Table S1. Equipment capacity and cost

	Description	**Unit Cost ($)**
Tray dryer (P-16/DDR-101)	Dry the *S. horneri* Tray Area: 265.48 m^2	544,000
Grinder (P-17/GR-101)	Grind *S.horneri* to the powder Sieve under the 200 mesh	466,000
CHEF bioreactor (P18/R-101)	Continuouse hydrolysis, enzymatic saccharification, and fermentation of bioethanol is conducted in the bioreactor Bioreactor size: 50 m^3	2,658,000
Steam generator (P20/SG-101)	For electricity generation by using superheated steam for sterilization Steam size: 26400 kg/hr	248,787
Seed fermenter (P-3/SFR-102)	Seed cultivation of *S.cerevisiae* Seed reactor size: 5 m^3	636,000
Centrifuge (P-7/DS-102)	Separate biomass waste after fermentation Throughput=3,000 L/h	250,500
Storage tank (P-8/V-101)	To hold the bioethanol before fillteration Tank size: 30 m3	9,010
Distillation column (P-11/C-101)	To allow purification of ethanol up to 89% at top of the column and with less than 1% of ethanol content at bottom of the column (mostly water). Size: D: 2.3 m, H: 13.12 m	8,080,000
Molecular sieve columns (P-12/C-102)	For dehydration of bioethanol by using ethylene glycol as a solvent Size: D: 2.3 m, H: 10.60 m	3,892,000
Cooler (P-13/PP102)	To cool down the bioethanol for storage.	24,300
Total		**16,808,597**

Table S2. Input material cost

Raw materials	**Cost ($/kg)**
S.horneri	0
water	0.000482
H_2SO_4	0.07
NaOH	0.144
Media	0.81
S. cerevisiae BY4741	0
Cellic C Tec2	1.62
Total	**2.644482**

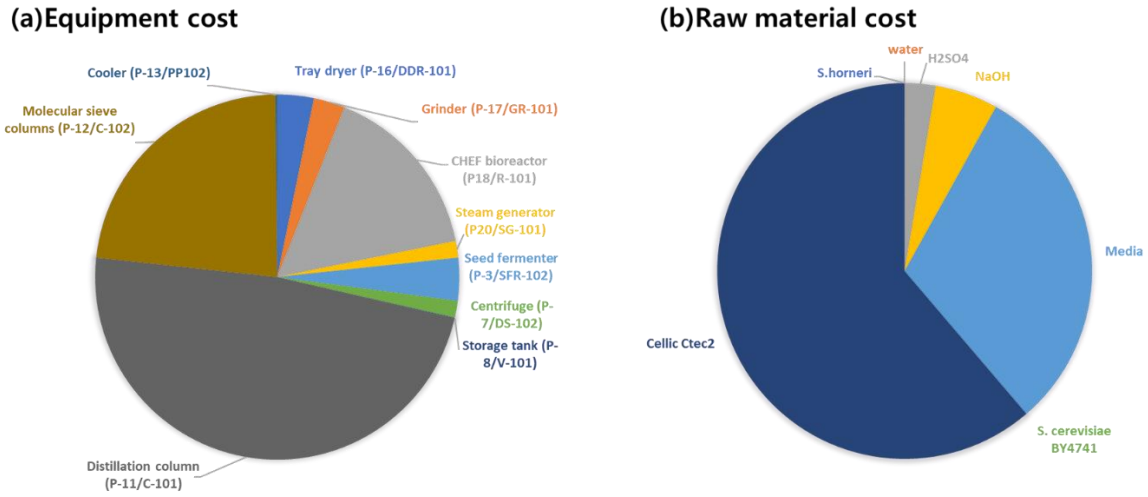

Figure S1. Comparison of cost (a)Equipment cost (b)Raw material cost