

verted toward normal. It is suggested that the genesis of the neoplastic cell was completed during the initial treatment, and such cells remained dormant or divided at a de-

creased rate until further stimulated. The non-specific irritant, croton oil, exerts its effect during the critical period of carcinogenesis.

16627

Antigenic Relationship of *Salmonellae* to Inaba Strains of *Vibrio comma* Isolated in Egypt.

OSCAR FELSENFELD.

From the Hektoen Institute for Medical Research of the Cook County Hospital, Chicago, Ill.

The sera of patients infected with *Salmonellae* frequently agglutinate cholera vibrios.¹ Gohar and Makkawi,² studying *Vibrio comma* strains from the recent outbreak in Egypt, found that these organisms were agglutinated by *Salmonella enteritidis* sera. It seemed of interest, therefore, to investigate which antigenic factors are common to *Salmonellae* and cholera vibrios.

Three strains of *V. comma* of the Inaba type, isolated from the recent cholera epidemic in Egypt, were used in these experiments.* *Salmonella* "O", "Vi" and "H" sera prepared

for routine *Salmonella* grouping (typing) by methods described by Edwards a.o.³⁻⁵ were employed. Procedures recommended by Ranta and Dolman⁶ were used for the production of *V. comma* "OH" sera. Agglutination and absorption tests were carried out according to the standard methods employed for *Salmonella* grouping (typing).^{4,5}

Live, alcohol-treated ("O") and formalized ("H") antigens prepared from the cholera vibrios were tested against 25 "O", 2 "Vi" and 39 "H" *Salmonella* sera. Agglutination of the vibrios occurred with dilutions of these

TABLE I.
Results of Agglutination Tests Using *Salmonella bredeney* "O" Serum.

Agglutination (after absorption) with "O" antigen from	Serum absorbed with "O" antigen from					
	None	<i>S. bredeney</i> I, IV, XXVII, XII	<i>S. paratyphi</i> A I, II, XII	<i>S. pullorum</i> IX, XII	<i>S. worthington</i> I, III, XXIII	<i>V. comma</i> "k", "4", "8"
<i>S. bredeney</i> I, IV, XXVII, XII	16*	0	6	4	4	12 12 12
<i>S. paratyphi</i> A I, II, XII	8	0	0	4	2	4 2 2
<i>S. pullorum</i> IX, XII	6	0	0	0	6	1 2 2
<i>S. worthington</i> I, III, XXIII	5	0	1	5	0	3 2 2
<i>V. comma</i> "k"	2	0	0	1	1	0 0 0
<i>V. comma</i> "4"	4	0	0	1	1	0 0 0
<i>V. comma</i> "8"	2	0	0	2	1	0 0 0

* All agglutination titers to be multiplied by 100.

¹ Felsenfeld, O., and Young, V. M., A.A.A.S. Annual Meeting, 1946.

² Gohar, M. A., and Makkari, M., *J. Trop. Med. and Hyg.*, 1948, **51**, 95.

* These strains were received through the courtesy of Dr. Harry Seneca of Columbia University.

³ Edwards, P. R., and Bruner, D. W., *Kentucky*

Agri. Exp. Sta. Bull., 1942, **54**.

⁴ Felsenfeld, O., *Am. J. Clin. Path.*, 1945, **15**, 584.

⁵ Edwards, P. R., and Bruner, D. W., *J. Bact.*, 1946, **52**, 493.

⁶ Ranta, L. F., and Dolman, C. E., *Canad. J. Publ. Health*, 1943, **34**, 26.

RELATIONSHIP OF *Salmonellae* AND *Vibrio*TABLE II.
Results of Agglutination Tests Using *Salmonella California* "H" Serum.

Agglutination (after absorption) with "H" antigen from	Serum absorbed with "H" antigen from						<i>V. comma</i>		
	None	<i>S. californica</i> g, m, t	<i>S. oranienburg</i> m, t	<i>S. essen</i> g, m	<i>S. senftenberg</i> g, s, t		"k"	"4"	"8"
<i>S. californica</i> , g,m,t	120*	0	20	5	20		80	80	80
<i>S. oranienburg</i> , m,t	60	0	0	5	10		60	60	60
<i>S. essen</i> , g,m	40	0	20	0	5		20	25	20
<i>S. senftenberg</i> , g,s,t	30	0	10	5	0		10	12	10
<i>V. comma</i> "k"	6	0	5	0	0		0	0	0
<i>V. comma</i> "4"	4	0	4	0	0		0	0	0
<i>V. comma</i> "8"	6	0	6	0	0		0	0	0

* All agglutination titers to be multiplied by 100.

TABLE III.
Average of Results of Agglutination Tests Using *Vibrio comma* "OH" Sera.

Agglutination (after absorption) with antigen from	Serum absorbed with antigen from							
	None	<i>S. bredeney</i> I, IV, XXVII, XII	<i>S. pullorum</i> IX, XII	<i>S. worthington</i> I, III, XXIII	<i>S. californica</i> g,m,t	<i>S. oranienburg</i> m,t	<i>S. essen</i> g,m	<i>S. senftenberg</i> g,s,t
<i>V. comma</i> "k"	14*	8	10	10	8	14	9	9
<i>V. comma</i> "4"	12	8	9	9	8	12	8	8
<i>V. comma</i> "8"	12	8	9	9	7	12	7	8
<i>S. bredeney</i> I, IV, XXVII, XII	2	0	1	1	2	2	2	2
<i>S. pullorum</i> IX, XII	2	0	0	2	2	2	2	2
<i>S. worthington</i> I, III, XXIII	2	0	2	0	2	2	2	2
<i>S. californica</i> g,m,t	4	4	4	4	0	4	0	0
<i>S. oranienburg</i> m,t	0	0	0	0	0	0	0	0
<i>S. essen</i> g,m	4	4	4	4	0	4	0	0
<i>S. senftenberg</i> g,s,t	4	4	4	4	0	4	0	0

After absorption with *V. comma* antigens, all agglutination tests were negative.

* All agglutination titers to be multiplied by 100.

sera as high as 5 to 25% of their titer against the homologous *Salmonella* when the serum contained agglutinins for the *Salmonella* antigenic factors I, XII or g. Subsequent absorption tests, as represented in Tables I and II confirmed that parts of *Salmonella* I, XII and g antigens were present in the *V. comma* strains.

Sera prepared against the *V. comma* strains agglutinated *Salmonellae* which contained the antigenic factors I, XII and g. Results of the absorption tests are given in Table III.

Summary. Three Inaba strains of *V. comma* isolated recently in Egypt harbored fractions of *Salmonella* I, XII and g antigens.