

Key: Hemotoxic
 Neurotoxic
 Cytotoxic

Species	Toxin	MOA	Symptoms	Treatment
Hymenoptera (Bees, hornets and wasps)	Bee: Melittin, apamin, phospholipase A, mast cell degranulation peptide, hyaluronidase Wasp: Mastropan and bradykinin		Localized pain, heat and swelling Eosinophilic accumulation	Ice/cold compress Antihistamines Topical corticosteroids Good prognosis
<i>Epicauta</i> (Blister beetle)	Crystalline cantharidin	Strongly irritating to mucous membranes Hypocalcemia due to unknown mechanism Blistering agent Diuretic Aphrodisiac	GIT: Anorexia, colic, diarrhea, mucoid to bloody stools Urinary Tract: Dysuria, hematuria Respiratory/Cardiac: Tachypnea, tachycardia, slow CRT Oral ulceration, vesiculation, desquamation in GI tract Hyperemia and hemorrhages in urethra and urinary bladder	Treat shock Correct acidosis Activated charcoal Guarded prognosis

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<p><i>Lactrodectus mactans</i> (Black widow)</p>	<p>Alpha-latrotoxin (neurotoxin)</p>	<p>Ionophore for Ca, Na and K</p> <p>Increases permeability and enhances neurotransmitter release</p> <p>Degeneration of nerve terminals</p> <p>Affects motor and sensory nerve terminals</p>	<p>Severe muscle cramping</p> <p>Anxiety</p> <p>Painful</p> <p>Peak effect 6-12 hours</p>	<p>Pain control</p> <p>Muscle relaxants</p> <p>Calcium gluconate</p> <p>Antivenin</p> <p>Treat shock</p> <p>Guarded prognosis (SA)</p>
<p><i>Laxosceles reclusa</i> (Brown Recluse)</p>	<p>Hyaluronidase Sphigomyelinase Proteases Hemolysins</p>	<p>Endothelial cell damage Coagulation Thrombus formation Tissue necrosis</p>	<p>Wounds that grow outward</p>	<p>Wound care Antibiotics Dapsone may reduce inflammation</p> <p>No antivenin</p>
<p><i>Crotalidae</i> (pit vipers) -Rattlesnakes -Water moccasins -Copperheads</p>	<p>Collagenase Hyaluronidase Phospholipases Ribonucleases Polypeptides Procoagulants and Anticoagulants</p>		<p>Pain Rapid swelling Ecchymotic to suffusive hemorrhages in bite area Salivation, hypernea, tachycardia, mydriasis Secondary infections Neurotoxicity (Mojave rattlesnake)</p>	<p>SA: Treat shock, transfusions, antibiotics, pain meds, diphenhydramine, antivenom ASAP</p> <p>LA: Establish and maintain airway Anti-inflammatory, antibiotics, anti-tetanus, antivenom risk for serum sickness if equine origin antivenom is given</p>

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<p><i>Elapidae (micruroides, micrurus)</i> -Coral snakes -Cobras</p>		<p>Curare-like effect Interfere with Acetylcholine blocking neuromuscular junction leading to paralysis</p> <p>Local tissue reaction Phospholipase A Hemolytic anemia reported in dogs</p>	<p>Limb numbness, weakness, disorientation, paralysis, dyspnea</p> <p>Parasympathetic signs include salivation, emesis, and diarrhea</p>	<p>Antivenin</p> <p>Respiratory support</p> <p>Atropine</p>
<p><i>Heloderma suspectum</i> (Gila monster)</p> <p><i>Heloderma horridum</i> (Mexican beaded lizard)</p>	<p>Gila toxin</p> <p>Hyaluronidase</p>		<p>Bleeding from bite</p> <p>Localized swelling</p> <p>Hypotension and Tachycardia</p> <p>Vomiting</p>	<p>Remove lizard and any teeth</p> <p>Flush bite wound</p> <p>Monitor and treat hypotension with crystalloid fluids as needed</p>
<p>Amphibians <i>Bufo marinus</i> (cane toad)</p> <p><i>B. alvarius</i> (Colorado river toad)</p>	<p>Bufo dienolides: Bufotalin</p> <p>Indole alkylamines: bufotenine</p> <p>Biologic amines: Adrenaline, noradrenaline, dopamine, and epinine</p>	<p>Inhibit sodium-potassium ATPase</p> <p>Marked effect on smooth muscle and the heart.</p> <p>Vasoconstriction, hypotension, and hallucinations</p>	<p>Immediate salivation</p> <p>Emesis</p> <p>Head Shaking</p> <p>Apparent blindness</p> <p>Disorientation</p> <p>Seizures</p> <p>V-fibrillation</p>	<p>Flush mouth</p> <p>Decontamination with AC and cathartic</p> <p>Cardiac arrhythmias: Atropine, lidocaine, propranolol</p> <p>Control seizures</p> <p>High mortality if not treated quickly!</p>