

SUPPLEMENTARY MATERIAL

Table S1: Mean conductivity values and NaCl concentrations of the dilutions used in the calibration of the avoidance system, without organisms, at 0 h (initial) and 3 h (final) (\pm SD), and percentage of the difference between initial and final (DIF) conductivity values.

Different alphabets indicate level of significance ($p < 0.05$).

Dilution (%)	Conductivity (S/cm)		DIF (%)	NaCl (mg/L)	
	0 h	3 h		0 h	3 h
0	0.07 \pm 0	0.08 \pm 0.007	12.5 ^a	0	0.08
20	0.14 \pm 0	0.18 \pm 0.008	22.2 ^b	0.2	0.25
40	0.29 \pm 0.004	0.34 \pm 0.008	14.7 ^c	0.4	0.46
60	0.51 \pm 0.004	0.52 \pm 0.001	1.9 ^d	0.6	0.61
80	0.71 \pm 0.004	0.70 \pm 0.02	-1.4 ^e	0.8	0.79
100	1.125 \pm 0.005	1.02 \pm 0.048	-9.8 ^f	1.0	0.82

Table S2a: 24, 48, 72 and 96-hours mortality data of Dichlorvos concentrations acting on *Oreochromis niloticus* fries in a forced exposure system.

CONCENTRATION (mg/L)	EXPOSED	24 H	%	48 H	%	72 H	%	96 H	%
0	12	0	0	0	0	0	0	0	0
1	12	0	0	1	8.33	2	16.67	2	16.67
2	12	0	0	0	0	2	16.67	3	25
4	12	2	16.67	2	16.67	4	33.33	6	50
5	12	1	8.33	2	16.67	4	33.33	7	58.33
6	12	2	16.67	4	33.33	7	58.33	8	66.67

Table S2b: 24, 48, 72 and 96-hours mortality data of Paraquat concentrations acting on *Oreochromis niloticus* fries in a forced exposure system.

CONCENTRATION (mg/L)	EXPOSED	24 H	%	48 H	%	72 H	%	96 H	%
0	12	0	0	0	0	0	0	0	0
10	12	0	0	0	0	0	0	0	0
30	12	1	8.33	1	8.33	2	16.67	3	25
50	12	1	8.33	2	16.67	4	33.33	6	50
70	12	2	16.67	2	16.67	6	50	8	66.67
100	12	1	8.33	4	33.33	8	66.67	10	83.33

Table S3a: Number of observed organisms (NO), Number of expected organisms (NE), Avoidance (NA) and percentage avoidance data of *Oreochromis niloticus* fries exposed to Dichlorvos and observed after 3 hours.

COMPARTMENT (CONCENTRATION)	NE	NO	NA	%NA
CPT1 (0 mg/L)	72	72	0	0
CPT2 (1 mg/L)	60	36	24	40
CPT3 (2 mg/L)	48	20	28	58.33
CPT4 (4 mg/L)	36	3	33	91.67
CPT5 (5 mg/L)	24	0	24	100
CPT6 (6 mg/L)	12	0	12	100

Table S3b: Number of observed organisms (NO), Number of expected organisms (NE), Avoidance (NA) and percentage avoidance data of *Oreochromis niloticus* fries exposed to Paraquat and observed after 3 hours.

COMPARTMENT (CONCENTRATION)	NE	NO	NA	%NA	
CPT1 (0 mg/L)		72	72	0	0
CPT2 (10 mg/L)		60	6	54	90
CPT3 (30 mg/L)		48	1	47	97.92
CPT4 (50 mg/L)		36	0	36	100
CPT5 (70 mg/L)		24	0	24	100
CPT6 (100 mg/L)		12	0	12	100

Table S4a: Results of the mixed-design ANOVA for the distribution (%) of fish in the control test in the linear system. Observation times were treated as a within-subjects factor (repeated measures) and compartments were considered a between-subjects factor. Mauchly's Test was used to check the sphericity of the repeated measures.

Within subjects effect	Mauchly W	Approx. chi-square	Degrees of freedom	Significance (p)
Time	0.08	37.75	35	0.37

Table S4b: Tests of within-subjects effects assuming sphericity:

Source	Sum of squares	Degrees of freedom	Mean square	F	Significance (p)
Time	0.125	8	0.02	0.001	1.00
Time * Compartment	574.88	40	14.37	1.19	0.23
Error (Time)	1739.41	144	12.08	-	-

Table S4c: Tests of between-subjects effects:

Source	Sum of squares	Degrees of freedom	Mean square	F	Significance (p)
Compartments	252.10	5	50.42	9.08	0.00
Error	99.93	18	5.55	-	-

Table S5a: Results of the mixed-design ANOVA for the distribution (%) of fish in the Dichlorvos test in the linear system. Observation times were treated as a within-subjects factor (repeated measures) and compartments were considered a between-subjects factor. Mauchly's Test was used to check the sphericity of the repeated measures.

Within subjects effect	Mauchly W	Approx. chi-square	Degrees of freedom	Significance (p)
Time	0.01	77.36	35	0.00

Table S5b: Greenhouse-Geisser tests of within-subjects effects:

Source	Sum of squares	Degrees of freedom	Mean square	F	Significance (p)
Time	439.12	4.01	109.33	1.24	0.30
Time * Compartment	5392.12	20.08	268.51	3.05	0.00
Error (Time)	6259.07	72.29	87.96	-	-

Table S5c: Tests of between-subjects effects:

Source	Sum of squares	Degrees of freedom	Mean square	F	Significance (p)
Compartments	29417.56	5	5883.51	48.06	0.00
Error	2203.66	18	122.42	-	-

Table 6a: Results of the mixed-design ANOVA for the distribution (%) of fish in the Paraquat test in the linear system. Observation times were treated as a within-subjects factor (repeated measures) and compartments were considered a between-subjects factor. Mauchly's Test was used to check the sphericity of the repeated measures.

Within subjects effect	Mauchly W	Approx. chi-square	Degrees of freedom	Significance (p)
Time	0.00	115.64	35	0.00

Table S6b: Greenhouse-Geisser tests of within-subjects effects:

Source	Sum of squares	Degrees of freedom	Mean square	F	Significance (p)
Time	1374.66	3.29	416.79	7.84	0.00
Time * Compartment	12789.65	16.49	775.56	14.59	0.00
Error (Time)	3155.82	59.37	53.16	-	-

Table S6c: Tests of between-subjects effects:

Source	Sum of squares	Degrees of freedom	Mean square	F	Significance (p)
Compartments	114435.62	5	22887.13	135.36	0.00
Error	3043.54	18	169.09	-	-