Table A1. Breakdown of species in dataset

|  |  |
| --- | --- |
| **Category** | **Number of species** |
| **LD50 method** |  |
| *Subcutaneous (SC)* | 47 |
| *Intravenous (IV)* | 68 |
| *Intraperitoneal (IP)* | 58 |
| *Intramuscular (IM)* | 24 |
| **LD50 model** |  |
| *Amphibian* | 2 |
| *Arthropod* | 1 |
| *Bird* | 5 |
| *Fish* | 9 |
| *Lizard* | 9 |
| *Mouse* | 100 |
| **Environment** |  |
| *Terrestrial* | 74 |
| *Arboreal* | 7 |
| *Aquatic* | 20 |
| **Habitat Dimensionality** |  |
| Low (1) | 73 |
| High (3) | 27 |
| **Eggs in Diet** | 7 |
| **Constriction observed** | 5 |
| **Prey size available** | 69 |
| total | 100 (276) |

Table A2. Estimates and higher and lower 95% credibility intervals (CI) in model including prey sizes as a fixed factor. Fixed factors include mass; LD50 method (subcutaneous (SC), intravenous (IV), intrapulmonary (IP) and intramuscular (IM)); habitat dimensionality (Dim- 2D and 3D); Presence of eggs in diet (Eggs in Diet) and the mean phylogenetic distance variance (CV) between LD50 and volume are also presented. The model was run with 12,000,000 iterations with a 2,000,000 burn-in and a thinning of 5000.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LD50** | | | | | | **Mean Volume** | | | | |
|  | Estimate | | | Lower CI | Upper CI |  | | Estimate | Lower CI | Upper CI |
| **Fixed Terms** | |  | |  |  |  | |  |  |  |
| Intercept | | 0.325 | | -0.162 | 0.777 |  | | 0.325 | -0.162 | 0.777 |
| Mass | | 0.07 | | -0.091 | 0.204 |  | | **0.525** | **0.429** | **0.612** |
| LD50 methodSC | |  | |  |  |  | |  |  |  |
| *IV* | | **-0.617** | | **-0.864** | **-0.375** |  | | -0.016 | -0.101 | 0.0713 |
| *IP* | | **-0.603** | | **-0.862** | **0.350** |  | | -0.033 | -0.122 | 0.069 |
| *IM* | | 0.231 | | -0.509 | 0.087 |  | | -0.026 | -0.131 | 0.090 |
| Dim2D | |  | |  |  |  | |  |  |  |
| *3D* | | -0.149 | | -0.651 | 0.389 |  | | **-0.992** | **-1.493** | **-0.495** |
| Eggs in Diet | | 0.402 | | -0.227 | 1.018 |  | | **-0.582** | **-1.179** | **-0.0492** |
| Diet-LD50 Dist | | **0.364** | | **0.247** | **0.492** |  | | -0.005 | -0.053 | 0.038 |
| Prey mass | | 0.078 | | -0.122 | 0.253 |  | | 0.139 | -0.016 | 0.305 |
| **Random Terms** | | |  |  |  |  | |  |  |  |
| Phylogeny | | 0.844 | | 0.381 | 1.335 |  | | 0.414 | 0.001 | 0.996 |
| Phylogeny CV | | 0.084 | | -0.166 | 0.332 |  | | 0.084 | -0.166 | 0.332 |
| Species | | 0.029 | | 0.001 | 0.108 |  | | 0.221 | 0.002 | 0.430 |
| Residuals | | 0.237 | | 0.177 | 0.300 |  | | 0.027 | 0.020 | 0.034 |
| Residuals CV | | 0.002 | | -0.013 | 0.018 |  | | 0.002 | -0.013 | 0.018 |

Table A3. Estimates and higher and lower 95% credibility intervals (CI) in model including constriction as a fixed factor. Fixed factors include mass; LD50 method (subcutaneous (SC), intravenous (IV), intrapulmonary (IP) and intramuscular (IM)); habitat dimensionality (Dim- 2D and 3D); Presence of eggs in diet (Eggs in Diet) and the mean phylogenetic distance between diet species and the LD50 model (Diet-LD50 Dist). The random terms and the co-variance (CV) between LD50 and volume are also presented. The model was run with 12,000,000 iterations with a 2,000,000 burn-in and a thinning of 5000.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LD50** | | | | | | **Mean Volume** | | | | |
|  | Estimate | | | Lower CI | Upper CI |  | | Estimate | Lower CI | Upper CI |
| **Fixed Terms** | |  | |  |  |  | |  |  |  |
| Intercept | | 0.330 | | -0.162 | 0.736 |  | | 0.330 | -0.162 | 0.736 |
| Mass | | 0.115 | | -0.006 | 0.247 |  | | **0.501** | **0.446** | **0.560** |
| LD50 methodSC | |  | |  |  |  | |  |  |  |
| *IV* | | **-0.6341** | | **-0.856** | **-0.421** |  | | -0.009 | -0.047 | 0.032 |
| *IP* | | **-0.456** | | **-0.682** | **-0.230** |  | | -0.008 | -0.051 | 0.037 |
| *IM* | | -0.148 | | -0.055 | 0.045 |  | | -0.006 | -0.055 | 0.045 |
| Dim2D | |  | |  |  |  | |  |  |  |
| *3D* | | -0.178 | | -0.627 | 0.272 |  | | **-0.859** | **-1.314** | **-0.385** |
| Eggs in Diet | | 0.686 | | 0.096 | 1.336 |  | | -0.508 | -1.086 | 0.032 |
| Diet-LD50 Dist | | **0.331** | | **0.243** | **0.424** |  | | -0.002 | -0.022 | 0.016 |
| Constrictionno | |  | |  |  |  | |  |  |  |
| *present* | | -0.092 | | -0.754 | 0.506 |  | | -0.321 | -1.004 | 0.253 |
| **Random Terms** | | |  |  |  |  | |  |  |  |
| Phylogeny | | 0.802 | | 0.385 | 1.230 |  | | 0.327 | 0.008 | 0.700 |
| Phylogeny CV | | 0.074 | | -0.160 | 0.319 |  | | 0.074 | -0.160 | 0.319 |
| Species | | 0.034 | | 0.001 | 0.116 |  | | 0.342 | 0.001 | 0.519 |
| Residuals | | 0.290 | | 0.233 | 0.350 |  | | 0.009 | 0.001 | 0.011 |
| Residuals CV | | 0.003 | | -0.004 | 0.011 |  | | 0.003 | -0.004 | 0.011 |

Table A4. Estimates and higher and lower 95% credibility intervals (CI) in model including habitat with the levels of terrestrial, aquatic and arboreal. Fixed factors include mass; LD50 method (subcutaneous (SC), intravenous (IV), intrapulmonary (IP) and intramuscular (IM)); habitat dimensionality (Dim- 2D and 3D); Presence of eggs in diet (Eggs in Diet) and the mean phylogenetic distance between diet species and the LD50 model (Diet-LD50 Dist). The random terms and the co-variance (CV) between LD50 and volume are also presented. The model was run with 12,000,000 iterations with a 2,000,000 burn-in and a thinning of 5000.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LD50** | | | | | | **Mean Volume** | | | | |
|  | Estimate | | | Lower CI | Upper CI |  | | Estimate | Lower CI | Upper CI |
| **Fixed Terms** | |  | |  |  |  | |  |  |  |
| Intercept | | 0.312 | | -0.099 | 0.704 |  | | 0.312 | -0.099 | 0.704 |
| Mass | | 0.112 | | -0.019 | 0.222 |  | | **0.508** | **0.439** | **0.576** |
| LD50 methodSC | |  | |  |  |  | |  |  |  |
| *IV* | | **-0.634** | | **-0.845** | **-0.405** |  | | -0.002 | -0.052 | 0.059 |
| *IP* | | **-0.456** | | **-0.666** | **-0.230** |  | | -0.021 | -0.080 | 0.038 |
| *IM* | | -0.149 | | -0.397 | 0.105 |  | | -0.013 | -0.083 | 0.046 |
| Dim terrestrial | |  | |  |  |  | |  |  |  |
| *Aquatic* | | -0.393 | | -0.938 | 0.192 |  | | **-1.112** | **-1.587** | **-0.638** |
| *Arboreal* | | 0.133 | | -0.606 | 0.821 |  | | **-0.947** | **-1.489** | **-0.369** |
| Eggs in Diet | | 0.489 | | -0.079 | 1.066 |  | | **-0.529** | **-1.048** | **-0.032** |
| Diet-LD50 Dist | | **0.340** | | **0.244** | **0.439** |  | | -0.005 | -0.030 | 0.019 |
| **Random Terms** | | |  |  |  |  | |  |  |  |
| Phylogeny | | 0.739 | | 0.357 | 1.187 |  | | 0.255 | 0.025 | 0.544 |
| Phylogeny CV | | 0.062 | | -0.145 | 0.283 |  | | 0.062 | -0.145 | 0.283 |
| Species | | 0.035 | | 0.001 | 0.121 |  | | 0.315 | 0.179 | 0.453 |
| Residuals | | 0.290 | | 0.236 | 0.352 |  | | 0.016 | 0.013 | 0.019 |
| Residuals CV | | 0.002 | | -0.008 | 0.013 |  | | 0.002 | -0.008 | 0.013 |

Table A5. Estimates and higher and lower 95% credibility intervals (CI) in a model of mean venom volume against prey size. Fixed factors include mass; The random terms and the co-variance (CV) between LD50 and volume are also presented. The model was run with 12,000,000 iterations with a 2,000,000 burn-in and a thinning of 5000. Terms are back-transformed from mean centered values to allow more direct comparison with equation 2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Mean volume** | | | |
|  | | Estimate | Lower CI | Upper CI | |
| **Fixed Terms** | |  |  |  | |
| Intercept | | 0.493 | -0.383 | 1.272 | |
| Prey mass | | **0.388** | **0.208** | **0.604** | |
| **Random Terms** | |  |  |  | |
| Phylogeny | | 1.019 | 0.600 | 1.521 | |
| Residuals | | 0.031 | 0.001 | 0.099 | |

Table A6. Estimates and higher and lower 95% credibility intervals (CI) in a model of prey size against predator size. Fixed factors include mass; The random terms and the co-variance (CV) between LD50 and volume are also presented. The model was run with 12,000,000 iterations with a 2,000,000 burn-in and a thinning of 5000. Terms are back-transformed from mean centered values to allow more direct comparison with equation 1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Prey mass** | | | |
|  | | Estimate | Lower CI | Upper CI | |
| **Fixed Terms** | |  |  |  | |
| Intercept | | 0.196 | -0.990 | 1.291 | |
| Mass | | **0.524** | **0.177** | **0.822** | |
| **Random Terms** | |  |  |  | |
| Phylogeny | | 0.892 | 0.001 | 1.596 | |
| Residuals | | 0.155 | 0.001 | 0.368 | |

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