

Enzymatically prepared alginate oligomer (AO) promoted the growth of *Chlamydomonas reinhardtii* in a concentration-dependent manner. AO at 2.5 mg/mL induced increase in expression levels of cyclin A, cyclin B, and cyclin D in *C. reinhardtii*. CuSO₄ at 100 μM suppressed the growth of *C. reinhardtii*, and AO at 2.5 mg/mL significantly alleviated the toxicity of CuSO₄. Increased intracellular reactive oxygen species level in *C. reinhardtii* induced by CuSO₄ was reduced by AO. After cultivation with CuSO₄ at 100 μM, expression levels of ascorbate peroxidase and superoxide dismutase in *C. reinhardtii* were increased, and AO reduced the increased levels of these enzymes. These results suggest that AO exhibits beneficial effects on *C. reinhardtii* through influencing the expression of various genes not only at normal growth condition but also under CuSO₄ stress.

