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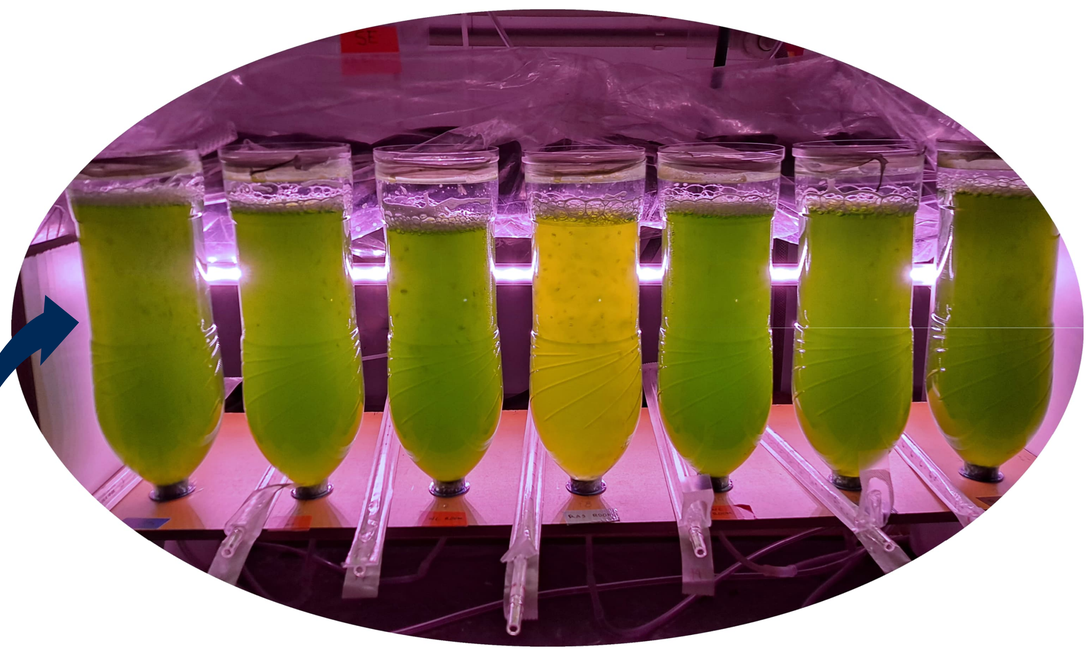
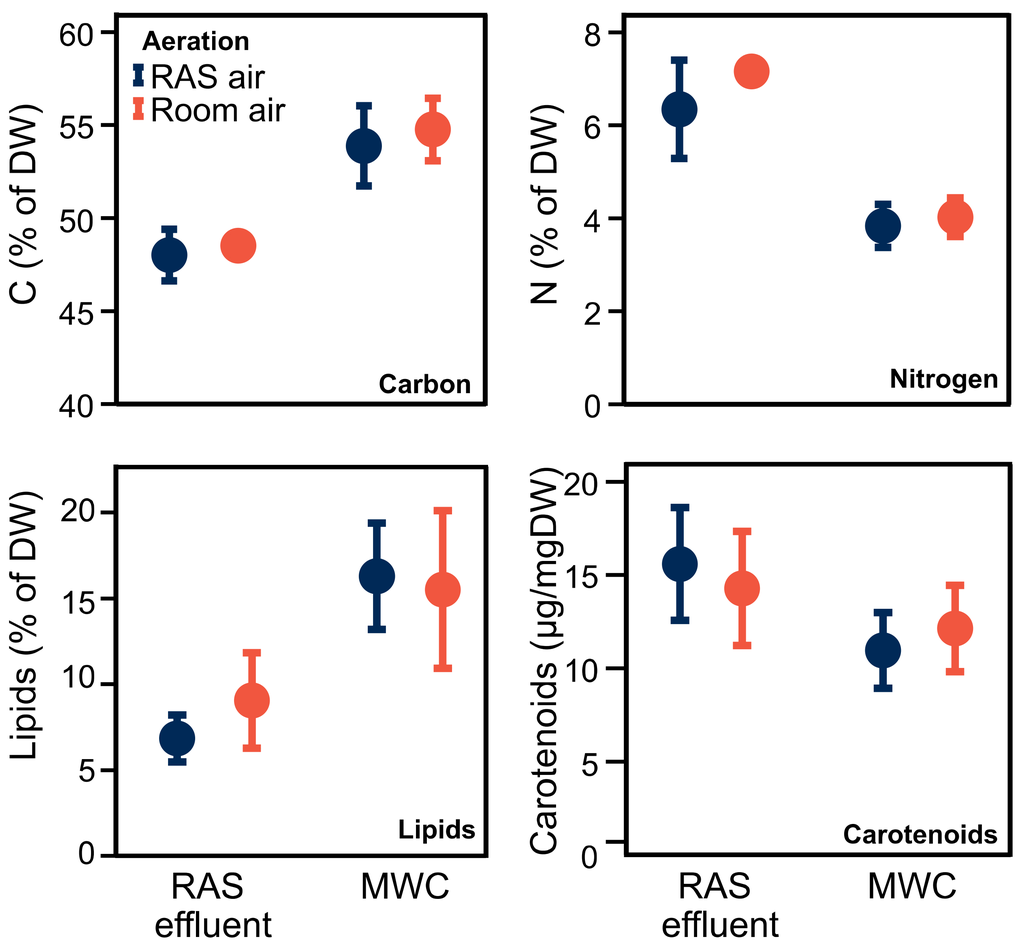
MIDAS
Microalgae Digital Applications

Biomass composition of *Chlorella vulgaris* grown in nutrient-rich effluent and CO_2 from a recirculating aquaculture system



METHODS

Chlorella vulgaris was grown in photobioreactors with nutrient rich effluent and CO_2 from a Nordic RAS system and analyzed for biochemical composition.



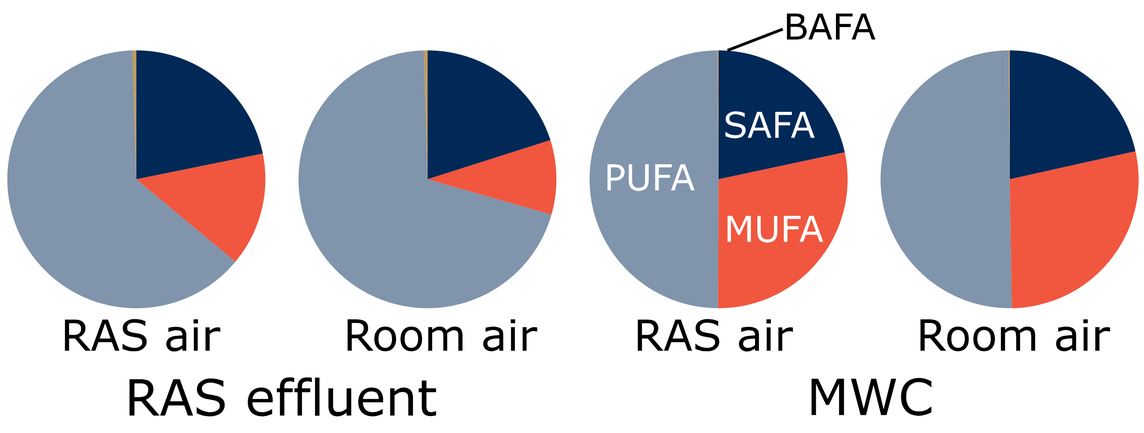
Carbon, nitrogen, and lipid content (% of dry weight, mean ± SD) during the stationary phase, and carotenoid content (µg/mgDW) during the exponential growth phase of *C. vulgaris* grown either in RAS effluent or algal culture medium (modified Wrigth's cryptophyte, MWC), and with aeration of air from the RAS trickling filter (RAS air, CO_2 700-1000 ppm) or room air (CO_2 ca. 400 ppm).

INTRODUCTION

The biochemical composition of the microalgae grown in effluents is key to the subsequent use of the biomass.

RESULTS

Carbon, lipid and monounsaturated fatty acid content of *C. vulgaris* was higher and nitrogen content lower in algal culture medium (MWC) than in RAS effluent, reflecting nutrient limitation in MWC. The increased CO_2 concentration had very little effect on biomass composition.



Fatty acid percent composition of *C. vulgaris* during the stationary growth phase of *C. vulgaris* grown either in RAS effluent or algal culture medium (modified Wrigth's cryptophyte, MWC and with aeration of air from the RAS trickling filter (RAS air, CO_2 700-1000 ppm) or room air (CO_2 ca. 400 ppm). SAFA = saturated fatty acids, MUFA = monounsaturated fatty acids, PUFA = polyunsaturated fatty acids, BAFA = Bacterial fatty acids.

CONCLUSIONS

Cultivation in RAS effluent and CO_2 had only minor effects on biomass composition compared to algae medium