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The solvent action of antiseptics on necrotic tissue.

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The work which we wish to report was undertaken with the idea of demonstrating the relative solvent action of the chlorinated antiseptics on necrotic tissue, pus cell, erythrocytes, plasma clot, and blood clot.

Liver tissue was purposely infected, placed in the incubator until thoroughly necrotic, shaken in salt solution with broken glass until emulsified, strained through one layer of gauze, and 5 c.c. portions added to bottles containing 50 c.c. of the solutions to be tested.

After shaking at half-hour intervals for two hours, 15 c.c. portions were removed and centrifuged for 5 minutes at the same high speed in each instance. The volume of sediment thrown down was measured, and by comparing the amount left after the action of antiseptic solution with that remaining after the action of control solutions of distilled water or salt solution, the amount of solvent action could be readily determined.

Dichloramine T is not soluble in water, and so oily solutions had to be used either superimposed on an aqueous suspension of the liver emulsion or alone.

These experiments showed that chloramine T and dichloramine T were without solvent action, while Dakin's hypochlorite solution in the concentration and degree of alkalinity used clinically readily dissolved the necrotic tissue. A similar action was demonstrated on pus cells, plasma clot, and red blood cells. Fiessinger (1) had already demonstrated this action on pus cells, but attributed it to the alkalinity of the hypochlorite solutions used. We have shown that this action was marked in a neutral solution of hypochlorite, whereas in a control solution without hypochlorite but of a degree of alkalinity comparable to Dakin's hypochlorite solution, it was wanting. Alkali added to the neutral hypochlorite enhanced its solvent action somewhat. Rous and Jones (2) have shown that intact leukocytes may protect virulent bacteria from the action of antiseptics. Hypochlorite solution by disrupting these cells will be able to reach and exert an antiseptic action on these organisms, while chloramine T and dichloramine T will have no such effect.

The solvent action of hypochlorite in the degree of alkalinity allowable for clinical use ceases below about 0.2 per cent. concentration of sodium hypochlorite. This point varies inversely with the alkalinity of the solution. None of these solutions had any solvent action on whole blood clot.

Curves shown by Carrel and Dehelly (3) demonstrate the ease with which infected wounds containing much necrotic tissue may be sterilized with the use of Dakin's hypochlorite solution.

REFERENCES.

1. FIESSINGER, N., MOIROUD, P., GUILLAUMIN, C. O., AND VIENNE, G. *Annales de Méd.*, 1916, III, 133.
2. ROUS, P., AND JONES, F. S. *Jour. Exp. Med.*, 1916, XXIII, 601.
3. CARREL, A., AND DEHELLY, G. *The Treatment of Infected Wounds*, New York, 1917.