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Switchable Solvent for Lipid Extraction of *Chlorella vulgaris*

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Lipid extraction from microalgae is generally carried out on a dry basis, which requires the use of a dewatering technique, such as centrifugation. The high energy demand leads to an uneconomical process. Dewatering of microalgae can be mitigated through the use of switchable hydrophilicity solvents (SHS) for lipid extraction which is carried out on a wet basis. The protonation of the tertiary amine, N, N-dimethyl cyclohexylamine using CO₂ provides an efficient lipid extraction method, while also providing an additional source of carbon capture. Investigation into their potential use with the intracellular lipid producing microalgae *Chlorella vulgaris* is compared with traditional hexane extraction. Efficiency of the SHS ability to extract lipids is compared using a microwave pre-treatment. Biocompatibility of N, N-dimethyl cyclohexylamine will be assessed through the reinoculation of post-extracted algae cells, and their ability to photosynthesis. The reversibility of SHSs provides a sustainable, environmentally friendly, and cost-effective method for lipid extraction and recovery.