

Supplement

Strophanthus sarmentosus* extracts and the *Strophanthus* cardenolide ouabain inhibit snake venom proteases from *Echis ocellatus

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Table S1: Anti-hemorrhagic activity of *S. sarmentosus* leaf and root extracts as expressed in the size of lesions on rat skin. Rats were injected with 0.2 mL of either saline, venom, venom + antivenom, or venom + extracts. Data are expressed as means $\pm$ StD of three individual experiments. The lesion area was estimated assuming an elliptic form (half of length * half of width * π).

	Extract / mg/kg	Average lesion length / mm				
			Leaf		Root	
			Methanol	Ethylacetate	Methanol	Ethylacetate
Venom		34 $\pm$ 1				
Antivenom		17 $\pm$ 7				
Saline		No foci				
Venom	100		23 $\pm$ 2	32 $\pm$ 1	37 $\pm$ 5	27 $\pm$ 2
	200		22 $\pm$ 2	23 $\pm$ 2	30 $\pm$ 2	22 $\pm$ 2
	300		25 $\pm$ 9	15 $\pm$ 2	22 $\pm$ 1	17 $\pm$ 2

	Extract / mg/kg	Average lesion width / mm				
			Leaf		Root	
			Methanol	Ethylacetate	Methanol	Ethylacetate
Venom		35 $\pm$ 5				
Antivenom		15 $\pm$ 3				
Saline		No foci				
Venom	100		25 $\pm$ 2	23 $\pm$ 2	35 $\pm$ 3	17 $\pm$ 2
	200		20 $\pm$ 2	24 $\pm$ 3	32 $\pm$ 3	19 $\pm$ 2
	300		35 $\pm$ 5	12 $\pm$ 2	22 $\pm$ 1	10 $\pm$ 2

	Extract / mg/kg	Average lesion cross section / mm				
			Leaf		Root	
			Methanol	Ethylacetate	Methanol	Ethylacetate
Venom		40 $\pm$ 3				
Antivenom		16 $\pm$ 3				
Saline		No foci				
Venom	100		24 $\pm$ 2	25 $\pm$ 2	38 $\pm$ 2	20 $\pm$ 2
	200		25 $\pm$ 1	26 $\pm$ 2	34 $\pm$ 1	21 $\pm$ 1
	300		40 $\pm$ 3	13 $\pm$ 1	22 $\pm$ 2	15 $\pm$ 3

	Extract / mg/kg	Lesion area / mm ²				
			Leaf		Root	
			Methanol	Ethylacetate	Methanol	Ethylacetate
Venom		943				
Antivenom		205				
Saline		No foci				
Venom	100		457	569	1026	363
	200		334	446	737	333
	300		687	148	380	141

Table S2: Effect of *S. sarmentosus* leaf and root extracts on venom hemolysis activity. Experiments were performed with mixtures of citrated red blood cells with either distilled water (control), venom, venom + antivenom, or venom + extracts. Data (absorption units) are expressed as means $\pm$ StD of three individual experiments.

	Extract / mg/kg	Average hemolysis effect / au				
			Leaf		Root	
			Methanol	Ethylacetate	Methanol	Ethylacetate
Venom		0.408 $\pm$ 0.057				
Antivenom		0.055 $\pm$ 0.015				
Control		2.892 $\pm$ 0.008				
Venom	100		0.230 $\pm$ 0.013	0.217 $\pm$ 0.017	0.241 $\pm$ 0.011	0.257 $\pm$ 0.012
	200		0.184 $\pm$ 0.011	0.127 $\pm$ 0.005	0.191 $\pm$ 0.008	0.151 $\pm$ 0.010
	300		0.146 $\pm$ 0.011	0.095 $\pm$ 0.012	0.167 $\pm$ 0.011	0.151 $\pm$ 0.022

Table S3: Effect of *S. sarmentosus* leaf and root extracts on hemolysis activity of venom (IC₅₀, mg/mL).

Extract	Methanol	Ethylacetate
Leaf	161.90	104.45
Root	188.89	166.70

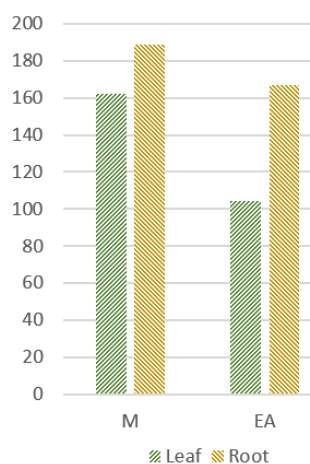


Table S4: Effect of ouabain on venom hemolysis activity. Experiments were performed using citrated red blood cells with of either distilled water (control), venom, venom + antivenom, or venom + ouabain. Data (absorption units and % inhibition) are expressed as means $\pm$ StD of three individual experiments. The experiments with pure ouabain were performed in a second laboratory as separate set of experiments using a different photometer compared to Tables S2/S3, which explains the slight differences in the measured values. IC₅₀ = 3.13 mg/mL.

	Concentrations/ mg/mL	Average hemolysis effect / au	% Inhibition
Venom		0.406 $\pm$ 0.002	75.54
Antivenom		0.123 $\pm$ 0.002	69.85
Control		1.662 $\pm$ 0.007	
Ouabain	2.0	0.232 $\pm$ 0.013	42.77
	1.0	0.235 $\pm$ 0.009	41.973
	0.5	0.269 $\pm$ 0.017	33.53

Table S5: Influence of *S. sarmentosus* leaf and root extracts on coagulation time inflicted by venom. Experiments were performed with plasma adding either methanol root extract or ouabain (2 mg/mL) as controls, venom, venom + antivenom, venom + extracts or venom + ouabain (2 mg/mL).

	Extract / mg/kg	Average coagulation time / s				
			Leaf		Root	
			Methanol	Ethylacetate	Methanol	Ethylacetate
Venom		48.00				
Antivenom		85.67				
Methanol root extract		69.00				
Venom	100		240.00	119.00	228.00	99.00
	200		167.00	86.00	189.00	88.67
	300		123.00	77.30	179.00	84.00
Ouabain		69.00				
Venom + ouabain		116.00				