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Influence of Electrolytes Added to Growth Medium on Electrophoretic Potential of Escherichia Coli.*

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(Introduced by R. Adams Dutcher.)

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Aqueous suspensions of *Esch. coli* picked from 24-hour growths at 37.5°C. on Bacto-nutrient agar adjusted in pH from 6.2 to 7.9 gave slightly lesser (to 4%) cataphoretic velocities, as measured in Falk capillary cells[1] than did suspensions washed one to 3 times. Accordingly, we used a suspension produced by washing the growth from the medium, centrifuging once and resuspending the bacteria in distilled water, in a study of the effect of the addition of salts to the growth medium on the electrophoretic velocity of *Esch. coli*

TABLE I.

Salt added	Concentration in medium	Migration velocity‡ Av. of 60-80 Readings, sec.	% change from control
NaCl	0 (Control)	8.06	—
"	10^{-4} Molar	8.04	—0.25
"	10^{-3} "	8.01	—0.62
"	10^{-2} "	7.92	—1.74
$CaCl_2$	0 (Control)	9.18	—
"	10^{-4} Molar	8.63	—5.99
"	10^{-3} "	8.58	—6.54
"	10^{-2} "	8.47	—7.73
$AlCl_3$	0 (Control)	8.08	—
"	10^{-4} Molar	8.05	—0.37
"	10^{-3} "	7.99	—1.11
"	5×10^{-3} "	8.03	—0.62
Na_2SO_4	0 (Control)	8.04	—
"	10^{-4} Molar	8.46	+5.22
"	10^{-3} "	8.46	+5.22
"	10^{-2} "	8.44	+4.98
Na_3PO_4	0 (Control)	7.98	—
"	10^{-4} Molar	8.03	+0.63
"	10^{-3} "	8.01	+0.38
"	10^{-2} "	8.00	+0.25

‡ Migration velocity = Electroendosmotic velocity minus cataphoretic velocity, voltage and distance being constant.

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[1] Falk, I. S., Jensen, L. B., and Mills, J. H., *J. Bact.*, 1928, **15**, 421.

as measured with the Falk capillary cell. As Table I will show, the addition of the salts to the growth medium had little or no effect on the cataphoretic velocity which measures the zeta potential. In a future paper (Pedlow and Lisse) it will be shown that the zeta potential of the bacteria in aqueous suspension can be changed when salts are added to the growth medium in greater concentrations.

It was also shown that no change of the electrophoretic velocity of organisms (once washed) greater than 2.5% was produced by adjusting the initial pH of the medium to values over the range 6.8 ± 1.9, the pH after growth having a value 6.5 to 8.6, 5.7 to 8.6, and 6.1 to 8.6 for the upper half, lower half and the whole agar.

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Amino Acids in Human Skin.*

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The outer layers of human skin were successively extracted in the cold with 95% alcohol, ethyl ether and chloroform. The material was then digested with commercial pepsin for 72 hours and for a similar length of time with commercial trypsin. The residual dry product contained 6.1% of ash and 14.2% of total nitrogen. Some of it was analyzed by means of the Van Slyke partition method. Cystine was determined according to Folin and Marenzi and tyrosine and tryptophane by the Folin and Ciocalteu procedure. The values for the basic amino acids (Van Slyke method) were recalculated and are shown in the table in terms of per cent in the residual skin. This was done in order that a comparison could be made with the results obtained by Wilkerson,[1] who recently reported on the chemical nature of human skin. Wilkerson used a modification of the Vickery and Leavenworth method for the basic amino acids, but the remainder of his data were obtained by the same procedures employed by the writer. The values shown in Table I are those obtained by the writer as well as those pub-

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[1] Wilkerson, V. A., *J. Biol. Chem.*, 1934, **107**, 377.