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**Biomass and lipid production of *Chlorella protothecoides* under heterotrophic cultivation on a mixed waste substrate of brewer fermentation and crude glycerol**

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**Abstract**

Biomass and lipid accumulation of heterotrophic microalgae *Chlorella protothecoides* by supplying mixed waste substrate of brewer fermentation and crude glycerol were investigated. The biomass concentrations of the old and the new *C. protothecoides* strains on day 6 reached 14.07 g/L and 12.73 g/L, respectively, which were comparable to those in basal medium with supplement of glucose and yeast extract (BM-GY) (14.47 g/L for old strains and 11.43 g/L for new strains) ( $P>0.05$ ). Approximately 81.5 % of total organic carbon and 65.1 % of total nitrogen in the mixed waste were effectively removed. The accumulated lipid productivities of the old and the new *C. protothecoides* strains in BM-GY were 2.07 g/L/day and 1.61 g/L/day, respectively, whereas in the mixed waste, lipid productivities could reach 2.12 g/L/day and 1.81 g/L/day, respectively. Our result highlights a new approach of mixing carbon-rich and nitrogen-rich wastes as economical and practical alternative substrates for biofuel production.

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