SENSITIVITY OF MICE TO Clostridium oedematiens TOXIN ADMINISTERED IN VARIOUS WAYS

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The sensitivity of noninbred albino mice to Clostridium oedematiens toxin is greatest if it is injected subcutaneously and intramuscularly, and least if injected intravenously. Intraperitoneal injection occupies an intermediate position. Mice weighing 20-25 g are twice as sensitive to the toxin as animals weighing 12-14 g. If divided doses of toxin are injected into different parts of the body, its lethal action is potentiated.

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The study of the sensitivity of mice to Clostridium oedematiens toxin when injected by different methods is of practical importance because during the titration of this toxin and determination of the immunogenic properties of prophylactic preparations, it is injected by different routes (intravenously, subcutaneously, intramuscularly, intraperitoneally). However, sensitivity to the toxins of anaerobic microorganisms (botulinus, tetanus, etc.) is known to vary substantially depending on the mode of injection [1-5, 7].

EXPERIMENTAL METHOD

Experiments were carried out on noninbred albino mice weighing 14-18 g. Different batches of native and concentrated toxins of Cl. oedematiens were injected. Statistical analysis of the experimental data were carried out by Bliss's probit method [6, 11].

EXPERIMENTAL RESULTS

Experiments showed that the sensitivity of mice to toxin when injected intramuscularly and subcutaneously is on the average 4 times higher than when injected intravenously, intraperitoneal injection occupying an intermediate position, 1.6 times higher than when given intravenously and 1.7 times lower than when injected intramuscularly.

A study of the sensitivity of mice of different weight (age) to Cl. oedematiens toxin when injected intramuscularly showed that heavier mice (20-25 g) are twice as sensitive as smaller mice (12-14 g), and this difference becomes still more marked when expressed per kg body weight. These results indicate the absence of a linear relationship between the dose of toxin giving a toxic effect and body weight. Similar results for botulinus and tetanus toxins have been given by other workers [8-10, 12].

The sensitivity of mice also depends on whether a given dose of toxin is given in one place or in two places. Experiments showed that LD_{50} for Cl. oedematiens toxin, when divided into two parts and injected into two limbs, is from 1 to 4 times less than when injected into one limb.

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