

Initial values of variables for ethanol fermentation	
Variable	Initial value
X (g/L)	1.5
P_1 (g/L)	5.3
P_2 (g/L)	0.0001
S_1 (g/L)	8.6
S_2 (g/L)	8.6
V (L)	1.35

Nomenclature, description and values of parameters

Parameter	Description	Value
μ_{m1}	Maximum specific growth rate coefficient for yeast on glucose (h^{-1})	1.8823
μ_{m2}	Maximum specific growth rate coefficient for yeast on fructose (h^{-1})	1.7098
$Y_{P1/S1}$	Yield coefficient for ethanol from glucose	0.5085
$Y_{P2/S1}$	Yield coefficient for glycerol from glucose	0.5331
$Y_{P1/S2}$	Yield coefficient for ethanol from fructose	0.5098
$Y_{P2/S2}$	Yield coefficient for glycerol from fructose	0.4462
K_{S1}	Saturation coefficient for cell growth on glucose (g/L)	159.75
K_{S1I}	Inhibition coefficient for cell growth on glucose (g/L)	94.233
K_{P1}	Saturation coefficient for cell growth on ethanol (g/L)	238.39
K_{P1I}	Inhibition coefficient for cell growth on ethanol (g/L)	2.7378
K_{S2}	Saturation coefficient for cell growth on fructose (g/L)	0.0726
K_{S2I}	Inhibition coefficient for cell growth on fructose (g/L)	9.0048
K_{P2}	Saturation coefficient for cell growth on glycerol (g/L)	35.958
K_{P2I}	Inhibition coefficient for cell growth on glycerol (g/L)	9.9722
K_{S1P1}	Saturation coefficient for ethanol production on glucose (g/L)	1.3409
k_{S1P1}	Inhibition coefficient for ethanol production on glucose (g/L)	18.612
K_{S2P1}	Saturation coefficient for ethanol production on fructose (g/L)	0.9129
k_{S2P1}	Inhibition coefficient for ethanol production on fructose (g/L)	1000
K_{S1P2}	Saturation coefficient for glycerol production on glucose (g/L)	6.7116
k_{S1P2}	Inhibition coefficient for glycerol production on glucose (g/L)	0.5863
K_{S2P2}	Saturation coefficient for glycerol production on fructose (g/L)	0.4310
k_{S2P2}	Inhibition coefficient for glycerol production on fructose (g/L)	1.150
v_{S1P1}	Coefficient of maximum specific ethanol production rate for yeast on glucose (h^{-1})	1.5051
v_{S2P1}	Coefficient of maximum specific ethanol production rate for yeast on fructose (h^{-1})	0.3321
v_{S1P2}	Coefficient of maximum specific glycerol production rate for yeast on glucose (h^{-1})	0.0023
v_{S2P2}	Coefficient of maximum specific glycerol production rate for yeast on fructose (h^{-1})	0.1609
λ	Proportion of glucose and fructose	0.5
S_f	Sugar total feed concentration (g/L)	300