

Representative LD₅₀ Values

Toxin or venom (source)	Mouse LD ₅₀ (mg/kg)	Mechanism
Water (various)	2 x 10 ⁵	CNS depression; cerebral edema; brain herniation.
Ethanol (fermentation of sugars)	10 ⁴	GABA receptor agonist → CNS inhibition.
NaCl (prepared food)	4 x 10 ³	Excitable cell membrane electrical effects; osmotic disruption of cells
Morphine sulfate (<i>Papaver somniferum</i>)	900	Endorphin receptor agonist → CNS inhibition.
Potassium chloride (geologic)	350	Excitable cell membrane electrical effects → nervous system disruption, cardiac arrhythmia
Salicylates (<i>Salix spp.</i>)	250	Uncouples oxidative phosphorylation
Strychnine sulfate (<i>Strychnos nux vomica</i>)	150	CNS <i>de</i> -inhibition
Plutonium (geologic)	80	Ionizing radiation effects in lungs, intestines
Thiopental (synthetic)	50-70	CNS inhibition; respiratory failure
Arsenic trioxide (geologic)	20	Binds sulfhydryl groups in proteins; 'replaces' PO ₄ in ADP + PO ₄ → ATP (get ADP-arsenate, instead)
Hydrogen cyanide (many plant species)	3.7	Blocks final step of electron transport chain.
Rattlesnake venom – cytotoxic (<i>Crotalus spp.</i>)	2-6	Enzymatic destruction of plasma membranes
Batrachotoxin (<i>Choresine spp.</i>)	2.0	Prolonged opening of Na ⁺ channels → nervous system inhibition → respiratory paralysis
T2 Toxin (<i>Fusarium spp.</i>)	1.2	Disrupts protein synthesis at several stages of translation
Nicotine (<i>Nicotiana spp.</i>)	1	Non-competitive agonist/antagonist of nACh receptor → excitation of nervous system, followed by paralysis, respiratory failure
Latrotoxin (<i>Latrodectus mactans</i>)	0.55	Hyperactivation of muscles of body
Curare (<i>Chondrodendron tomentosum</i>)	0.5	Competitive inhibitor of nACh receptor → paralysis, respiratory failure
Kallikrein, natriuretic-type toxin (<i>Varanus komodoensis</i>)	≈ 0.4	Peripheral vasodilation, ↑ vascular permeability → profound hypotension, circulatory collapse
Rattlesnake venom – neurotoxic (<i>Crotalus spp.</i>)	0.2-0.7	Non-competitive inhibitor of nACh receptor → paralysis, respiratory failure
Aconitine (<i>Aconitum heterophyllum</i>)	0.1	Na ⁺ channel blocker → cardiac arrhythmia
Sarin (synthetic)	0.1	Noncompetitive inhibitor of myoneural junction AChase → severe seizures that can result in death
α-bungarotoxin (<i>Bungarus multicinctus</i>)	0.08	Non-competitive inhibitor of nACh receptor → weakness, paralysis, respiratory failure
Soman, or GD (synthetic)	0.06	Noncompetitive inhibitor of myoneural junction AChase → severe seizures that can result in death
Anatoxin (<i>Anabena flos-aquae</i>)	0.05	Non-competitive agonist of nACh receptor → excitation of nervous system, seizures (BTW, "Ana" is from <i>Anas</i> , a genus of ducks)
Microcystin (<i>Microcystis aeruginosa</i>)	0.05	Hepatotoxic due to apoptosis of hepatocytes subsequent to disrupted protein dynamics.
Enterotoxin B (<i>Staphylococcus aureus</i>)	0.027	'Hyperactivation' of T-cells → cytokine 'storm' → pulmonary edema, circulatory collapse
VX (synthetic)	0.015	Noncompetitive inhibitor of myoneural junction AChase → severe seizures that can result in death
Saxitoxin (<i>Alexandrium spp.</i>)	0.01	Nervous system Na ⁺ channel blocker → paralysis, respiratory failure

α -Tityustoxin (<i>Tityus spp.</i>)	0.009	CNS K ⁺ channel blocker → severe hypertension, pulmonary edema, <i>cor pulmonae</i> .
Unnamed α -neurotoxin (<i>Oxyuranus scutellatus</i>)	0.009	Non-competitive inhibitor of nACh receptor → paralysis, respiratory failure
Tetrodotoxin (<i>Vibrio spp.</i>)	0.008	Nervous system Na ⁺ channel blocker → paralysis, respiratory failure
α -conotoxin (<i>Conus spp.</i>)	0.005	Competitive inhibitor of nACh receptor → paralysis, respiratory failure
Taipoxin (<i>Oxyuranus scutellatus</i>)	0.005	Rhabdomyolysis; disrupted release of neurotransmitters by CNS neurons → paralysis, respiratory failure
Ricin (<i>Rincus communis</i>)	0.003	Enzymatic degradation of rRNA → blockage of protein synthesis
CP Enterotoxin (<i>Clostridium perfringens</i>)	0.003	Pore-forming proteins → dramatically ↑ plasma membrane permeability → apoptosis
Unnamed α -toxin (<i>Oxyuranus microlepidotus</i>)	≈ 0.002	Non-competitive inhibitor of nACh receptor → paralysis, respiratory failure
Batrachotoxin (<i>Choresine spp.</i>)	0.002	Locks voltage-gated Na ⁺ channels in open conformation → disrupted neural function, cardiac arrhythmias
Verotoxin (<i>Escherichia coli</i> Strain O157:H7)	0.002	Causes death of endothelial cells in GI & renal capillaries → bleeding, renal failure
Dioxin (synthetic)	0.001	↑ gene expression – many genes, many cell types → malignant transformation, apoptosis
Textilotoxin (<i>Pseudonaja textilis</i>)	0.0006	Blocks release of ACh at neuromuscular junction → paralysis, respiratory failure
Ciguatoxin (<i>Gambierdiscus toxicus</i>)	0.0004	Locks voltage-gated Na ⁺ channels in open conformation → disrupted neural function, cardiac arrhythmias
Palytoxin (various marine species)	0.00015	Converts Na ⁺ K ⁺ -ATPase into an ion channel → disrupted transmembrane ion fluxes; cell death due to Ca ⁺⁺ overloading
Diphtheria toxin (<i>Corynebacterium diphtheriae</i>)	0.0001	Disrupts function of ribosomal elongation factor 1 → blockage of protein synthesis
Maitotoxin (<i>Gambierdiscus toxicus</i>)	0.0001	Ca ⁺⁺ channel activator → ↑ release of norepinephrine by numerous tissues → adrenergic storm
Abrin (<i>Abrus precatorius</i>)	0.00004	Enzymatic degradation of rRNA → blockage of protein synthesis
Shiga Toxin (<i>Shigella dysenteriae</i>)	0.000002	Enzymatic degradation of rRNA → blockage of protein synthesis
Tetanus Toxin (<i>Clostridium tetani</i>)	0.000002	Enzymatic destruction of SNARE complex in glycine-dependent synapses → seizures
Botulinum toxin (<i>Clostridium botulinum</i>)	0.000001	Enzymatic destruction of SNARE complex in ACh-dependent synapses → weakness, paralysis, respiratory failure