

# Supplementary Materials

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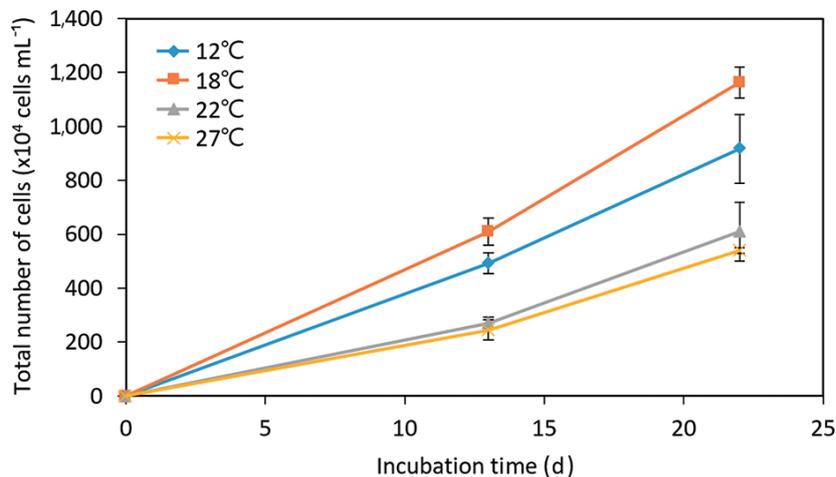


**Supplementary Table S1.** Comparison of costs of media used for the biomass production of KSF0031

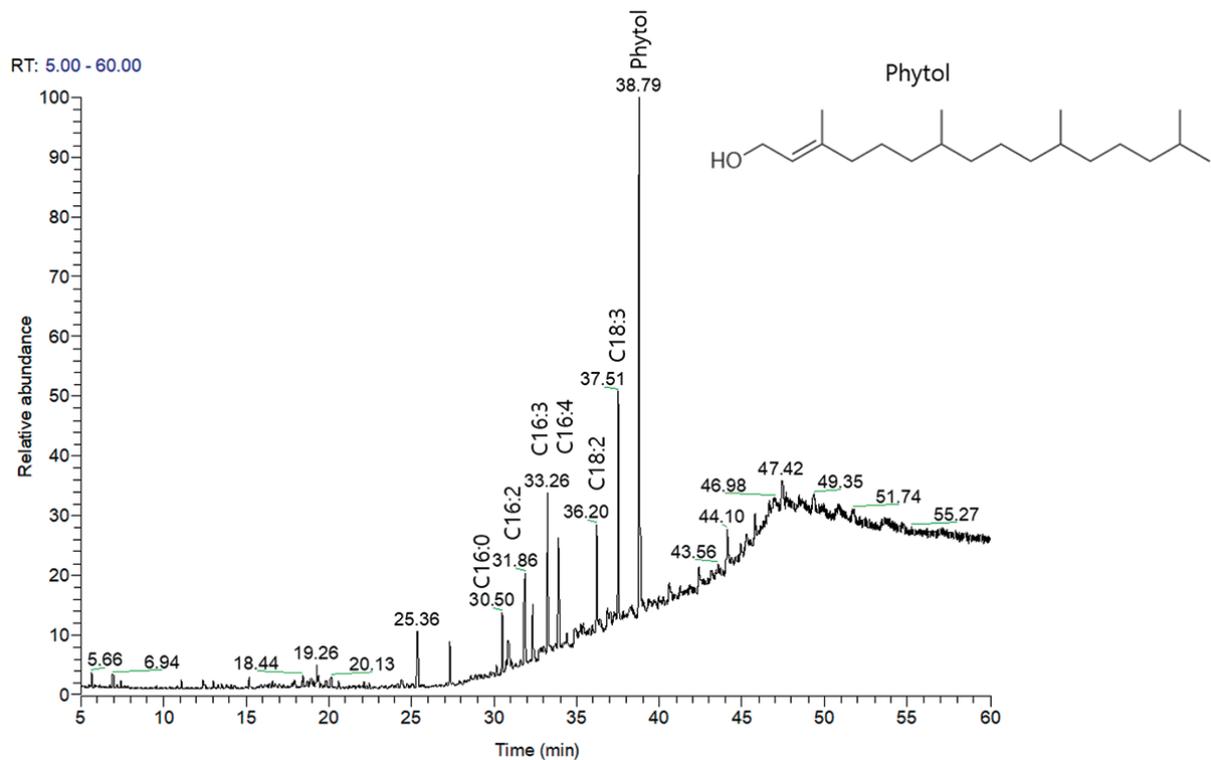
Component <sup>a</sup>	Chemical cost (WON, KRW) for 1 L medium	
	Original BG-11	Optimized BG-11
Stock No.		
1 NaNO <sub>3</sub>	390.9	390.90
2 K <sub>2</sub> HPO <sub>4</sub>	17.42	30.48
3 MgSO <sub>4</sub> ·7H <sub>2</sub> O	19.74	36.85
4 CaCl <sub>2</sub> ·2H <sub>2</sub> O	9.89	9.89
5 Citric acid	1.48	1.48
6 AFCg	2.54	0.25
7 EDTA·Na <sub>2</sub>	0.48	0.48
8 Na <sub>2</sub> CO <sub>3</sub>	4.35	4.35
9 Trace metals:		
H <sub>3</sub> BO <sub>3</sub>	0.67	0.67
MnCl <sub>2</sub> ·4H <sub>2</sub> O	0.64	0.64
ZnSO <sub>4</sub> ·7H <sub>2</sub> O	0.06	0.06
Na <sub>2</sub> MoO <sub>4</sub> ·2H <sub>2</sub> O	0.35	0.35
CuSO <sub>4</sub> ·5H <sub>2</sub> O	0.03	0.03
Co(NO <sub>3</sub> ) <sub>2</sub> ·6H <sub>2</sub> O	0.04	0.04
Total cost (WON) for 1 L medium	448.58	476.46
Total cost (WON) for 1 g DCW (KSF0031)	1,725.30	1,323.50

AFCg, ammonium ferric citrate green; DCW, dry cell weight.

<sup>a</sup>All components were purchased from Sigma-Aldrich, and the price was converted based on the 500 g standard product using the stock price in South Korea in 2022.



**Supplementary Fig. S1.** Effect of temperature on the growth of *Micractinium variabile* KSF0031. Approximately  $2 \times 10^4$  cells mL<sup>-1</sup> were inoculated in original BG-11 medium at various temperatures. Data presented are the average cell densities  $\pm$  standard deviation from two biological replicates.



**Supplementary Fig. S2.** Gas chromatography mass spectrometry results showing the fatty acid methyl esters and phytol with extracts of *Micractinium variabile* KSF0031.