**Toxicity and genotoxicity of imidacloprid in tadpoles of *Leptodactylus latrans* and *Physalaemus cuvieri* (Anura: Leptodactylidae)**

Caroline Garcia Samojeden1, Felipe André Pavan1, Camila Fátima Rutkoski2, Alexandre Folador1, Silvia Pricila Da Fré1, Caroline Müller1, Paulo Afonso Hartmann1, Marilia Teresinha Hartmann1\*

1Ecology and Conservation Laboratory, Federal University of Fronteira Sul, CEP 99.700-000, Erechim, RS, Brazil. (carolsamojeden@hotmail.com, felipe\_pavan21@yahoo.com.br, camilarutkoski@hotmail.com, alexandre\_folador@hotmail.com, silvia\_dafre@outlook.com carolinemulleram@gmail.com, hartmann.paulo@gmail.com, marilia.hartmann@gmail.com)

2Department of Natural Sciences, Regional University of Blumenau, CEP 89.012-170, Blumenau, SC, Brazil. (camilarutkoski@hotmail.com)

**Supplementary Material**

Online Resource 1 Number and percentage of survival, body lenght and mass in Leptodactylus latrans and Physalaemus cuvieri tadoples after 168 h of chronic exposure to imidacloprid-based herbicide.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Species | Imidaclorid (μg L-1) | Survival (%) | Body lenght (mm) | % body lenght | Body mass (g) | % massa |
| *Leptodactylus latrans* | 0 | 29 (96.67) | 20.82 ± 0.30a | 0.00 | 0.086 ± 0.004a | 0.00 |
| 3 | 23 (76.67) | 19.08 ± 0.28b | -8.33 | 0.046 ± 0.004b | -46.45 |
| 30 | 24 (80.00) | 18.34 ± 0.30bc | -11.89 | 0.037 ± 0.004b | -57.03 |
| 100 | 30 (100.00) | 17.69 ± 0.30bc | -15.03 | 0.044 ± 0.004b | -48.90 |
| 200 | 25 (83.33) | 17.99 ± 0.30bc | -13.59 | 0.048 ± 0.004b | -44.19 |
| 300 | 25 (83.33) | 17.95 ± 0.31c | -13.78 | 0.032 ± 0.003b | -62.56 |
| *Physalaemus cuvieri* | 0 | 30 (100.00) | 21.24 ± 0.25a | 0.00 | 0.100 ± 0.003a | 0.00 |
| 3 | 30 (100.00) | 20.59 ± 0.28ab | -3.08 | 0.095 ± 0.004ab | -4.55 |
| 30 | 30 (100.00) | 19.37 ± 0.30bc | -8.80 | 0.080 ± 0.003bc | -20.05 |
| 100 | 30 (100.00) | 20.05 ± 0.26bc | -5.63 | 0.092 ± 0.003b | -7.40 |
| 200 | 30 (100.00) | 19.86 ± 0.23bc | -6.52 | 0.094 ± 0.002b | -6.05 |
| 300 | 30 (100.00) | 18.80 ± 0.31c | -11.51 | 0.072 ± 0.002c | -27.45 |

Data represent mean ± SE (*n* = 30). Different letters indicate significant differences by the Tukey test (*p* < 0.05).

Online Resource 2Damage to body structures (mouth and intestine) in Leptodactylus latrans and Physalaemus cuvieri tadpoles after 168 h of chronic exposure to imidacloprid-based herbicide.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Species | Imidacloprid (μg L-1) | Tadpoles number | Tadpoles number with structural damage (%) | Tadpoles number with mouth damage ( %) | Tadpoles number with interstine damage (%) |
| *Leptodactylus latrans* | 0 | 29 | 2 (6.67)a | 0(0,00)a | 2(6.67)a |
| 3 | 23 | 13 (56.52)b | 13(56.52)b | 6(26.09)ab |
| 30 | 24 | 13 (54.17)b | 13(54.17)b | 7(29.17)ab |
| 100 | 30 | 19 (63.33)bc | 19(63.33)bc | 13(43.33)b |
| 200 | 25 | 18 (72.00)bc | 18(72.00)bc | 12(48.00)b |
| 300 | 26 | 24 (92.31)c | 24(92.31)c | 23(88.46)c |
| *Physalaemus cuvieri* | 0 | 30 | 0 (0.00)a | 0(0.00)a | 0(0.00)a |
| 3 | 30 | 19 (63.33)ab | 19(63.33)b | 9(30.00)b |
| 30 | 30 | 23 (76.67)b | 23(76.67)b | 18(60.00)c |
| 100 | 30 | 24 (80.00)b | 23(76.67)b | 19(63.33)c |
| 200 | 30 | 26 (86.67)b | 26(86.67)b | 22(73.33)c |
| 300 | 30 | 27 (90.00)b | 27(90.00)b | 26(86.67)c |

Different letters indicate significant differences by the Tukey test (*p* < 0.05).

Online Resource 3 Number of tadpoles and frequency (%) of changes in swimming activity in Leptodactylus latrans tadpoles exposed to different concentrations of imidacloprid. The total frequency represented in percentage.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Imidacloprid (μg L-1) | Lethargy | Hiperactivity | Unresponsive | Spasms |
| 0 | 0(0) a | 0(0) a | 0(0) a | 0(0) a |
| 3 | 9(30) b | 0(0) a | 7(23) bc | 5(17) ab |
| 30 | 8(27) b | 8(27) b | 4(13) abc | 5(17) ab |
| 100 | 10(33) b | 8(27) b | 4(13) abc | 4(13) ab |
| 200 | 10(33) b | 4(13) c | 3(10) ab | 5(17) ab |
| 300 | 9(30) b | 11(37) b | 9(30) c | 9(30) b |

Different letters indicate significant differences by the Tukey test (*p* < 0.05).