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The effects of combined agricultural phytohormones on the growth, carbon partitioning and cell morphology of two screened algae

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Abstract:

Applying phytohormones has been considered a promising way to increase lipid productivity of microalgae recently. Eight dosages of auxin phytohormones were tested to exploit the effects and mechanism of such stimulants on microalgae. The optimal one was 20 mg L⁻¹, leading to an increase in biomass concentration of 59.3% for *Scenedesmus sp.* SDEC-8 and 76.6% for *Chlorella sorokiniana* SDEC-18, meanwhile the lipid content rose from 18.74% to 56.17% (SDEC-8) and from 19.69% to 55.76% (SDEC-18). Proton pumps were activated by the stimulants, causing excretion of H⁺, which resulted in pH decline and a favorable condition for growth. Pigments changes implied that hormones strengthened the dark reactions of photosynthesis. Auxin addition led to a 3 μm increase in diameter for *C. sorokiniana* SDEC-18 and altered the cellular pattern of *Scenedesmus sp.* SDEC-8, which

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