Ψ], Ankan Sinha[a,Ψ], Babul Chandra Dutta[b], Harendra Singh[b], Debasish Das,[a,*]

[a]Department of Biosciences & Bioengineering, Indian Institute of Technology, Guwahati, Assam 781039, India

[b]Institute Of Biotechnology &Geotectonic Studies, ONGC Ltd, A&AA Basin, Cinnamara, Jorhat, Assam 785704, India

[Ψ] Equal Author Contribution

*Corresponding author.

Professor,

Department of Biosciences & Bioengineering,

Indian Institute of Technology Guwahati,

Guwahati, Assam 781039, India.

Tel.: +91-361 258 2221; fax: +91-361 258 2249.

E-mail addresses: debasishd@iitg.ac.in, debasish.iitg@gmail.com (D. Das).

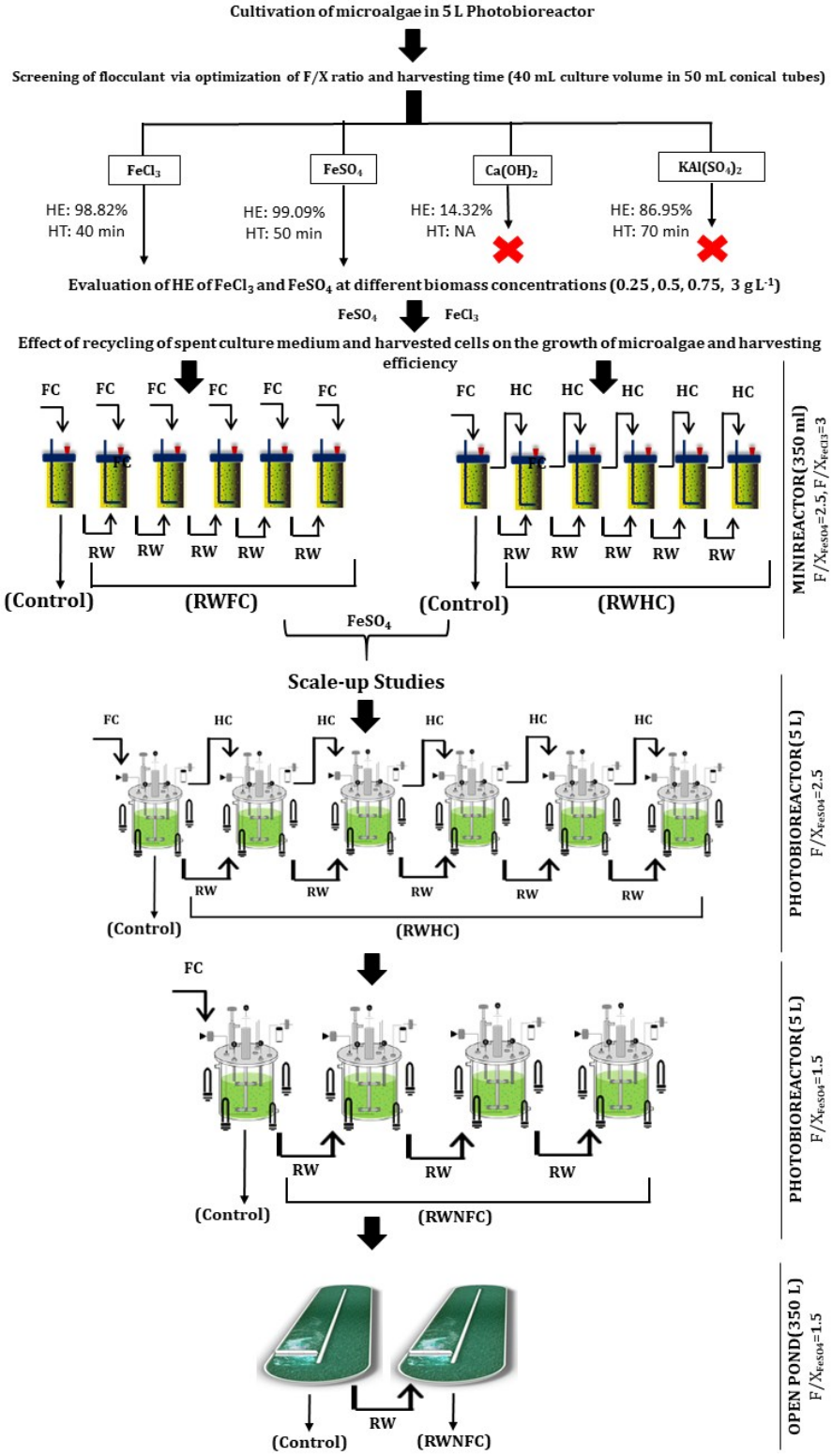

Fig. S1 Flow diagram of the experimental steps carried out in the present study

HE: Harvesting Efficiency; HT: Harvesting Time; FC: Fresh Cells; HC: Harvested Cells; RW: Recycled Water; RWFC: Batches with recycling of spent water after harvesting and fresh cells as inoculum for the successive batch; RWHC: Batches with recycling of spent water after harvesting and harvested cells as inoculum for the successive batch; RWNFC: Batches with recycled spent water after harvesting from the previous batch with treated non-flocculated cells as inoculum for the consecutive batches; F/X: Weight of the flocculant F to weight of the microalgal biomass X.

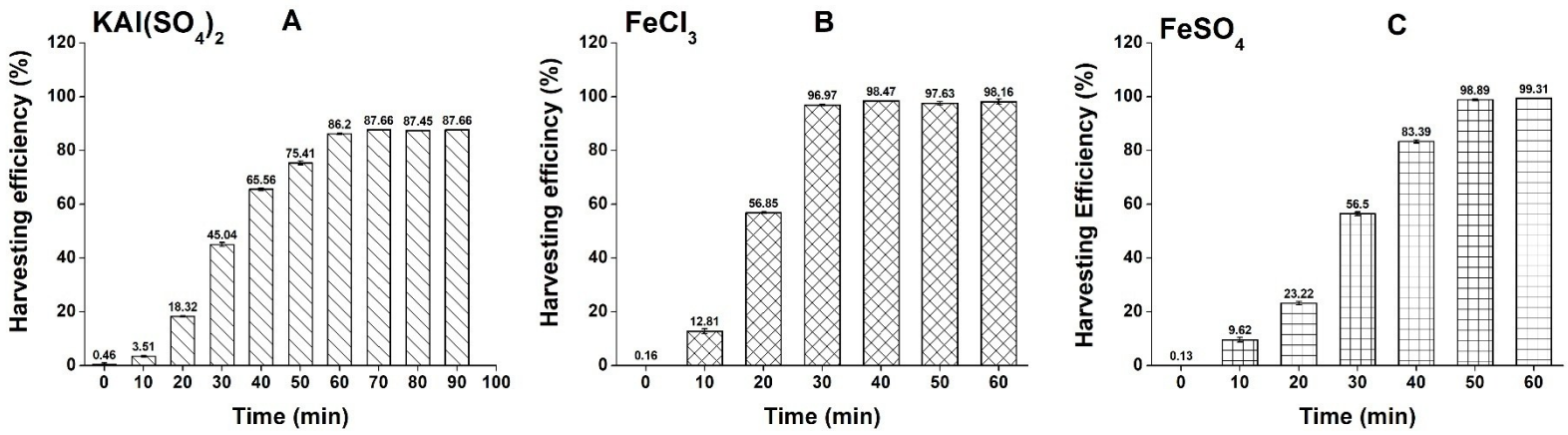

Fig. S2 Effect of process time on harvesting efficiency of (A) Alum, (B) $FeSO_4$, and (C) $FeCl_3$ as flocculant for *Chlorella* sp. FC2.

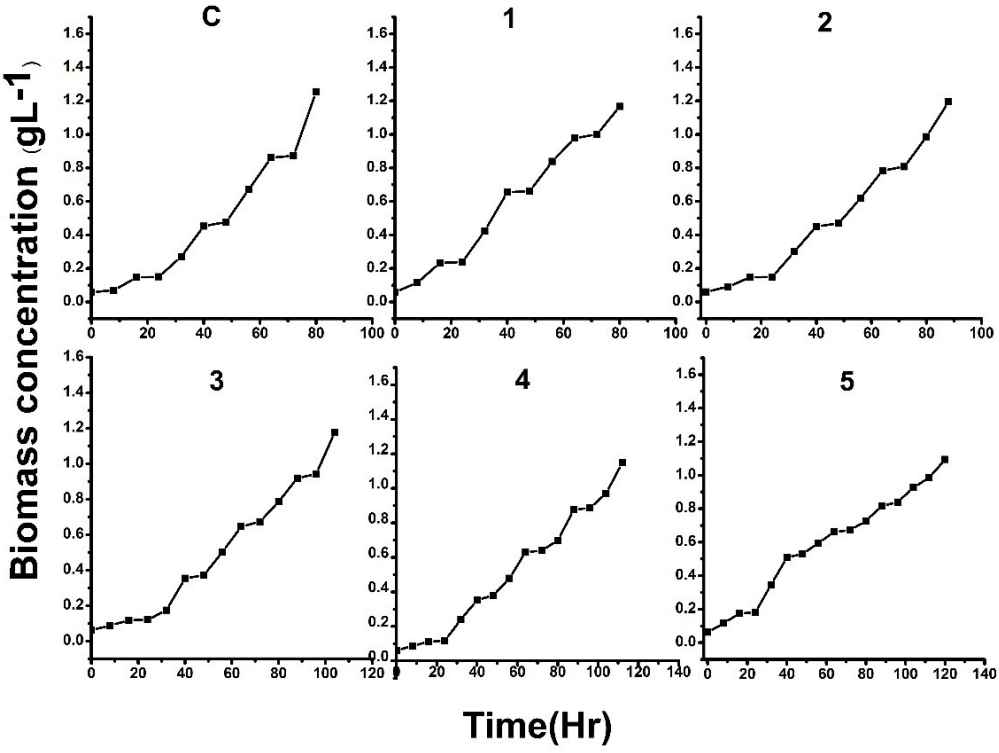

Fig. S3 Dynamic profile of growth for subsequent batches with recycle of spent media inoculated with harvested cells (RWHC batches). Experiments were performed in a photobioreactor with working volume of 5L and $FeSO_4$ was used as flocculant at F/X ratio of 2.5.

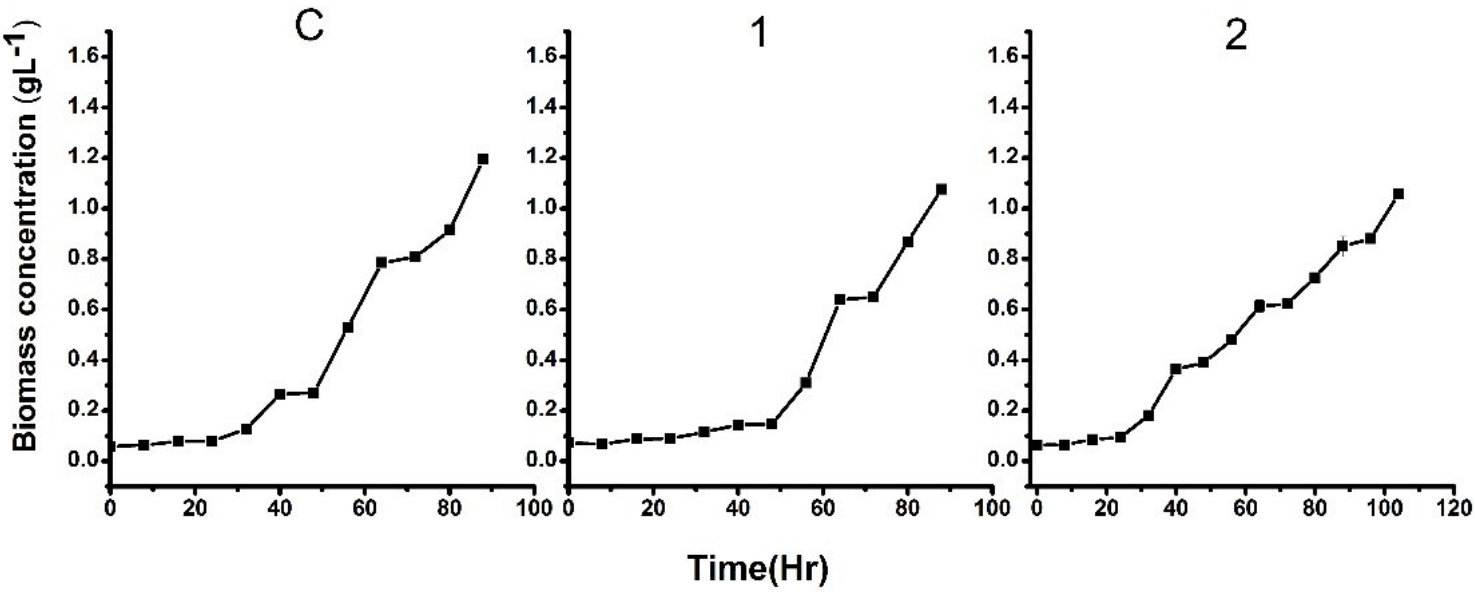

Fig. S4 Dynamic profile of growth for subsequent batches with recycle of spent media inoculated with treated non flocculated cells (RWNFC batches). Experiments were performed in a photobioreactor with working volume of 5L and $FeSO_4$ was used as flocculant with F/X ratio of 1.5.

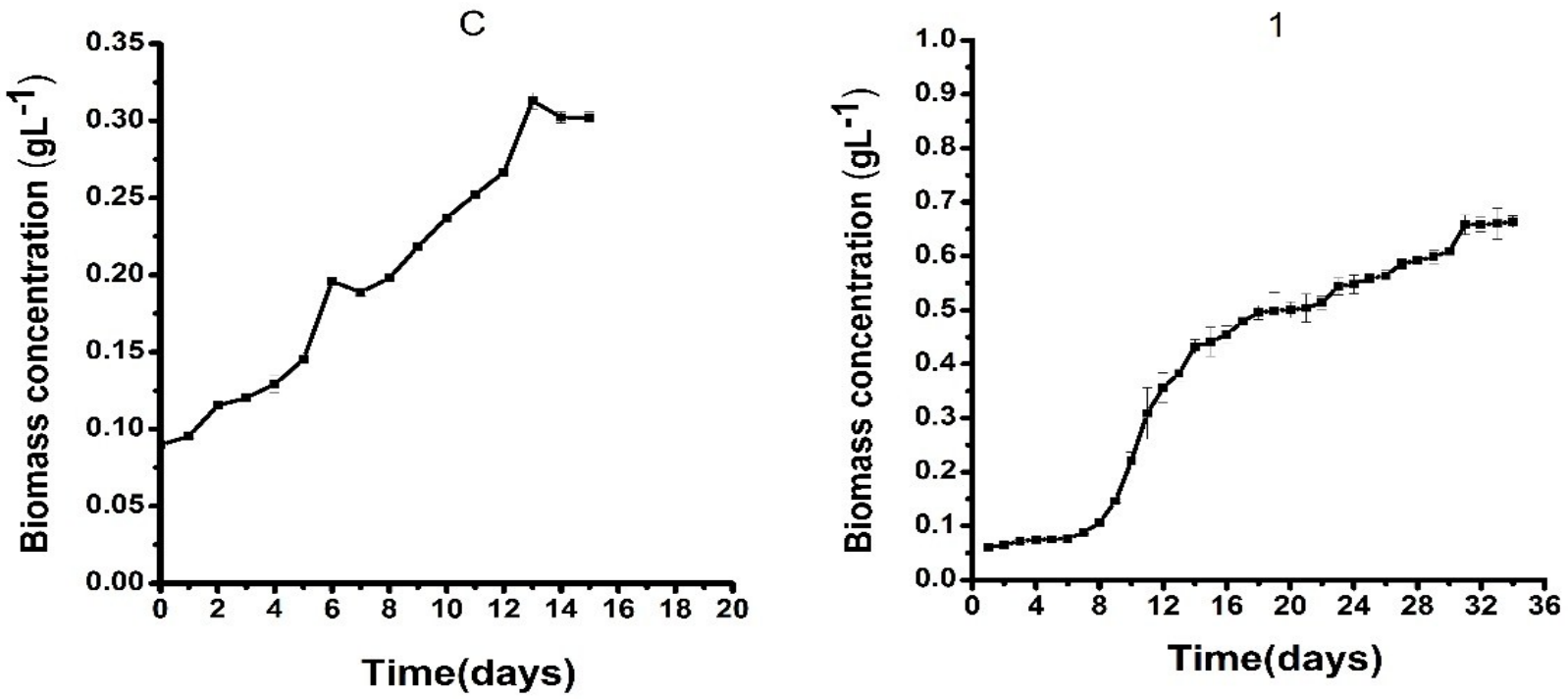

Fig. S5 Dynamic profile of growth for subsequent batches with recycle of spent media inoculated with treated non flocculated cells (RWNFC batches). Experiments were performed in an open raceway pond with working volume of 350L and $FeSO_4$ was used as flocculant at F/X ratio of 1.5.

Table S1.

Analysis of harvesting cost for harvesting of 1 kg of microalgal biomass.

(A) Cost of Flocculant			
Amount of microalgal biomass to be harvested	1	1	kg
Algal cultivation system and volume	ORP, 350 L	ORP, 350 L	
Harvesting Efficiency	87.48	92.3	%
Amount of microalgal biomass before harvesting (in broth)	1.143	1.083	kg
Biomass concentration in 350 L open raceway pond	0.66	0.66	g/L
Volume of culture broth to be harvested	1732	1641.5	L
Number of batches of harvesting (20 L transparent bottle each)	87	82	-
F/X Ratio used for harvesting	1.5	1.5	
Amount of $FeSO_4$ used for harvesting	1.72	1.62	kg
Cost of $FeSO_4$	5810-10894[a]	800000[b]	INR/Ton
Cost of $FeSO_4$ used for harvesting	**9.96-18.68**	**1300.1**	**INR**
(B) Cost of Energy input for mixing			
Power consumption of stirrer	500	500	W
Power consumption of the stirrer per hour	0.5	0.5	KWH or Unit
Mixing time	30	30	seconds
Power consumption of the mixer per 30 seconds	0.00417	0.00417	unit
Power consumption of the mixer for harvesting total volume	0.362	0.342	unit
[c]Cost of electricity	6.65	6.65	INR/unit
Cost of electricity for mixing	**2.41**	**2.27**	**INR**
Total cost for harvesting 1 kg microalgal biomass (A+B)	**12.37-21.09**	**1302.38**	**INR**
	0.17 – 0.3	**18.33**	**USD[d]**

a - cost of commercial grade $FeSO_4$ in bulk purchase has been taken from Alibaba.com (www.alibaba.com);
b - cost of analytical grade $FeSO_4$ has been taken from Himedia Bioscience and Laboratory Chemicals, India (2018-19);
c - cost of electricity per unit has been considered based on the rate imposed by the Assam Power Distribution Company Limited, India;
d - 1 INR = 0.014 USD.