

BA - for serum adapted enzymes.
Indices

Enzymes

Lactase + Lactose

Adaptation

serum (~~not~~)

18

8838 "protectus" R. Abdalhalim. Munch. Med. Wschr. 88:726

5415 localization of lactase in yeast cell See

Hjörbäck & Vessén *E. coli* physiol. ch.

277: 171-180 (1943). *T. cremoris*

fermented but did not hydrolyse !?

Über die Lactase-fermentation
und die Lokalisation
des Enzyms in der Hefezelle

17 13310 *aquaria*. See JBC 147:99-108 (1943).

481 { Conyell + Christman JBC 150: 143-154 (1943).

16447 } Utilization of lactose by the fasting rat.

16 ~~632~~

~~4676~~

15

Caputto, R., Leloir, L.F., and Trucco, R.E. (1948) Lactase and lactose fermentation in *Saccharomyces fragilis*. *Enzymologia*, 12: 350-355.

Extracted adapted yeast cake by adding $\frac{1}{2}$ vol toluene and .2 vol M/2 NaHCO₃ and mixing 20 mins. Washed with one vol. water, solid then left 2-3 days with 2 vols .6M KCl. ³Residue removed. Add .4 vols cold acetone, discard ppt, and ppt active fraction with additional .3 vols. Redissolve in 20 cc .6 M KCl. "When suspended in pure water the enzyme loses about half its activity in 2-3 hrs. AS fractionation gave high losses, but separation from invertase was achieved.

Modified Steinhoff method used for estimation:

I. 7% CuSO₄ added to 50g NaAc to vol 100 ml. II AsMo Rx according to Nelson,
+ 1 vol 1.5N H₂SO₄ JBC, 153,575 '44
III 5N Sulf ac

2 ml sample, 2 ml I and .4 ml BuOH mixed in tt grad to 10ml. Cover tube with marble and heat at 80 20mins. After cooling, add 2 ml II, 1.5 ml III and water to 10 ml. Mix and read with #52 filter. Found reduction by glu, gal and lac in ratio: 1, 1.2, .016. M/25 Phosphate buffer caused ca 44% inhib., but accounted for with blank and with glucose control.

Lactase: pH opt. 6.7-6.9. Deprot. usually unnecessary. Rather poor linearity illustrated. Apparent phosphate activation noted, but explained as K, and removal of Zn, etc. K, Mn and Mg activated the enzyme considerably. (ca. ~~10x~~ M/100) Hexokinase studied: fastest with glucose; lactose only after induction (hydrolysis?) Amount of lactase more

A Bibliography of Neurospora

A. Biochemical mutants.

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- 9.

cross #	from	3A	3B	3C	51
1335		++	CL	CL	++
"	(211)	-	CL	++	-
"	(145)	-	+	-	(+)
"	(1339)	-	CL	CL	-
211		-	CL	++	-
145		-	+	-	CL
1339		-	(+)	CL	-
1394		EL	CL	CL	++
"	(145)	-	+	-	(+)
"	(211)	-	CL	++	-
284		CL	++	-	+
"	(145)	-	+	-	+
145		-	+	-	CL
"	(1394)	-	+	-	+
1371		CL	CL	CL	+

similar results in other groups.

In addition to references cited in my American Journal of Veterinary Research, Vol. VIII, 1947 paper, I found the following possibly useful references in my file.

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 Salmonella group.

I	enteritidis	(I), IX, XII
②	typhi	IX, XII, VI
③	pulchrum	IX, XII
④	deby	I, IV, XII
⑤	para B	IV, XII
⑥	stanley	IV, V, XII
⑦	reading	IV, XII
⑧	typhimurium	(I) IV (V) XII

1, + 12

Phages ~~1, 11, 13 + 18~~ attack typical smooth only of ①, ② + ③.

Phages 11, 13 + 18 regularly attacked only typical roughs of ② + ③.

Special "r" strains were attacked only by phage 8, which attacked
 all but a few variants, of ②.

~~18~~ 1R/13 was "smooth", and lysed by 12; it carried 1
 lysogenically. 15/12 were "rough" and sensitive to 11, 13 + 18.

¶ 8 attached S forms of ~~1, 2, 3~~, 1, 2, 3, 5, but not 6, 4, ~~7~~
para A, superatifer. R forms of 1, 2, 3, 5, 8, 9, para A.

¶ 1 + ¶ 12 attached typical S forms only of 1, 2, 3 + 4. no R.

¶ 11 " most R forms regardless of type. do. 13 + 18.

¶ 20 " R + S forms of 1, 2, 3 para A

¶ 21 R + S 1, 2, 3 + decay S.

Conclusion: Sphages probably associated with the factor
now recognized as IX. They are cosmopolitan, as are the
serological behaviors.

Burnet 1929b. Further obs. - Reprint.

φ 8 eq. active on R + S of gallinacum. No serological difference

detectable between S + S/8, or R + R/8. R/8 did not absorb φ 8.

R + S sera showed little cross-reaction. R was obtained with φ₁.

1929a. Classified phages:

A	B	C	D
1, 12, 33	8, 18, 28, 31, 34, 38	20, 25, 32, 35	11, 13

Testing on variants obtained S phage.
A are Sφ.

18, 35, 11 + 13 are R only.

8, 34 are indifferent to R/S. Other φ are more active on R than S.

32 + 38 : 32 gallinacum R or S, 38 R only.

gallinacum S/12 are variably "rough" if really resistant, but frequently reacted with both R + S sera. Various colonial types noted.

The mucoids which were found were hypopycni → smooth mutants, sensitive to R φ.

All /H were rough. S/8 → smooth; correlated with resistance to φ 8.

Smooth mutants could be recovered from rough strains. Reversibility may be associated with a slight O-egg-leucine content. (titre ca 80)

R-S-R → ... could take place.

Gumet 1930) Bacteriophage activity and the antigenic structure of
 salina. J.P.B. 33:647-664.

Table 4. *S. gallinarum*:

A B C D D'

Discussion of mutation patterns in terms of "change" planes

For some phages, ~~the~~ susceptibility & specificity are uniform in R + S phases.

It is possible that different directions of modification of the O-substance

are responsible. In Staph, sensitivity is more closely correlated c

serology:

Phages

<u>Antigen</u>	1	2	3	4	
ABC	S	S	S	S	SF
BC	R	S	S	S	SF/1
ABC AC	S	R	R	S	SF/2
ABC.	S	S	R	S	SF/3

Table 4. *S. gallinarum*.

Cells.	A	B	C	D	D'	Angstrom
	12	39	40 8	18 38 25	35	13
398S	S	S	S S ± R	S S	R	S
398S/8	S	S	S R R R	S S	R	S
398S/25	S	S	S ^R ± R	R	R	S
398S/39	S	R	R S ± R	S S	R	S
398R = S/12	R	R	S		→	R
398R/8	R	R	R R R	S S	S	R
398R/35	R	R	S S S	R R	R	R
398R/13	R	R	S S S	R R	R	R

Note: R are R to A, B., S to C + D /8 is C_R D_S /13 or 35 is C_S D_R

Burnet, + McKie, (1930) Bacteriophage reactions of flexner dysentery strains. JPB 33:637-646.

4 groups of phages.

A - smooth only.

others - most roughs, some smooths.
antigenic types characteristically different.

Groups C + D are homologous with the Salmonella phages active on rough gallinarum.

Burnett + McKie JPB. 36: 299-306; 307-318 (1933).

I + II.

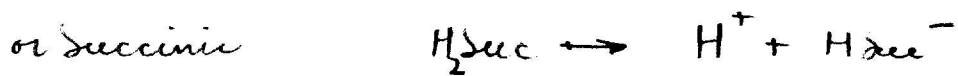
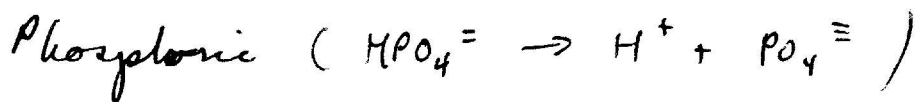
The classification of dysentery-coli bacteriophages. resistance patterns

+ serology. Some phages may act equally on dysentery R, coli +

Salmonella.

pH (ca²⁺)

acetate		4.76
Barbiturate		3.98
Benzoic		4.20
Citric		2.06 4.75 6.40
Formic		3.75
Lactic		3.86
Malic		3.40 5.05
Nitrous		3.4
Oxalic		1.19 4.21
Phosphoric		2.12 7.21 12.32
Phthalic		2.89 5.41
Succinic		4.19 5.81
Sulfurous		1.76 7.20
Tartaric		3.02 4.54



Sulfurous.

Oxalate

Absorption of p20 by W578 and W811.

532

4/20/49

Assays on E. coli B to avoid confusion with λ action

Temperature sensitive resume

W:
31
35
40
42
43
44
45
47
48
65
67
72
74
76

1
20
3
36
58
60
71
78
88
87
83
42

108
110
124
125
138
137
178
179
200
242
259
305

tested for
P.S. by E.L.

W305 maybe faster at 37 than at 40.
W110 - at 31 ++ at 40. W42 maybe
similar.

Lactulose

ca 1:12 of p. 467-468 NBS "Sugar".

100g lactose in ^{ca 75g} 500ml H₂O sat'd Ca(OH)₂ at 55° kept several days.
Concentrate in vacuo to wt of 125g. Dilute residue with 125ml MeOH
and cool for crystallization several days. Remove crystal lactose, ca 75g by
filtration & wash with 400 ml MeOH. Concentrate filtrate to a syrup.
Dilute to 500 ml H₂O + 100 ml to remove Ca. Dilute to 200ml and
filter & dry.

5 ml sample. in 200 ml Erlenmeyer. Add 5 ml .1N iodine from burette
Add 7.5 ml .1N NaOH ~~to remove~~ dispense. Repeat for 6 times. (3ml @ 2)
Acidify with 10 ml N HCl + back titrate with N/10 Na₂S₂O₃ standard.
For 2.5 g., Br = 1/20 iodine titration of 5ml sample. Add 26 ml 20% KI
equivalent. Add 15g CaCO₃ precipitate. Add bromine dispense &
mechanical stirring. Remove residue & 10g, 10g 10g
per equivalent Br. H₂O to filtrate to remove excess Ag. Evaporate
filtrate to 125 ml to remove H₂O.

(b) Selected Bibliography

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1
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$$\sim p \cdot \sim q$$

$$p \vee q = \sim(\sim p \cdot \sim q)$$

$$\sim(p \vee q) = \sim p \cdot \sim q$$

$$\sim(p \cdot q) = \sim p \vee \sim q$$

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Life Cycles -

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