

SENSITIVITY OF MICE IMMUNIZED WITH Clostridium oedematiens
AND Cl. sordellii TOXOIDS TO HOMOLOGOUS TOXINS
ADMINISTERED BY DIFFERENT ROUTES

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Albino mice immunized with Clostridium oedematiens toxoid were found to be only half as sensitive to Cl. oedematiens toxin injected intramuscularly as to the same toxin injected intravenously. Conversely, unimmunized mice were 3.5-4 times more sensitive to Cl. oedematiens toxin when injected intramuscularly than intravenously. Mice immunized with Cl. sordellii toxoid were 30 times less sensitive to Cl. sordellii toxin injected intramuscularly than intravenously. The sensitivity of unimmunized mice to Cl. sordellii toxin was the same by both methods of injection.

Many investigators have shown that the sensitivity of animals to the toxins of the agents of anaerobic infections differs depending on the mode of administration of the toxin [1-4, 6]. Specific immunization greatly reduces the sensitivity of animals to the homologous toxin.

This paper describes a study of the sensitivity of immunized animals to toxin injected in different ways.

EXPERIMENTAL METHOD AND RESULTS

Noninbred albino mice weighing 14-16 g were immunized with native toxoids of Clostridium oedematiens and Cl. sordellii adsorbed on $Al(OH)_3$.

For the reacting dose, concentrated toxins of Cl. oedematiens and Cl. sordellii, partially purified by fractional salting out with ammonium sulfate, were used. In these experiments, as in those described previously [2], mice were found to be on the average 3.5 times more sensitive to the toxin injected intramuscularly than intravenously. This ratio was reversed in the immunized animals: the sensitivity of the immunized mice to Cl. oedematiens toxin was 2-2.5 times less when the toxin was injected intramuscularly than intravenously.

The sensitivity of animals to the toxin of Cl. sordellii was the same whether it was injected intravenously or intramuscularly. Specific immunization reduced the sensitivity of the animals to the toxin, and the degree to which the sensitivity was reduced also depended on the mode of injection. Despite identical sensitivity of the unimmunized animals to the toxin whether injected intravenously or intramuscularly, the sensitivity of the immunized animals was 30 times less to toxin injected intramuscularly than intravenously.

It is considered that an explanation for these facts will be forthcoming when more is known, first, on the mechanism of action of the toxins of Cl. oedematiens and Cl. sordellii depending on their mode of administration, and second, on the mechanism of immunity to these toxins.

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The fact that the toxins of Cl. oedematiens and Cl. sordellii contain several components [5, 7] must also be remembered; the possibility that animals differ in their sensitivity to the different components of the toxin depending on its mode of administration cannot be ruled out.

From the practical point of view it is evident that when the resistance of immunized animals and, consequently, the immunogenicity of prophylactic preparations are being determined, the method used to inject the toxin has a considerable bearing on the result.

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