complement-binding antigen which can be extracted from the virus-induced papillomas of rabbits, though it resembles the latter in its general traits. Further work is under way to determine the significance of the findings.

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Germicidal Efficiency of Synthetic Phenolic Compounds Tested by the Improved Tissue Culture Method.

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In the preceding paper of this series[1] an improved method was proposed for testing and rating germicides. The compounds which were rated by the method included: iodine, Hexylresorcinol, Metaphen, phenol, Mercurochrome, and Merthiolate.

The same method was followed for the evaluation of several synthetic organic compounds belonging to the phenolic group. The compounds were tested for their effect on the growth of living embryonic chick tissue as well as for their ability to kill bacteria. A number known as the toxicity-index was determined which is defined as the ratio of the highest dilution of disinfectant showing no growth of embryonic tissue in 10 minutes to the highest dilution required to kill the test-organism in the same period of time. The tests were run at a temperature of 37° C. in the presence of a standard amount of organic matter. Theoretically the smaller the index the more nearly perfect the germicide.

The following compounds were tested and compared: *o*-n-hexylphenol, *p*-hydroxydiphenyl sulfide, and *p*-hydroxyphenyl-n-amyl sulfide. Since phenol and Hexylresorcinol are also phenolic compounds they are included for comparison.

Effect of germicides on bacteria and tissue. The compounds were tested against both *Staphylococcus aureus* (gram +) and *Eberthella typhosa* (gram —). The killing concentrations of the germicides for tissue and bacteria and their toxicity-indices after 10 minutes' exposure at 37°C. are given in Table I.

The phenolic compounds that have been tested show relatively small toxicity-indices indicating that they are efficient germicidal

[1] Salle, A. J., McOmie, W. A., Shechmeister, I. L., and Foord, D. C., PROC. SOC. EXP. BIOL. AND MED., 1938, **37**, 694.

TABLE I.

Compound	Highest dilution showing no growth after 10 minutes' exposure			Toxicity-index = A/B	
	Staph. aureus = B	*E. typhosa* = B	Tissue = A	*Staph. aureus*	*E. typhosa*
Hexylresorcinol	1:1620	1:1770	1:1450	0.9	0.8
p-hydroxyphenyl-n-amyl sulfide	1:2700	1:2700	1:2800	1.0	1.0
o-n-hexylphenol	1:2900	1:2800	1:3125	1.1	1.1
p-hydroxydiphenyl sulfide	1:2500	1:3125	1:3125	1.3	1.0
Phenol	1:110	1:186	1:224	2.0	1.2

agents. Also, they exhibit about the same degree of germicidal efficiency against both *Staph. aureus* (gram +) and *E. typhosa* (gram —) making them valuable germicides for general use. With the exception of iodine the non-phenolic compounds which have been tested[1] show great differences in their action on *Staph. aureus* and *E. typhosa*.

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Relationship of Pyruvic Acid to the Bisulphite Binding Substances of the Blood.

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Increases in the bisulphite binding substances (B.B.S.) of the blood have been related to increases in pyruvic acid, both in beriberi[1] and following exhaustive exercise.[2] The B.B.S. has been shown to be elevated in beriberi[1] and other disease states,[3] and also following the injection of sodium pyruvate.[4] The present communication gives a brief résumé of the relationship of the B.B.S. to the blood pyruvic acid.

Pyruvic acid was estimated in blood by Peters and Thompson's

[1] Platt, B. S., and Lu, G. D., *Proc. Chinese Physiol. Soc.*, Third General Conference, Chinese M. A., 1935, p. 16; *Ibid., Quart. J. Med.*, 1936, n.s., **5**, 355.

[2] Johnson, R. E., and Edwards, H. T., *J. Biol. Chem.*, 1937, **118**, 427.

[3] Taylor, F. H. L., Weiss, Soma, and Wilkins, R. W., *J. Clin. Investigation*, 1937, **16**, 833.

[4] Wilkins, R. W., Weiss, Soma, and Taylor, F. H. L., *Ann. Int. Med.*, in press.