Swab Test Using Enzyme-Linked Immunosorbent Assay (ELISA) Technique for Diagnosis of Brown Recluse Spider Bites

Missouri: Brown Recluse Central

Missouri lies near the center of the habitat for the brown recluse spider. The death of a St. Louis woman in 2008 was attributed to complications from a brown recluse bite.

“There is no way to confirm a diagnosis of a recluse spider bite.” – An emergency room physician, commenting on the above death, UPI, April 5, 2008. A survey of ER physicians in the endemic area has shown the economic viability of a test for these spider bites.

Which of these is a spider bite? These four patients were all referred for spider bites. Answer below pictures.

Steps 1-2: Using venom Ab raised in NZ white rabbits, immobilize the fusion-tagged venom from the lysate; wash away unbound protein.

Steps 3-4: Bind venom Ab to immobilized venom protein; wash away unbound protein.

Steps 5-6: Elute protein interaction complex and Analyze on SDS-PAGE

The resulting “Super polyclonal antibodies (super polyclonals) can recognize spider venom in femtogram amounts.”

The rabbit venom Ab can recognize venom up to 5 days on the skin and sometimes beyond:

Test In Practice

- Swab lesion 30 seconds with saline
- 3-hour ELISA
- Femtogram sensitivity (micro nano pico femto)
- Cotton works better than Dacron
- We have a Missouri network of 10 sites; we pay $350/case (within 5 d.)

First documented Turkish case (3) ELISA results from gauze swab

Funding, Patent, References

- Phase II SBIR Score ‘09: 24
- Patent: Pending 11/550,130
- References:

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