Supplementary Material

Removal of Cr(VI) and p-chlorophenol and generation of electricity using constructed wetland-microbial fuel cells based on *Leersia hexandra* Swartz: p-chlorophenol concentration and hydraulic retention time effects

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➢ Results and discussion

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Results and discussion

PVDF filters produce filtration loss for certain substances (such as saccharin sodium, salicylic acid and benzoic acid) as the previous study,[1] therefore comparing PVDF and PTFE materials to determine the appropriate filter for 4-CP analysis is necessary. Fig. S1 shows the filtration loss of 4-CP by PVDF was 15.3% more than that of PTFE (2.3%), mainly because PVDF (granular pore structure) and PTFE (fibrous network with interconnected pore channels) have different pore morphology.[2] The lower filtration loss of PTFE may be due to the relatively strong adsorption of PVDF with hydroxyl and other functional groups.[3] Some studies indicate that PTFE has a lower adsorption effect on substances containing a single number of polar or non-polar substituents and has a lower filtration loss than other filters.[4] The PVDF membrane no longer has adsorbed substance effect when the matrix components of the sample gradually occupy the available active adsorption sites of filter material. To avoid collecting too many water samples from the sample tap of DLCW-MFC and prevent the filter function failure caused by the blocking of the filter due to the particulate matter contained in a large number of water samples. Therefore, the PTFE filter was selected to filter the water samples to determine 4-CP.

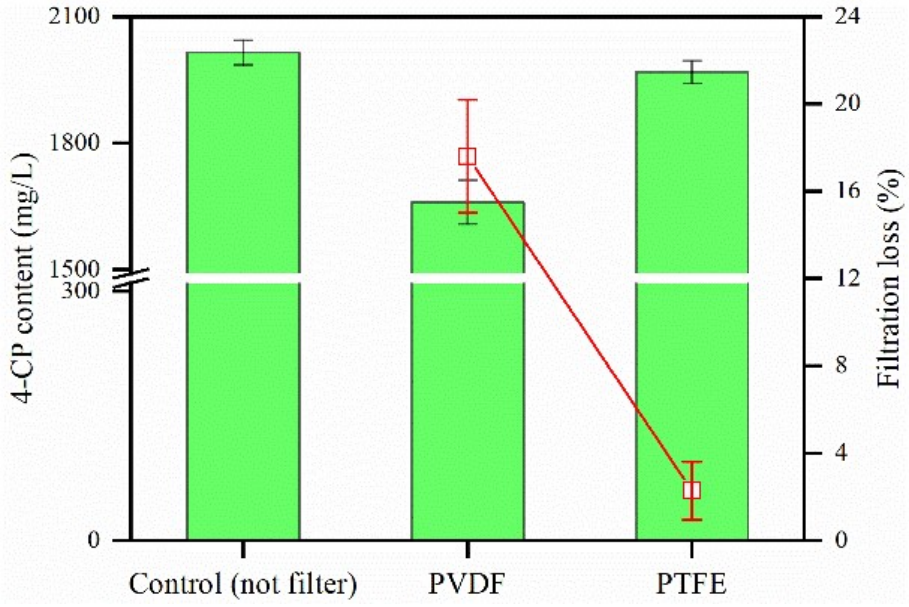

Fig. S1. The effect of PVDF and PTFE to filter 2 g/L 4-CP.

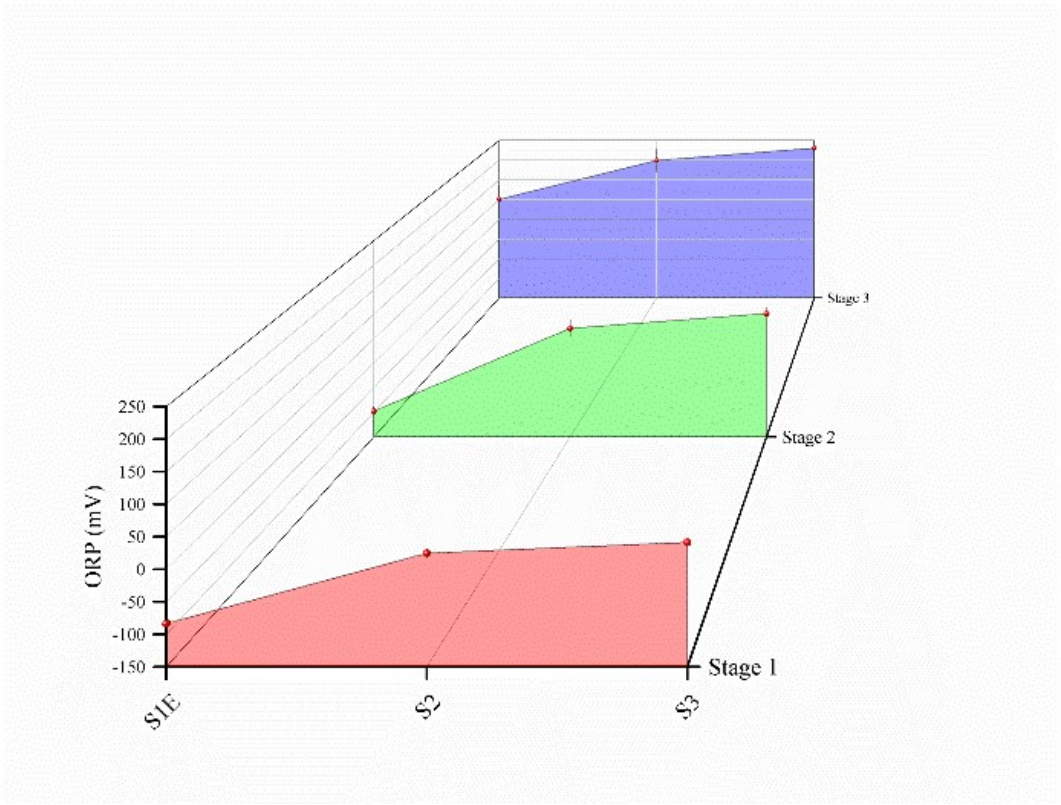

Fig. S2. ORP of sample taps at different concentrations of 4-CP (the suffix E represents the effluent).

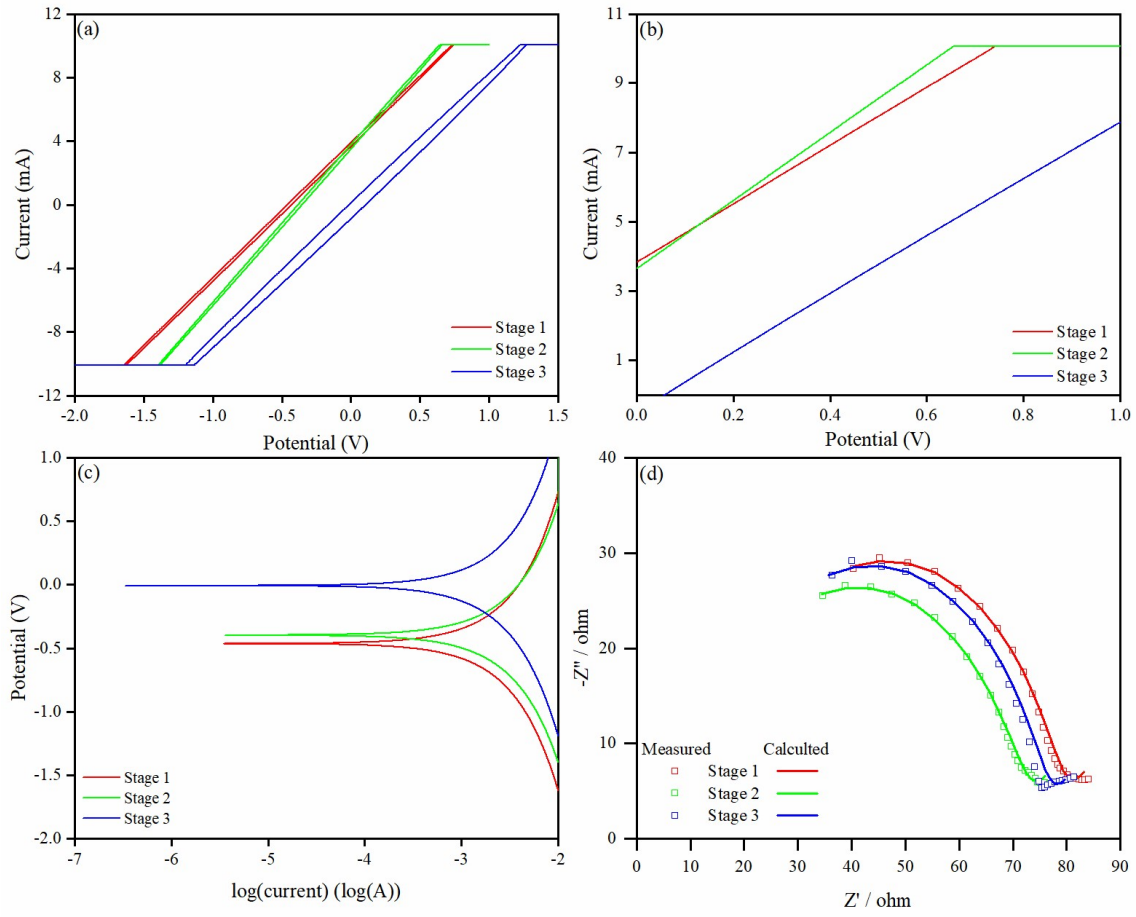

Fig. S3. (a) CV, (b) LSV, (c) TAF and (d) EIS figure at different concentrations of 4-CP.

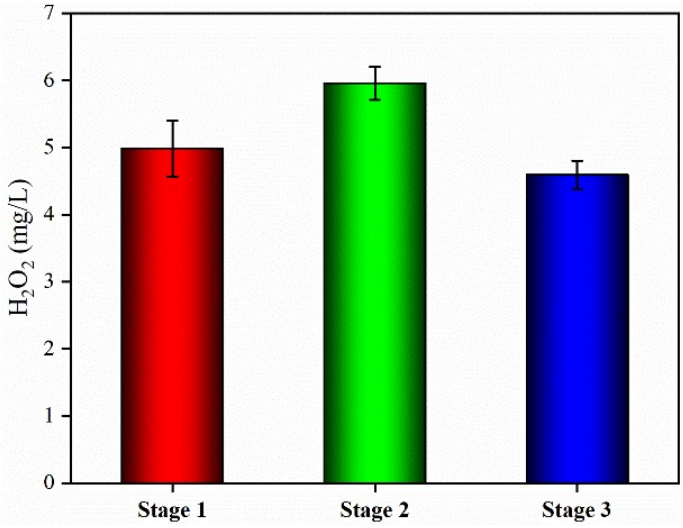

Fig. S4. H_2O_2 content at the cathode at different concentrations of 4-CP.

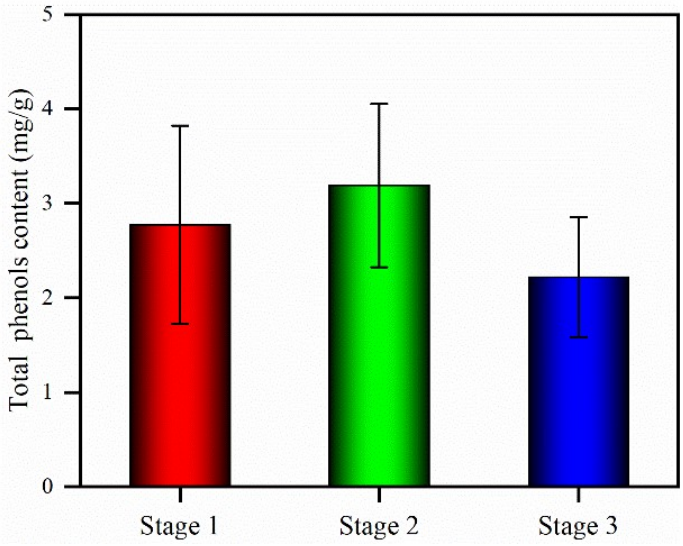

Fig. S5. Total phenols content of *L. hexandra* at different concentrations of 4-CP.

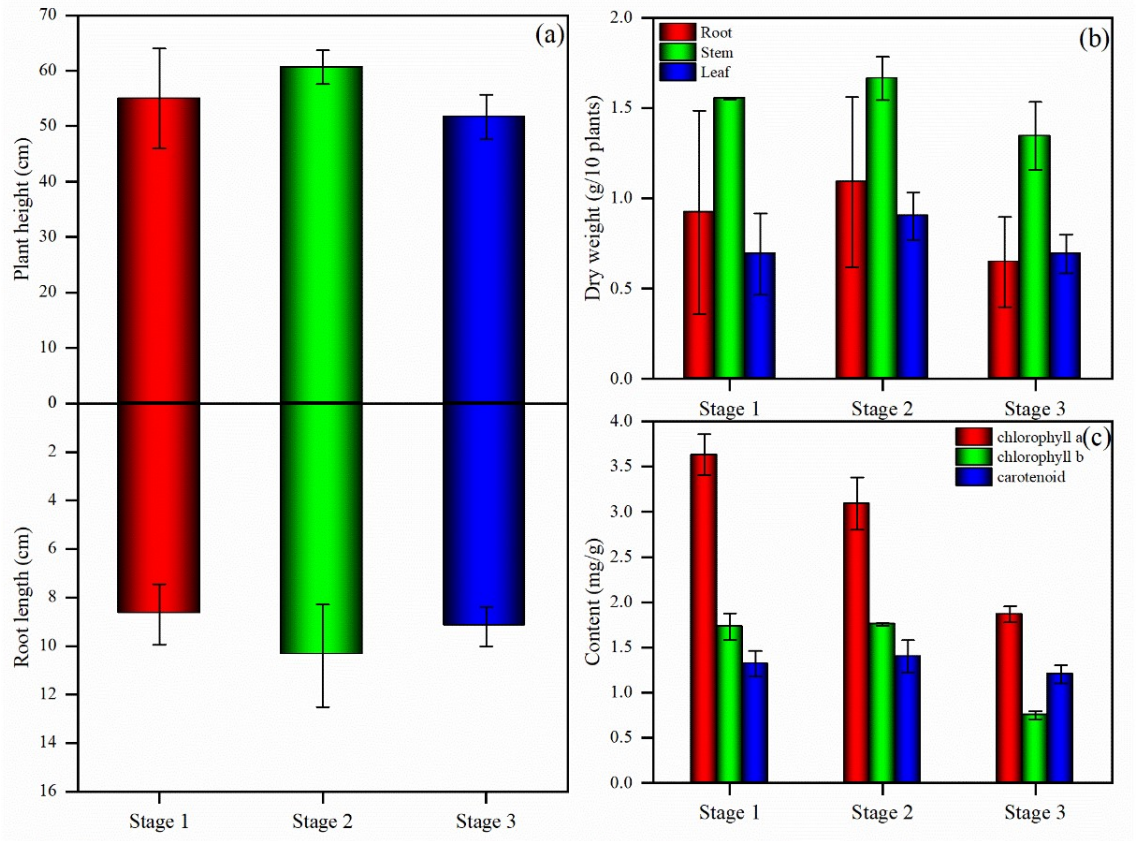

Fig. S6. (a) Plant height and root length, (b) dry weight and (c) chlorophyll and carotenoid content of *L. hexandra* at different concentrations of 4-CP.

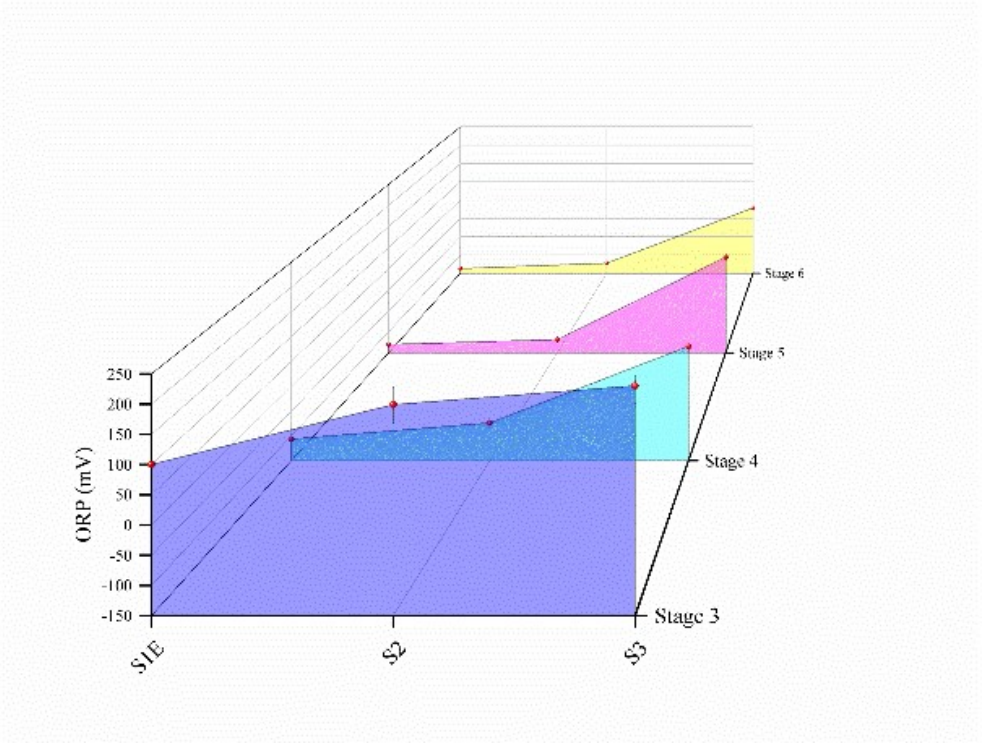

Fig. S7. ORP of sample taps at different HRT (the suffix E represents the effluent).

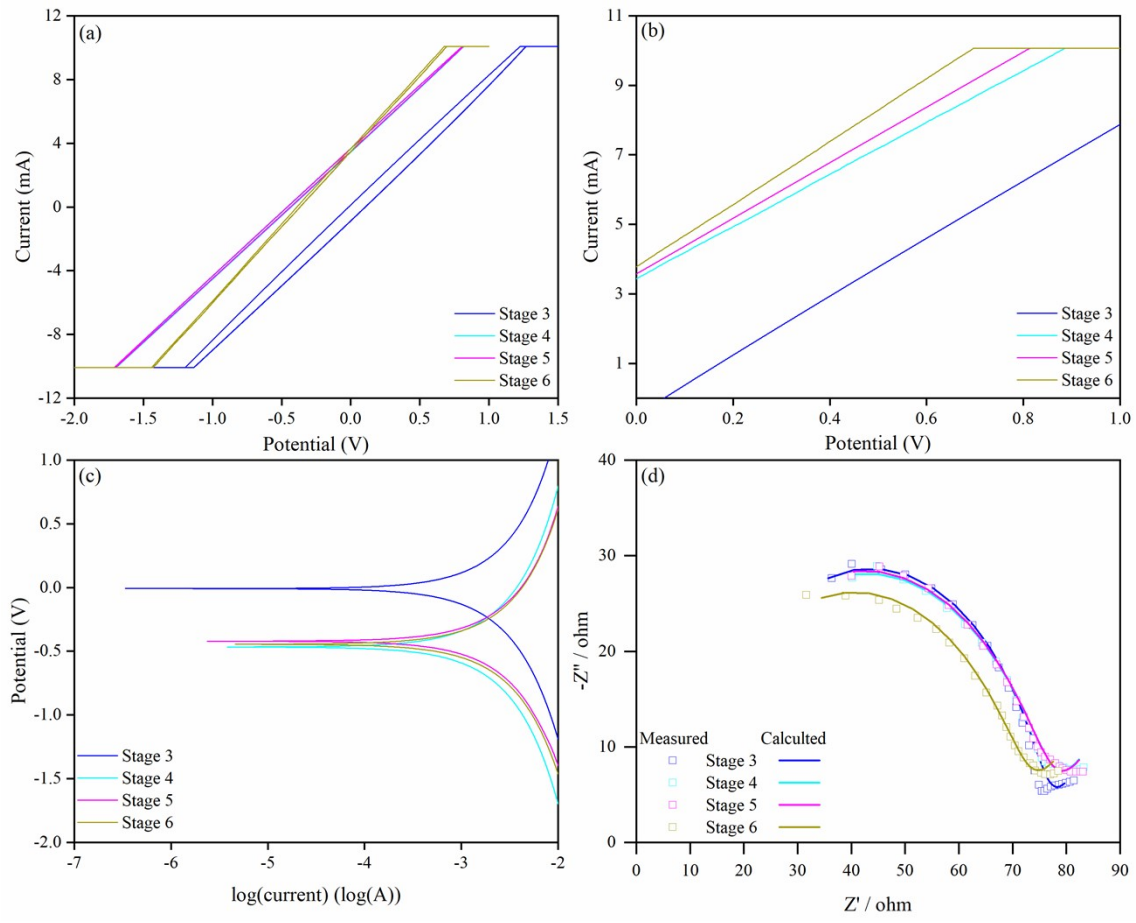

Fig. S8. (a) CV, (b) LSV, (c) TAF and (d) EIS figure of DLCW-MFC at different HRT.

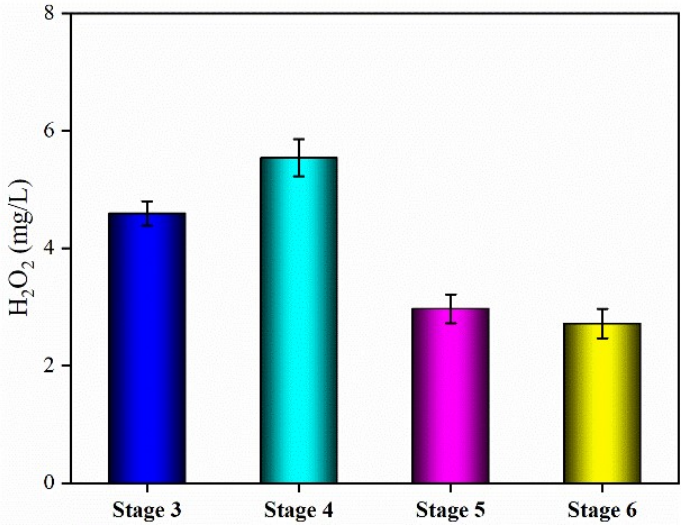

Fig. S9. H_2O_2 content at the cathode at different HRT.

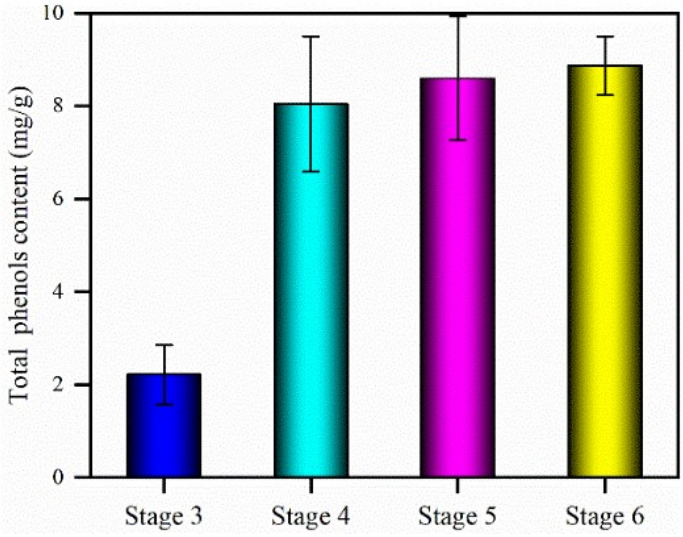

Fig. S10. Total phenols content of *L. hexandra* at different HRT.

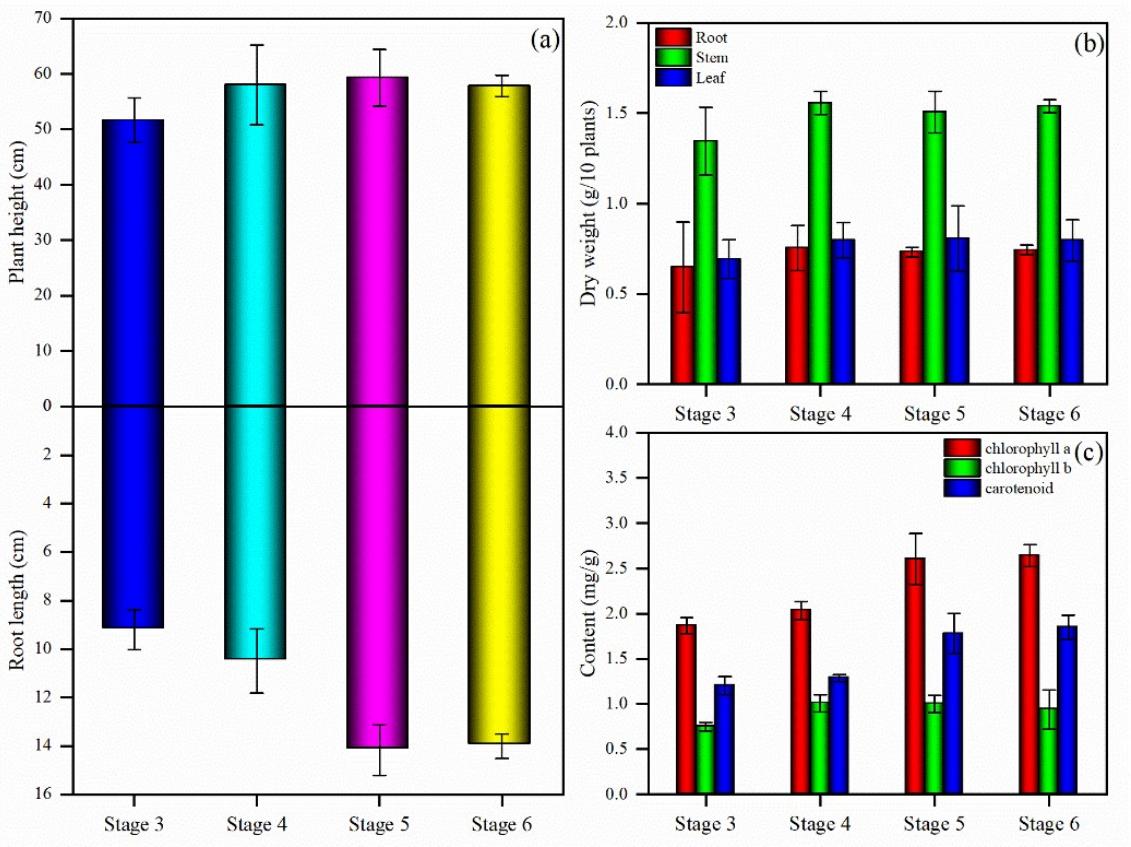

Fig. S11. (a) Plant height and root length, (b) dry weight and (c) chlorophyll and carotenoid content of *L. hexandra* at different HRT.

References

1. M. Carlson and R. D. Thompson, *J. Chromatogr. Sci.*, 2000, **38**, 77-83.
2. K. Xiao, J. Y. Sun, Y. H. Mo, Z. Fang, P. Liang, X. Huang, J. B. Ma and B. R. Ma, *Desalin.*, 2014, **343**, 217-225.
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4. N. Godby and A. Conklin, *Adsorpt. Sci. Technol.*, 2016, **35**, 153-161.