Supplementary Material for

Stress Responses and Ammonia Nitrogen Removal Efficiency of *Oocystis lacustris* in Saline Ammonium-Contaminated Wastewater Treatment

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Figures

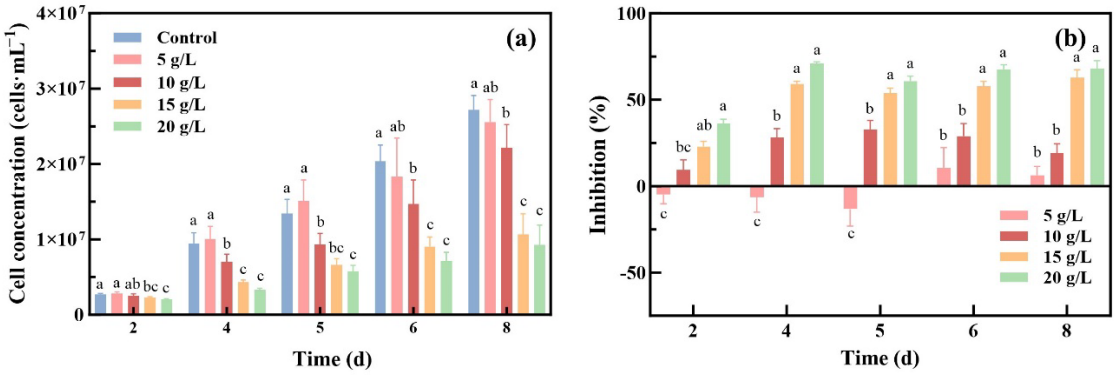

Figure S1. Growth of *Oocystis lacustris* at different Na_2SO_4 concentrations - September 2022. (**a**) Cell concentration; (**b**) inhibition of yield. (At the same cultivation time, different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

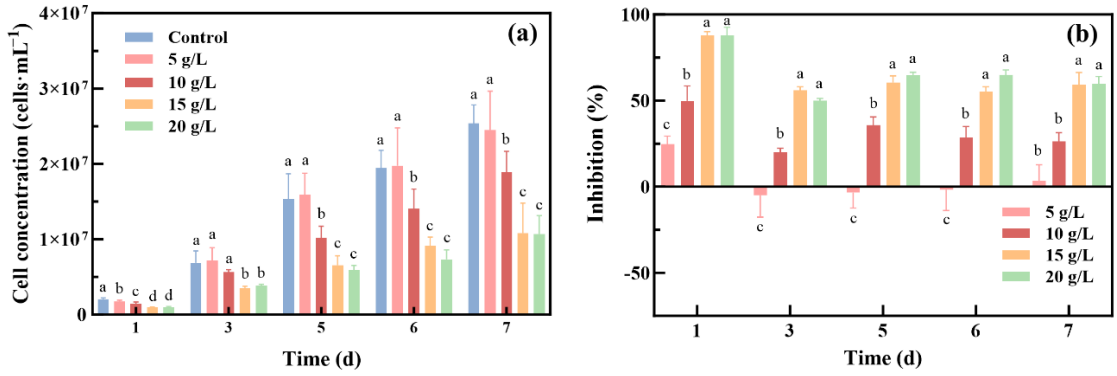

Figure S2. Growth of *Oocystis lacustris* at different Na_2SO_4 concentrations - November 2022. (**a**) Cell concentration; (**b**) inhibition of yield. (At the same cultivation time, different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

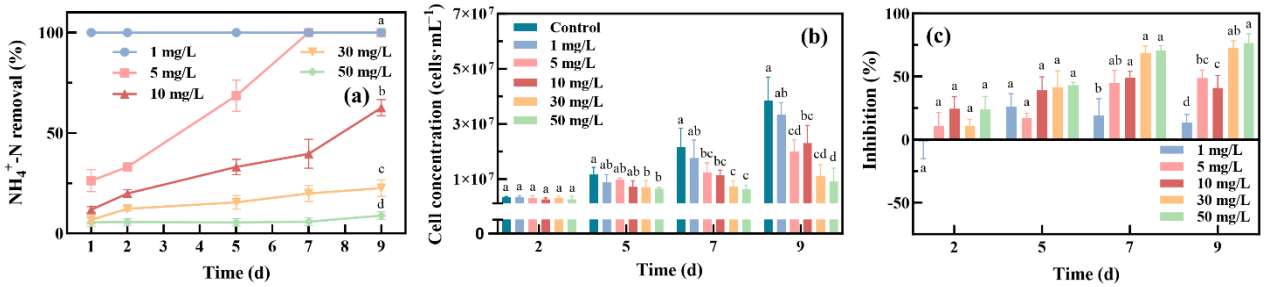

Figure S3. Treatment of *Oocystis lacustris* in the EX phase (8×10^5 cells/mL) with different concentrations of NH_4^+-N - September 2022. (**a**) NH_4^+-N removal rate; (**b**) cell concentration; (**c**) inhibition of yield. (At the same cultivation time, different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

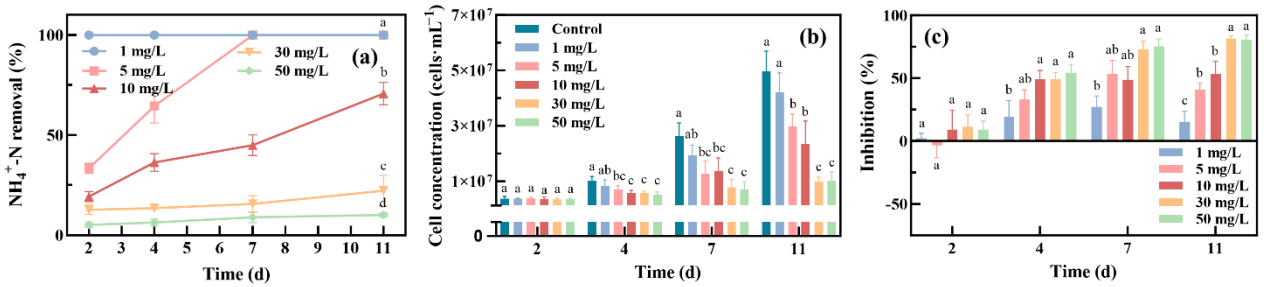

Figure S4. Treatment of *Oocystis lacustris* in the EX phase (8×10^5 cells/mL) with different concentrations of NH_4^+-N - November 2022. (**a**) NH_4^+-N removal rate; (**b**) cell concentration; (**c**) inhibition of yield. (At the same cultivation time, different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

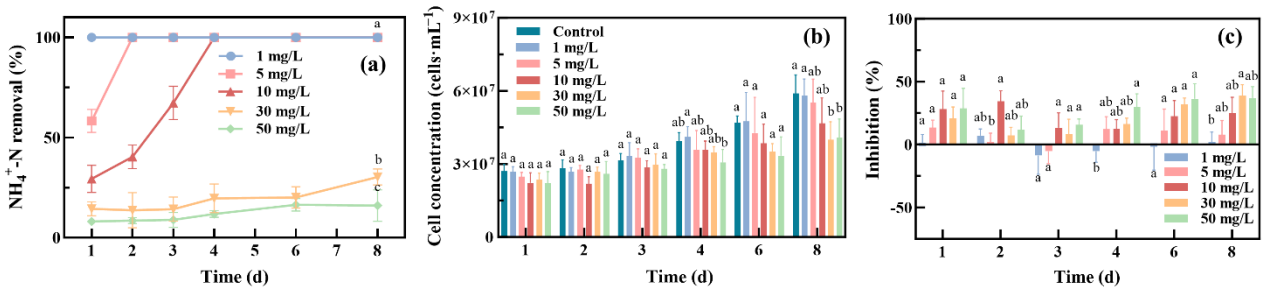

Figure S5. Treatment of *Oocystis lacustris* in the STA phase (2 × 10^7 cells/mL) with different concentrations of NH_4^+-N - September 2022. (**a**) NH_4^+-N removal rate; (**b**) cell concentration; (**c**) inhibition of yield. (At the same cultivation time, different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

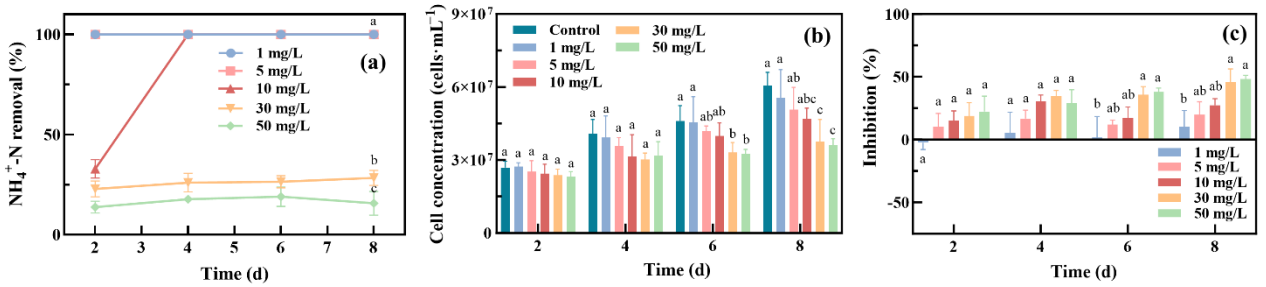

Figure S6. Treatment of *Oocystis lacustris* in the STA phase (2 × 10^7 cells/mL) with different concentrations of NH_4^+-N – November 2022. (**a**) NH_4^+-N removal rate; (**b**) cell concentration; (**c**) inhibition of yield. (At the same cultivation time, different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

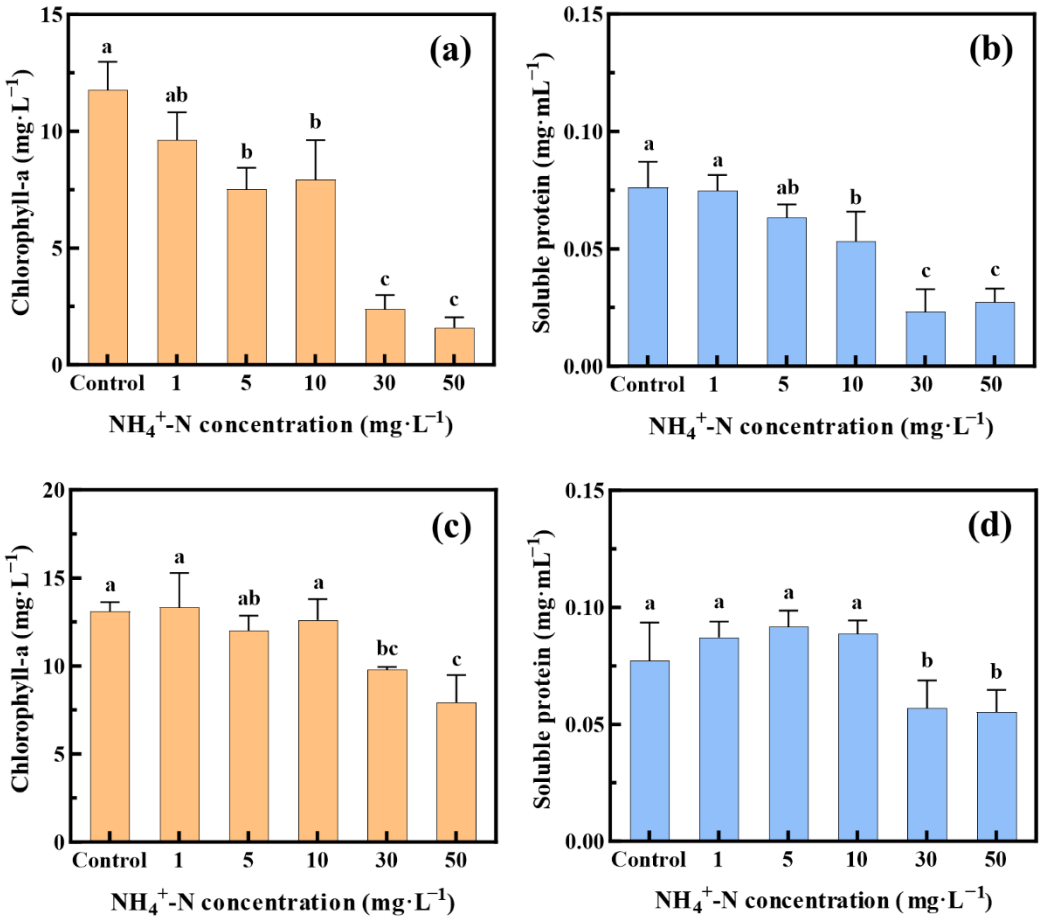

Figure S7. Variations in chlorophyll-a and soluble protein contents within *Oocystis lacustris* cells at different NH_4^+-N concentrations on the 8th day - September 2022. (**a,b**) Changes in chlorophyll-a and soluble protein contents within algal cells in the EX phase; (**c,d**) changes in chlorophyll-a and soluble protein contents within algal cells in the STA phase. (Different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

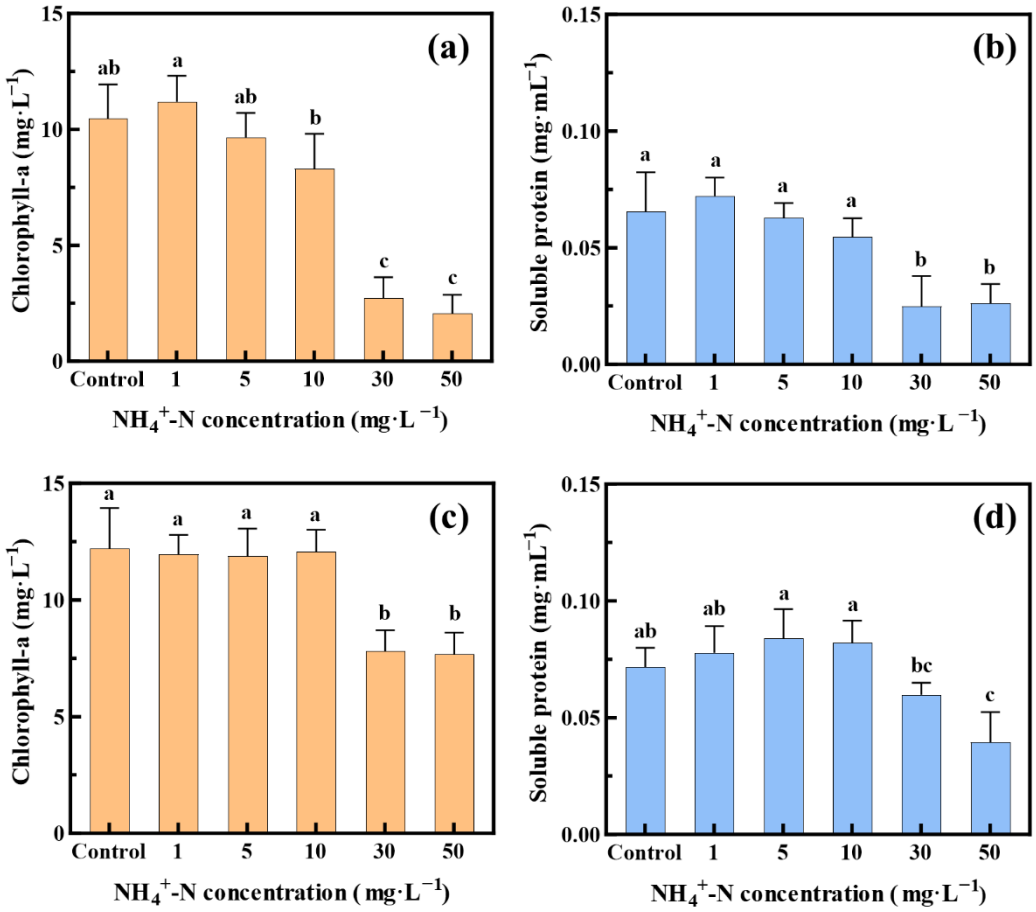

Figure S8. Variations in chlorophyll-a and soluble protein contents within *Oocystis lacustris* cells at different NH_4^+-N concentrations on the 8th day - November 2022. (**a,b**) Changes in chlorophyll-a and soluble protein contents within algal cells in the EX phase; (**c,d**) changes in chlorophyll-a and soluble protein contents within algal cells in the STA phase. (Different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

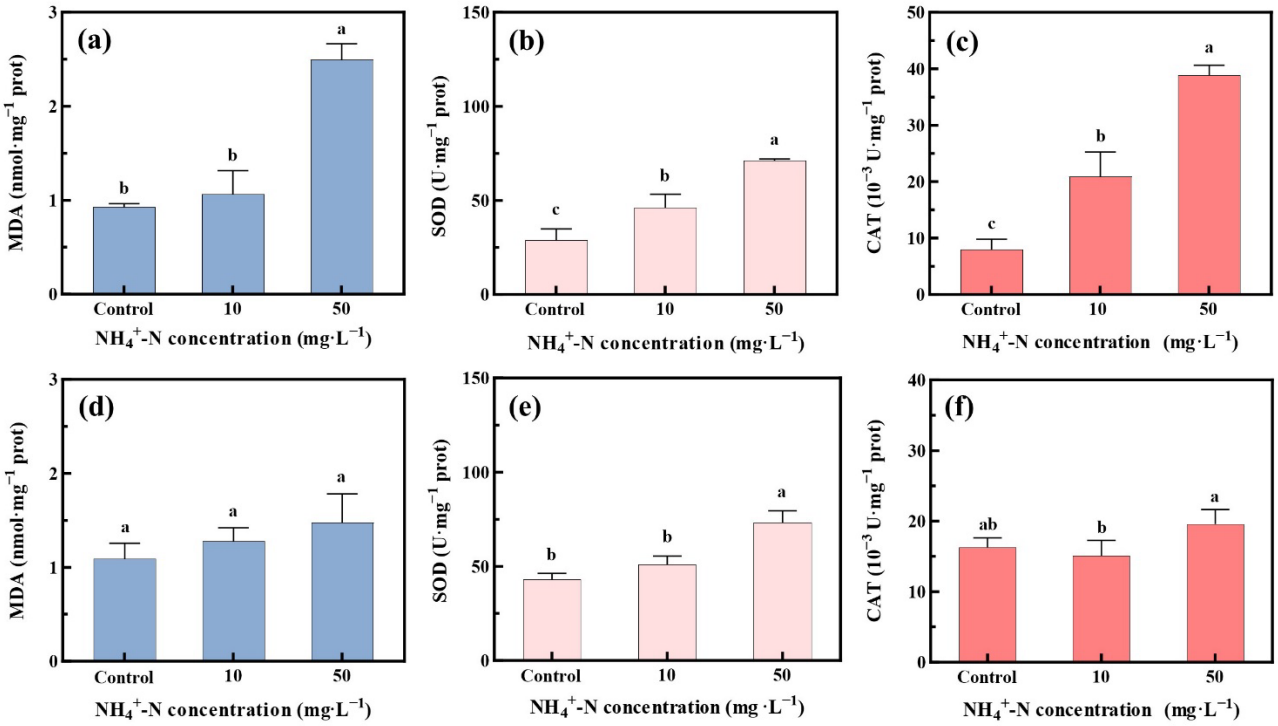

Figure S9. Oxidative stress status within *Oocystis lacustris* cells treated with different concentrations of NH_4^+-N on the 8th day - September 2022. (**a–c**) MDA concentration and SOD and CAT activities within algal cells in the EX phase; (**d–f**) MDA concentration and SOD and CAT activities within algal cells in the STA phase. (Different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

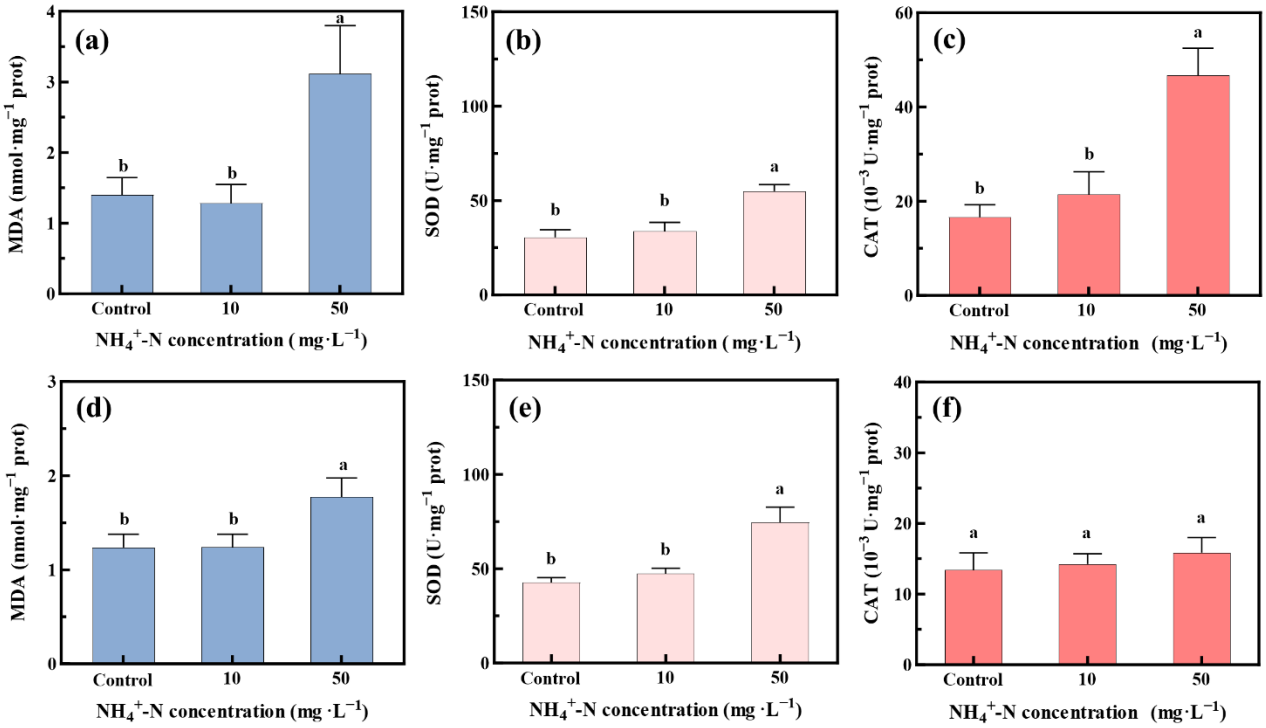

Figure S10. Oxidative stress status within *Oocystis lacustris* cells treated with different concentrations of NH_4^+-N on the 8th day - November 2022. (**a–c**) MDA concentration and SOD and CAT activities within algal cells in the EX phase; (**d–f**) MDA concentration and SOD and CAT activities within algal cells in the STA phase. (Different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

Figure S11. Microscopic morphology of *Oocystis lacustris* cells in the EX phase on the 8th day: Two cells enveloped in a pectinaceous gelatinous sheath of control group.

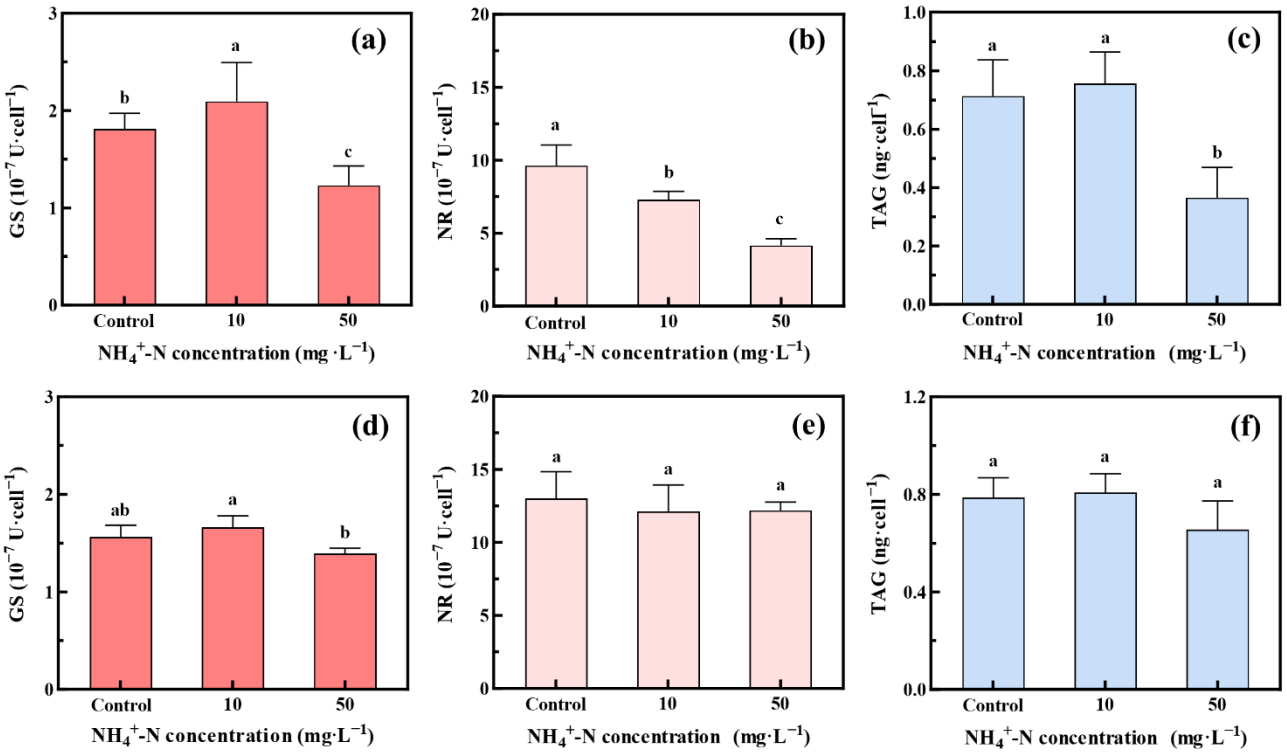

Figure S12. Changes in nitrogen metabolism enzymes and TAG activity within *Oocystis lacustris* treated by different NH_4^+-N concentrations - September 2022: (**a**) GS, (**b**) NR, and (**c**) TAG within algal cells in the EX phase; (**d**) GS, (**e**) NR, and (**f**) TAG within algal cells in the STA phase. (Different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)

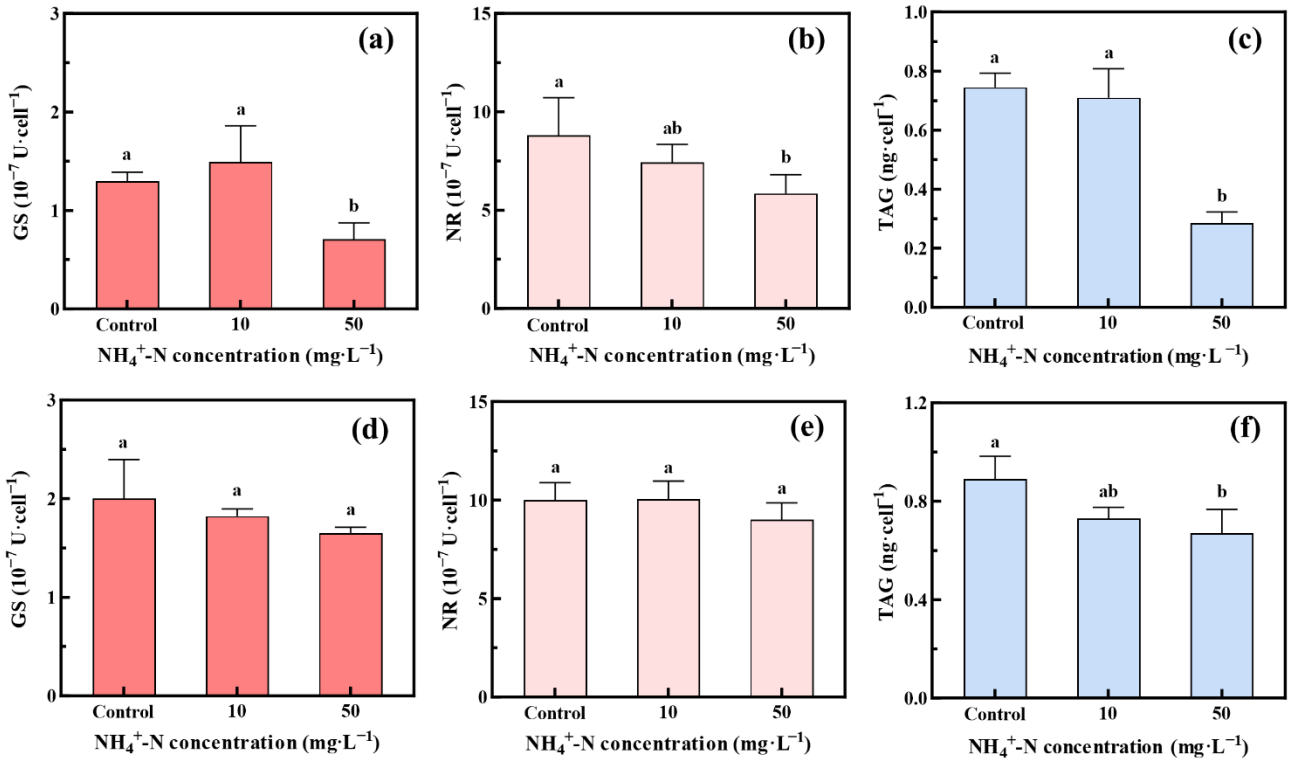

Figure S13. Changes in nitrogen metabolism enzymes and TAG activity within *Oocystis lacustris* treated by different NH_4^+-N concentrations - November 2022: (**a**) GS, (**b**) NR, and (**c**) TAG within algal cells in the EX phase; (**d**) GS, (**e**) NR, and (**f**) TAG within algal cells in the STA phase. (Different letters on adjacent bars indicate significant differences ($p < 0.05$), while the same letter indicates no significant difference.)