

Table 3. ALA accumulation of mutant strains

Strain	genes knock-out	ALA accumulation (mg/L)	Standard Error	Relative Change
<i>E. coli</i> BW25113-T7 (D0)	Control	662.25	100.28	1.00
<i>E. coli</i> D1:F	$\Delta hemF$	1361.22	100.90	2.06
<i>E. coli</i> D1:D	$\Delta dppA$	847.07	39.61	1.28
<i>E. coli</i> D1:M	$\Delta mppA$	601.37	41.40	0.91
<i>E. coli</i> D2:FY	$\Delta hemF, \Delta ybdK$	1280.62	207.11	1.93
<i>E. coli</i> D2:FA	$\Delta hemF, \Delta gdhA$	1114.22	84.14	1.68
<i>E. coli</i> D2:FB	$\Delta hemF, \Delta gadB$	1094.72	156.11	1.65
<i>E. coli</i> D3:FYA	$\Delta hemF, \Delta ybdK, \Delta gdhA$	1473.67	18.11	2.23
<i>E. coli</i> D3:FYB	$\Delta hemF, \Delta ybdK, \Delta gadB$	1526.32	25.79	2.30
<i>E. coli</i> D3:FAB	$\Delta hemF, \Delta gdhA, \Delta gadB$	1341.72	274.49	2.03
<i>E. coli</i> D4:FYAB	$\Delta hemF, \Delta ybdK, \Delta gdhA, \Delta gadB$	1434.02	137.53	2.17
<i>E. coli</i> D5:FYABD	$\Delta hemF, \Delta ybdK, \Delta gdhA, \Delta gadB, \Delta mppA$	1601.72	40.62	2.42
<i>E. coli</i> D5:FYABM	$\Delta hemF, \Delta ybdK, \Delta gdhA, \Delta gadB, \Delta dppA$	1278.67	161.32	1.93
<i>E. coli</i> D6:FYABMD	$\Delta hemF, \Delta ybdK, \Delta gdhA, \Delta gadB, \Delta mppA, \Delta dppA$	1014.77	122.83	1.53