



## Acute Toxins of Biological Origin

Toxin	Species	Route	LD <sub>50</sub> (µg/kg body wt)	SAR Exempt Limits
<b>Abrin</b>	Mouse Human	IV Ingestion	0.7 5-7	1000mg
Aerolysin	Mouse	IV	7*	
<b>Boutlinum Toxin A</b>	Mouse	IP	0.0012*	1mg
<b>Botulinum Toxin B</b>	Mouse	IP	0.0012*	1mg
<b>Botulinum Toxin C1</b>	Mouse	IV	0.0011	1mg
<b>Botulinum Toxin C2</b>	Mouse	IP	0.0012	1mg
<b>Botulinum Toxin D</b>	Mouse	IP	0.0004	1mg
<b>Botulinum Toxin E</b>	Mouse		0.0011*	1mg
<b>Botulinum Toxin F</b>	Mouse	IV	0.0025	1mg
B-Bungarotoxin	Mouse	IP; IV	7.8; 10	
Caeruleotoxin	Mouse	IV	40	
Cereolysin	Mouse	IV	40-80	
Ciguatoxin 2	Mouse	IP	1	
Ciguatoxin 3	Mouse	IP	0.9	
<i>Clostridium difficile</i> enterotoxin A	Mouse	IP	0.5	
<i>Clostridium perfringens</i> alpha toxin, lecithinase	Mouse	IV	3	
<i>Clostridium perfringens</i> theta toxin, perfringolysin O	Mouse	IV	13-16	
<i>Clostridium perfringens</i> enterotoxin	Mouse	IV	81	
<i>Clostridium perfringens</i> beta-toxin	Mouse	IP; IV	4.5; 0.31	
<i>Clostridium perfringens</i> delta-toxin	Mouse	IV	5*	
<i>Clostridium perfringens</i> epsilon-toxin	Mouse		0.1*	
<b>Conotoxins</b>			10-100	100mg
Crotoxin	Mouse	IV	82	
<b>Diacetoxyscirpenol (DAS)**</b>	Dog	IV	1100	10,000mg
Diphtheria toxin	Mouse Hamster	IV IP	0.01 6.5	
Listeriolysin	Mouse		3-12*	
Maitotoxin	Mouse	IP	0.6	
Modeccin	Rat	IP	1.3	
Nematocyst toxins	Mouse	IV	33-70	



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Notexin	Mouse	IV	5	
Palytoxin	Rat Mouse	IV IP	0.089 0.05	
Pertussis toxin	Mouse	IP	18	
Pneumolysin	Rabbit	IV	1.5	
<i>Pseudomonas aeruginosa</i> exotoxin A	Mouse	IP; IV	14; 3	
<b>Ricin</b>	Mouse Rat	IV IP	2.2 1.5	1000mg
<b>Saxitoxin</b>	Mouse	IV	3-9	500mg
Scaritoxin	Mouse	IP	50	
Shiga toxin	Mouse Rabbit	IP IV	0.25 0.0022	
<i>Shigella dysenteriae</i> neurotoxin	Mouse	IP; IV	1.3; 0.45	
Streptolysin O	Mouse	IV	8	
Streptolysin S	Mouse	IV	25	
<i>Staphylococcus aureus</i> alpha toxin	Mouse	IV	0.04-0.06	
<b><i>Staphylococcus aureus</i> enterotoxin B</b>	Monkey	IV	20	100mg
<b><i>Staphylococcus aureus</i> enterotoxin F</b>	Rabbit	SQ; IV	2; 10	100mg
<b>T-2 toxin**</b>	Pig	IV	1000	10,000mg
Taipoxin	Mouse	IV	2	
Tetanus toxin	Mouse	SQ	0.003	
<b>Tetrodotoxin</b>	Mouse	IV/IP	8	500mg
Viscumin	Mouse	IV	2.4	
Volkensin	Mouse	IP	1.38	
<i>Yersinia pestis</i> murine toxin	Mouse	IV	10	

IV = intravenous; IP = intraperitoneal; SQ = subcutaneous

**Toxins in bold are Select Agent toxins.**

\* MLD = minimum lethal dose; lowest dose reported to kill at least one subject

\*\*Although DAS and T-2 toxins have LD<sub>50</sub> values >100µg/kg body weight, they must be registered as Acute Toxins with the Biosafety Office as they are Select Agent toxins.

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