

Table S1. Growth optimization of *A. mangrovei* with spent osmotic solution and yeast extract using Central Composite Design (CCD).

| Run | Factor Assignment | | Responses | | Predicted value | |
|-----|----------------------|---------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|
| | X ₁ (SOS) | X ₂ (YE) | Biomass productivity (g/L/day) | DHA productivity (mg/L/day) | Biomass productivity (g/L/day) | DHA productivity (mg/L/day) |
| 1 | 0 | +1 | 3.71 | 337.67 | 3.59 | 328.35 |
| 2 | 0 | -1 | 1.99 | 477.24 | 2.38 | 460.59 |
| 3 | 0 | 0 | 3.27 | 402.19 | 3.52 | 459.93 |
| 4 | 0 | 0 | 3.56 | 443.12 | 3.52 | 459.93 |
| 5 | +1 | 0 | 2.89 | 394.11 | 2.73 | 357.94 |
| 6 | -1 | 0 | 1.77 | 207.62 | 1.90 | 217.70 |
| 7 | 0 | 0 | 3.61 | 436.53 | 3.52 | 459.93 |
| 8 | +1 | -1 | 1.55 | 389.10 | 1.48 | 405.57 |
| 9 | +1 | +1 | 2.76 | 166.48 | 2.91 | 179.39 |
| 10 | 0 | 0 | 3.71 | 415.48 | 3.52 | 459.93 |
| 11 | -1 | -1 | 1.11 | 177.88 | 0.86 | 171.39 |
| 12 | 0 | 0 | 3.39 | 559.78 | 3.52 | 459.93 |
| 13 | -1 | +1 | 1.82 | 143.24 | 1.88 | 133.09 |
| 14 | 0 | 0 | 3.50 | 463.37 | 3.52 | 459.93 |

Coded values; X₁ sugars from SOS (g L⁻¹), X₂ yeast extract (g L⁻¹). The three levels (-1, 0 and +1) set for SOS were 14, 35 and 60 g L⁻¹, while for yeast extract was 4, 8 and 12 g L⁻¹ respectively.