

## Supplementary Materials

**Table S1.** Worksheet of experiment settings together with the results of the experiments of the first DoE.

Exp No	Exp Name	Run Order	Incl/Excl	Trace Elements	Vitamins	Iron	Mix 2	Mix3	Mix4	Mix1	OD <sub>600nm</sub> <sup>1</sup>	Td <sup>1</sup>
1	N1	8	Incl	1	1	1	0.333333	0	0.333333	0.333333	1.3	3.29
2	N2	12	Incl	20	1	1	1	0	0	0	-	-
3	N3	20	Incl	20	1	1	0	1	0	0	-	-
4	N4	10	Incl	20	1	1	0	0	1	0	0.7	14.77
5	N5	16	Incl	20	1	1	0	0	0	1	0.8	6.00
6	N6	18	Incl	1	10	1	1	0	0	0	-	-
7	N7	15	Incl	1	10	1	0	0	1	0	-	-
8	N8	9	Incl	1	10	1	0	0	0	1	1.1	3.22
9	N9	19	Incl	20	10	1	0	1	0	0	1.3	4.52
10	N10	14	Incl	20	10	1	0.333333	0	0.333333	0.333333	0.8	1.47
11	N11	17	Incl	1	1	10	1	0	0	0	0.7	9.60
12	N12	7	Incl	1	1	10	0	1	0	0	0.8	0.06
13	N13	6	Incl	1	1	10	0	0	1	0	-	-
14	N14	22	Incl	1	1	10	0	0	0	1	5.1	0.69
15	N15	11	Incl	20	1	10	0.333333	0	0.333333	0.333333	0.8	10.80
16	N16	23	Incl	1	10	10	0	1	0	0	1	0.35
17	N17	4	Incl	1	10	10	0	0.333333	0.333333	0.333333	1.5	2.41
18	N18	3	Incl	20	10	10	1	0	0	0	1.2	1.57
19	N19	24	Incl	20	10	10	0	0	1	0	-	-
20	N20	21	Incl	20	10	10	0	0	0	1	1.3	5.15
21	N21	1	Incl	1	5,5	1	0	1	0	0	0.9	3.63
22	N22	5	Incl	20	5,5	10	0	1	0	0	1.3	3.79
23	N23	2	Incl	10.5	5.5	5.5	0.25	0.25	0.25	0.25	0.5	0.63
24	N24	13	Incl	10.5	5.5	5.5	0.25	0.25	0.25	0.25	0.9	3.35

<sup>1</sup>Some values are missing because the minimum threshold for the OD<sub>600nm</sub> reading was not reached.

**Table S2.** ANOVA table of the two responses of the first DoE.

OD	DF	SS	MS (variance)	F	p	SD
Total	18	44.08	2.44889			
Constant	1	26.8889	26.8889			
Total corrected	17	17.1911	1.01124			1.00561
Regression	1	1.20238	1.20238	1.20323	<b>0.289</b>	1.09653
Residual	16	15.9887	0.999296			0.999648
Lack of Fit (Model error)	15	15.9087	1.06058	13.2573	<b>0.213</b>	1.02985
Pure error (Replicate error)	1	0.08	0.08			0.282843
	N = 18	Q2 = 0.050		Cond. no. = 1.029		
	DF = 16	R2 = 0.070		RSD = 0.9996		
	Comp. = 1	R2 adj. = 0.012				
Duplication time	DF	SS	MS (variance)	F	p	SD
Total	18	581.295	32.2942			
Constant	1	315.005	315.005			
Total corrected	17	266.29	15.6641			3.95779
Regression	2	102.32	51.1599	4.68011	<b>0.026</b>	7.15261
Residual	15	163.97	10.9313			3.30626
Lack of Fit (Model error)	14	160.271	11.4479	3.0947	<b>0.421</b>	3.38348
Pure error (Replicate error)	1	3.6992	3.6992			1.92333
	N = 18	Q2 = 0.128		Cond. no. = 1.144		
	DF = 15	R2 = 0.384		RSD = 3.306		
	Comp. = 2	R2 adj. = 0.302				

**Table S3.** ANOVA table of the two responses of the second DoE.

<b>OD600nm</b>	<b>DF</b>	<b>SS</b>	<b>MS (variance)</b>	<b>F</b>	<b>p</b>	<b>SD</b>
Total	24	263.4	10.975			
Constant	1	249.615	249.615			
Total corrected	23	13.785	0.599348			0.774176
Regression	14	11.4571	0.818363	3.16388	<b>0.044</b>	0.904634
Residual	9	2.32792	0.258658			0.508584
Lack of Fit (Model error)	7	1.34792	0.192561	0.392981	<b>0.852</b>	0.438817
Pure error (Replicate error)	2	0.98	0.49			0.7
	N = 24	Q2 = 0.648		Cond. no. = 8.551		
	DF = 9	R2 = 0.831		RSD = 0.5086		
		R2 adj. = 0.568				
<b>Duplication Time</b>	<b>DF</b>	<b>SS</b>	<b>MS (variance)</b>	<b>F</b>	<b>p</b>	<b>SD</b>
Total	24	124.081	5.17003			
Constant	1	120.198	120.198			
Total corrected	23	3.8822	0.168791			0.410842
Regression	17	3.23952	0.19056	1.77906	<b>0.245</b>	0.436532
Residual	6	0.642678	0.107113			0.327281
Lack of Fit (Model error)	4	0.118211	0.0295527	0.112696	<b>0.966</b>	0.171909
Pure error (Replicate error)	2	0.524467	0.262233			0.512087
	N = 24	Q2 = 0.613		Cond. no. = 9.479		
	DF = 6	R2 = 0.834		RSD = 0.3273		
		R2 adj. = 0.365				