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Action of *o*-Iodosobenzoic Acid on Certain Bacteria.

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Although *o*-iodosobenzoic acid was studied with regard to its bactericidal action by Loevenhart and Grove[1] there seems to have been little if any work done on this subject since then. These authors presented, along with their results pertaining to physiological effects, evidence that *o*-iodosobenzoic acid and related compounds had definite *in vitro* bactericidal action upon organisms of the colon group including *B. typhosus* and upon *B. pyocyaneus* and *Staphylococcus aureus.* Bacteriological studies *in vivo* were not performed. Sodium *o*-iodosobenzoate was found to be highly toxic to the animal organism when administered subcutaneously and intraperitoneally.

Recent work has indicated that *o*-iodosobenzoate at pH 7 may be used for the quantitative estimation of —SH groups whether in compounds such as cysteine and glutathione[2] or in proteins such as denatured hen's egg albumin and urease[3,4] according to the process:

$$2\ RSH + \overline{O}OC—C_6H_4\ OI \rightarrow \begin{matrix} R—S \\ R—S \end{matrix} + IC_6H_4COO^- + H_2O$$

While the following experiments can in no sense be considered as final, the evidence at hand suggests there may be a correlation between the reproduction and survival of certain bacteria and the presence of —SH groups (*cf.*[5,6]) although it is recognized that iodosobenzoate is not entirely specific for the sulfhydryl group. Irrespective of theory it may prove worthwhile to study further the possible use of locally applied *o*-iodosobenzoic acid in the treatment of infected wounds. The work is presented in its present stage since the author will not be able to do further experimental work for the duration.

Experiments with E. coli. With Fildes synthetic ammonium lactate medium and concentrations of organisms of about 1000/cc it was found that *o*-iodosobenzoate in a concentration of 0.5 mg % completely prevented growth for as long as 72 hr, and as growth was not obtained on replating it was concluded that the effect was bactericidal rather than bacteriostatic. Sulfanilamide controls showed definite growth after replating. A concentration of 1.0 mg % completely inhibited the growth of as many as 5×10^7 organisms per cc while 0.25 mg % permitted only very slight growth of 5×10^3 organisms per cc after 48 hr.

Experiments with beta hemolytic streptococci. Beef broth infusion medium was used in the following, *o*-iodosobenzoate being added from a sterile solution. Two strains of organisms were employed; the first the C-203 strain and the second an organism recently isolated from a case of scarlet fever. With 4000 organisms per cc a concentration of 10 mg % of *o*-iodosobenzoate had a slightly more marked effect than controls with the same concentration of sulfadiazine. Again here the effect of the *o*-iodosobenzoate was bactericidal rather than bacteriostatic.

Animal experiments (mice). Intraperitoneal injections of 120 mg of *o*-iodosobenzoic acid dissolved in an equivalent amount of NaOH in a total volume of about 1.5 cc resulted in death within 15 min with symptoms of shock; on examination there was found about 5 cc of gelatinous clear exudate with scattered petechial hemorrhages on the

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4 Hellerman, L., Chinard, F. P., and Deitz, V. R., to be published.

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6 Fildes, P., *Brit. J. Exp. Path.*, 1940, **21**, 67.

mesenteries and intestines. With amounts of 15 mg or less in about 1.0 cc the animals, while at first becoming sick, eventually recovered; no residua were noted on autopsy several days later. Because of the acute toxicity of the drug when administered in this fashion a series was run in which the free acid was placed either subcutaneously through an incision or injected as an emulsion in about 1.0 cc of water in the loose tissues about the neck. Amounts below 30 mg per 30 g mouse were fairly well tolerated; the main reaction again was an accumulation of sterile gelatinous exudate which was later resorbed.

A known virulent C-203 strain was injected subcutaneously along side about 15 mg of *o*-iodosobenzoic acid and at no time was there evidence of infection in the 6 animals used; the controls without *o*-iodosobenzoic acid all died within 48 hr. In the presence of the same amount of drug as many as 5×10^7 organisms had no more effect than 1×10^3 and all cultures from the site of the injections and the heart's blood failed to show hemolytic streptococci. In a series of animals receiving 60 mg of the drug all were dead within 48 hr as a result of the toxic effects of the drug but none showed any signs of infection on autopsy or culture.

Conclusions. 1. *o*-iodosobenzoate *in vitro* apparently has as marked if not more marked an effect than the sulfonamides on *E. coli* and certain hemolytic streptococci. 2. The effect is bactericidal rather than bacteriostatic. 3. It is conceivable that the drug may act by interruption of some catalytic process dependent on intact —SH groups. 4. Locally *o*-iodosobenzoic acid apparently did control in these experiments what should have been an overwhelming infection. The *o*-iodosobenzoate which is much more soluble seems to be too toxic to be used locally.

These data suggest that *o*-iodosobenzoic acid may be worth further study as a possible bactericidal agent in the treatment of infected wounds.

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Injurious Action of Pitressin on the Rat Testis.*

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Some of the biological effects of adrenocorticotropic pituitary preparations suggested the presence of a pressor substance. A temporary prostration of the rats was observed invariably to follow injections of high levels of these partially purified preparations. Coincidentally it was noted that there were injurious effects of high levels of these preparations on the testes of normal and hypophysectomized males. Two methods have been employed in the effort to determine whether the injurious effects on the testes may be referred to pressor principles. First, attempts were made to remove any pressor substance from ACT preparations and to compare the biological properties of the crude and purer materials. This phase of the subject will be discussed later. Second, effects of the pressor principle itself on the testis have been studied and are here reported.

As a maximum of 5 dog pressor units per mg have been found in ACT preparations, pitressin† was injected into normal 40-day-

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† Kindly supplied by Parke, Davis and Co.