

FAILURE TO INDUCE ALLERGIC RESPONSE IN GUINEA PIGS WITH SCORPION VENOM

DIANE S. DORO, EDWARD S. ORNELAS, AND ROY M. JOHNSON, TEMPE, ARIZ.

SNAKE venoms have been utilized as therapeutic agents in arthritic patients.^{1, 2} The use of venoms as therapeutic agents necessitates a consideration of their allergic response. The venom of *Centruroides sculpturatus*, a poisonous scorpion indigenous to the southwestern United States, was tested for its ability to incite an allergic response in guinea pigs.

MATERIALS AND METHODS

The venom was obtained by electrical stimulation of the scorpion, lyophilized in vials, and weighed dry. One vial was used for the anaphylaxis experiments, another for the Schultz-Dale tests. The dried venom was dissolved in normal saline to give a concentration of 2 mg. per milliliter. This was used as a stock solution from which working dilutions in normal saline were made. The minimum lethal dose (M.L.D.) for each vial was determined by guinea pig titration, using eight male guinea pigs weighing between 500 and 900 grams each. All injections were made subcutaneously.

Four male guinea pigs weighing between 600 and 800 grams were inoculated with a sublethal concentration of venom for both the initial dose and, fourteen days later, the challenging dose (Table I).

TABLE I. ANAPHYLAXIS EXPERIMENT WITH *C. SCULPTURATUS* VENOM IN GUINEA PIGS*

M.L.D. VENOM (MG./KG.)	INITIAL INJECTION (MG./KG.)	SHOCKING DOSE (MG./KG.)	ANAPHYLAXIS
0.06	0.04	0.04	(-)

*All figures are in terms of milligrams of venom per kilogram of body weight.

Three male guinea pigs, each weighing between 600 and 800 grams, were injected with sublethal amounts of venom according to the schedule in Table II. The guinea pigs were subsequently sacrificed; the intestinal tissue was placed in Ringer's solution and the Schultz-Dale³ reaction was attempted immediately.

The intestinal tissue was fastened to the bottom of a vial containing approximately 10 ml. Ringer's solution. The free end was attached to a lever arm in contact with a kymograph. The venom, in a concentration of 0.1 mg. per milliliter, was added dropwise to the exposed tissue by means of a tuberculin syringe and a 20-gauge needle.

From the Poisonous Animals Research Laboratory, Arizona State College.
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RESULTS

In no experiment was any allergic reaction noted. Blood counts taken at the time of the Schultz-Dale experiments indicated no eosinophilia.

TABLE II. SCHULTZ-DALE EXPERIMENT WITH *C. SCULPTURATUS* VENOM*

GUINEA PIG NO.	M.L.D. VENOM (MG./KG.)	INITIAL INJECTION (MG./KG.)	SUBSEQUENT INJECTIONS	ANIMAL SACRIFICED (DAYS)	REACTIONS
1	0.1	0.08	None	15	None
2		0.08	0.08 on second, seventh, and tenth days	15	None
3		0.08	8 injections in 29 days, increasing venom concen- tration by 0.02 units to 0.14	45	None

*All figures are in terms of milligrams of venom per kilogram of body weight.

DISCUSSION

The use of any proteinaceous substance, such as venoms, as a therapeutic agent carries the potential danger of an allergic response to the agent by the patient. The use of scorpion venom as a therapeutic agent has not yet reached the clinical stage, nor has its chemical nature been completely elucidated. However, the presence of proteins or peptides in this venom has been indicated by electrophoretic analysis in this laboratory, using ninhydrin as an indicator.

In several preliminary experiments and in those reported here the venom of *Centruroides sculpturatus* has given no allergic response in animal experiments.

SUMMARY

The venom of *Centruroides sculpturatus* was tested for its ability to incite an allergic response in guinea pigs, using two standard methods. No allergic response was observed.

REFERENCES

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3. Boyd, William C.: Fundamentals of Immunology, New York, 1956, Interscience Publishers, Inc., p. 693.