Enzyme dilution

	Di	De	V_{cor}
1	−3	048	37
2	0	083	69
3	0	124	110
4	0	159	145
5	0	198	184
6	4	253	235
7	0	274	260
8	2	321	305
9	4	337	319
10	1	406	391
0	−2	+12	−14

NaPM/50 7.5 M/2000 ONPG 399 10^{-2}–10^{-3}

Quantitative adaptation data

4/23/49

			Di	Df	
1	K12	Y2Lac	090	349	
2	"	" Glu	090	087	
3	K12	Bug M/500	120	790	(7 min. reading!)
4	"	M/1000	99	529	
5	W112	Y2Lac	132	170	
6	"	Glu	80	073	
7	"	Lac M/500	80	095	
8		" M/1000	93	106	
9		Bug M/500	113	310	
10		" M/1000	120	228	

10 min. readings
Note tremendous activity
of Bugal adapted cells of K-12!

Comparison of Lac,- and Bugal.

4/24/49.

Grow W112 overnight in Y2 Lac M/500; Bugal M/500 and Glu M/500

A = K-12 B = Y70 C = W112 (8 min. 10)

1 = Lac M/50 2 = M/500 3 = Bug M/500

		D_i cells	D_i cor		Δ	Δ/D_i	R.A. 20 min.	
K-12	A 1	70	73	281	208	297	600	(410) 514
	2	110	109	223	114	104	200	
	3	81	83	470	387	478	950	(800) 590
Y70	B 1	117	115	140	025	021	042	
	2	111	110	120	010	009	018	
	3	113	112	178	064	057	113	
W112	C 1	90	91	127	036	040	080	(23) 30
	2	113	112	127	015	013	027	
	3	88	89	239	150	171	341	(700) 310

These cells are shaken, and therefore pneumatically aerobic!
Compare earlier data which show a wider discrepancy.

[Cf ~~See~~ 421. — in last column I.
EML 194. (Y10 for K-12)

Much greater differentials.

Compare Y10 (K) and W112 (Lac-)

April 25.

Without shelving: 20 min tests

		D_i 470		Δcor	R.A.
Y10	1 Lac M/50	048	152	96	200
	2 M/500	078	174	91	116
	3 Bug "	053	113	52	098
	NSB	063	070	0	000
	Y2 Glu	047	056	01	002
W112	1	072	086	08	011
	2	109	119	08	007
	3	97	143	43	044
	Blank + orpg		013		

Shelves: 20 min.

Y10	1	108	460	350	324
	2	119	570	452	380
	3	097	441	341	331
	4	130	150	020	015
	5	080	086	001	001
W112	1	096	119	020	021
	2	~~076~~ 103	120	014	014
	3	122	262	139	114

These data can be used:

	M/500 Lac	M/500 Bug	M/50 Glu
Y10 Lac,+	380	331	001
W112 Lac,−	014	114	—

Adaptivity of galactosidase

5/6/49.

Y10 after 3 transfers in NSB, grown overnight shaken in

	15 min. Di	Df.	Con Δ.	Δ	R.A. 15 m.	20 m.
Lac Y2	100	441	351-22	341	329	439
Permassay (Gln)	111	128	6	17	005.4	007.2
NSB.	109	127	6	18	005.5	007.3
0			22			

Increase upon adaptation is 61 x
i.e., unadapted cells have activity ca. 1.6% of adapted!
This may be incipient adaptation.

Kinetics of adaptation

547

5/25/49

Harvest Y10 from 6 hr. heavily moc: Y2 Glu shaken.
Suspend 2 ml c̄ 2 ml 1% Lac, 2 ml H_2O, 2 ml M/5 buffer.
Take 4 ml samples into M/100 azide M/50 buffer then ONTO M/200

		Di	Df	Acor.	R.A.
7PM	T=0	104	97		
7 45	45 m.	101	100		
9 30	150 m.	086	097		
9 50	170 m.	079	090		

No adaptation found

5/26/49

Y10. 2 ml cells 1 ml 1% Lac ½ ml buffer ½ ml H_2O or M.C. (A) (B)

T_0 = 2:35 PM. Assay in azide phosphate

cells very clumpy! apparent in both media

	T	O_i	D_f
A. (O)	T_0	121	133
	3 PM	130	168
	3:35	117	144
	5 PM	109	132
	7 PM	106	134
B (MC)	T_0	128	133
	3 PM	130	148
	3:35	120	129
	5 PM	118	147
	7 PM	118	133

Minute adaptation

Adaptation rate.

7/5/49.

Harvest K-12 from standing culture in Y2 Bkr. Conc. ca ~~20~~ 10 X. in H_2O. Ad. Syst. contains ~~H_2O~~ 1ml NaP M/5 7.5, 1ml 2% lactose, 1ml cells and 1ml supp.

Take .3ml samples to 9ml ONPG test system.

A). No supplement — ONPG concentration 021.

B). Peptone 1ml 2%. — 4PM Start.

T.		A Di	A Df	A Δ(corr)	A R.A.	B Di	B Df	B Δ	B R.A.
15m.	4^{15}	061	071	−005	——	064	087	008	012
	5^{00}	056	077	+ 005	009	067	098	038	057
	7^{00}	048	098	+ 034	071	083	310	214	261
	8^{00}	~~051~~				099	780	670	680

Deadaptation.

Harvest K12 freshly grown on Y2 Lac. 8^{40} PM

.5ml sample (from c). 8 mins.

071 152 067 236 (60 MIN)

A) 1ml cells 1ml buffer 1ml glucose 1ml H_2O

B) do. 1ml M/100 Azide

c) do. 1ml lactose 1ml H_2O.

		Di	D_f^{10}	R.A. (60)
10PM	A	062	267	
	B	062	300	
	C	062	260.	

(80 mins)

Inappreciable deadaptation!

c should be corrected for inhibition by 0.1% lactose.

Deadaptation

July 6, 1949

Harvest K12 from 50 ml Y2 Lac overnight. Conc. ca 10x.
System (4 ml)

1 ml cells (a) 1 ml buffer (b) 1 ml 2% sugar (c) 1 ml peptone or water (d)

A. a b — Buffer only 10^{45} AM.
B. ab — d peptone
C. ab glucose — glucose (final conc. 2.2×10^{-3} M)
D. ab glucose d peptone + glucose.

Assay in M/100 azide M/50 Na buffer. .2 ml samples (d = .050)

	Di	Df.	Δcor	R.A.
A	050	143		
B	050	181		
C	049	100		
D	048	118.		

Does glucose compete for entrance into cell?

1^{45} PM

A	038	552
B	049	226
C	046	380
D	080	234.

Note augmented activity of cells incubated in buffer.

Sediment this tube and examine supernatant.
.5 ml supernatant. ca 12a Most activity is still in cells!