

CONTRIBUTED AND SELECTED

SOME USES OF CHLORAZENE.*

(Dakin's New Antiseptic.)

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Great interest being shown in Dakin's New Antiseptic, chemically known as para-toluene-sodium-sulphochloramide, it may be of interest to this body of physicians and pharmacists to know some of the uses it may be put to, and which are not yet generally known.

In the August 1916 number of the *British Medical Journal*, Dr. H. D. Dakin of the Herter Laboratories, New York, tells the results of some work on antiseptics carried out in laboratories at Compiègne supported by the Rockefeller Institute for Medical Research attached to Hospital 21 of the French Army. To quote, he says: "The killing of bacteria by ordinary antiseptic substances is essentially a chemical reaction between the antiseptic on the one hand, and the proteins and cell contents on the other." He recognized the fact that destroying bacteria in water or in test-tubes is comparatively easy, while the destruction of bacteria mixed with blood, serum, pus, etc., is a difficult proposition and worthy of study.

He became interested in Hypochlorites, studied their mode of action and decided that hypochlorites in contact with the =NH group (always abundant in proteins) formed a highly antiseptic =NCl group. Then in coöperation with Prof. J. B. Cohen he prepared certain chloramines which should contain this group, and studied their antiseptic action, later deciding that the most desirable one was para-toluene-sodium-sulphochloramide.

Chlorazene, the trade name applied to it in America, is a white crystalline substance with a faintly chlorous odor, very characteristic bitter taste, soluble 1 in 8 parts of cold water. It liberates, very readily, its chlorine atom in combination with the nitrogen as the NCl group, and its antiseptic properties are due to the readiness with which the NCl molecule combines with proteins, peptones, etc., with which it may come in contact.

Chlorazene has no direct corrosive action even in concentrated solutions, does not precipitate or coagulate protein, such as blood serum, has been demonstrated as being practically non-toxic even when injected hypodermatically on rabbits, and is much less irritating than sodium hypochlorite solution. When its phenol coefficient of 54 is taken into consideration, one may gain an idea of its value as a non-toxic antiseptic.

For general surgical use, a 1 percent solution is strong enough, although if a sign of infection is present a 2 percent is desirable. If stronger solutions are employed, as in war wounds with profuse exudation, the skin if involved becomes irritated and should be protected with vaseline. The most convenient method of use is to pack perforated rubber tubes in the wound beneath the gauze covering, the tubes connected with a larger supply tube, which in turn is connected

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with the source of supply. At regular intervals of one to two hours, enough of the chlorazene solution is allowed to run through the tubes to saturate the gauze packing. Such a procedure is possible with hypochlorite solution only in strengths between 0.45 percent and 0.5 percent and increase of 0.1 percent showing very marked irritation. Hypochlorite solution has the added disadvantage of being very short-lived when exposed to organic matter.

In eye infection a 0.1 percent is good, while for nose and throat use, a 0.1 percent to 0.2 percent solution is desirable especially when dissolved in a 0.7 percent salt solution. In bladder and urethral cases a 0.25 percent solution is very efficacious.

Oily combinations of chlorazene do not keep well, but a 1 percent to 2 percent jelly with sodium stearate is very staple. Dr. Carrel spreads a 0.7 percent jelly over the wound after thoroughly cleansing with chlorazene or hypochlorite solution. The writer has made 1 percent jelly with tragacanth and only enough of a volatile oil to cover the chlorous odor. This keeps perfectly, and makes a very good lubricant for surgical purposes provided instruments are not kept in it too long. Chlorazene attacks iron fairly rapidly, copper and brass less so, while silver, nickel and aluminum are hardly attacked at all.

In bad war jaw cases, it has not been specially noticed to injure fillings, and a 0.5 percent solution has not appeared to affect the enamel of the teeth. The writer has made a tooth-powder containing 0.5 percent of the antiseptic in combination with saccharin, myrrh, precipitated chalk and sodium bicarbonate, using oil of cinnamon to mask the slight odor of the chlorazene. The powder is pleasantly flavored, causes the peculiar frothing in the mouth of a very weak solution of hydrogen peroxide, and causes the cleanly feeling after use, of that solution.

Another use which will probably become very popular, is in preparing an antiseptic gauze. We have but three or four substances in medicine which can be used in gauze for an antiseptic dressing, and they are either irritating or they possess an undesirable odor. Chlorazene will render a gauze antiseptic, and it may be packed into a fissure without irritation. The scientific branch of the British Medical Journal reports that a 4 percent gauze is the most antiseptic and satisfactory gauze made. The writer has made a sample containing 25 percent of the antiseptic—a higher strength than would ever be necessary.

When we consider the antiseptic power of this new substance, the fact that it is stable, and that it is non-toxic, it is hard to see why it should not take the place of the poisonous and perishable preparations now on the market.

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