

Highlights

- Efficient treatment of real urban wastewater using *Chlorella sorokiniana* and *Scenedesmus obliquus* in semi-continuous culture.
- Significant removal of nitrates, ammonium, phosphates, and heavy metals, from primary wastewater.
- Treated effluent met regulatory standards for agricultural water reuse.
- Biomass showed species-specific composition: protein-rich *C. sorokiniana* and carbohydrate-rich *S. obliquus*.
- *Chlorella sorokiniana* extracts strongly stimulated seed germination, rooting, and chlorophyll retention.