

1. Batch Growth of *Lactobacillus* on Glucose.

The following data were measured for the growth of *Lactobacillus* on glucose, starting with different initial substrate (Glucose (S)) at constant initial cell concentrations (X_0).

Time (hr)	Expt A		Expt B		Expt C	
	X (g/L)	S (g/L)	X (g/L)	S (g/L)	X (g/L)	S (g/L)
0	0.1	0.25	0.1	1	0.1	5
0.5	0.106	0.225	0.111	0.958	0.113	4.95
1.5	0.113	0.2	0.122	0.912	0.127	4.893
2	0.119	0.175	0.134	0.862	0.143	4.827
2.5	0.125	0.151	0.148	0.8	0.161	4.757
3	0.131	0.128	0.163	0.75	0.181	4.676
3.5	0.136	0.106	0.178	0.686	0.204	4.584
4	0.141	0.088	0.195	0.619	0.23	4.482
4.5	0.145	0.071	0.213	0.547	0.258	4.366
5	0.149	0.056	0.232	0.474	0.291	4.237

Plot each data set (A, B, and C) in an appropriate manner to determine whether any lag phase is present. From the appropriate data set, determine μ_{max} . Determine the value of K_S . Calculate the Yield over the entire batch time period for each data set.

2. Growth Parameters of *E. aerogenes* in a Chemostat.

Problem 6.7 of the text.

4. Production of Lactic Acid by Fermentation of *Streptococcus lactis* in a Chemostat.

Problem 6.19 of the text.

Due Fri. 12 Oct., '07