MULTI-GENERATIONAL EXPOSURE OF Daphnia magna TO PHARMACEUTICALS: EFFECTS ON HABITAT SELECTION BEHAVIOUR AND REPRODUCTION





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Neonates



Continued exposure to pharmaceutical products could have multigenerational changes in long-term **reproduction**.

MATERIALS AND METHODS



MULTIGENERATIONAL EXPOSURE



HeMHAS -Heterogeneous Multi-Habitat Assay System (version #1) is a non-forced aquatic assay system







HABITAT SELECTION TEST

- **Caffeine test** Organisms pre-exposed to clean water preferred to stay in caffeine compartment.
- Fluoxetine test In the food experiment with fluoxetine preexposed organisms, more than 50% of the organisms in the mixing compartment were obtained.
- Ibuprofen test Organisms pre-exposed to clean water preferred to stay in caffeine compartment.
 In experiments with food, organisms pre-

		X Clean water X	X Mixture X
Experimental conditions	Contaminants	Setup 1: without food	Setup 2: with food
20 Daphnids per replicate	Caffeine		$\mathbf{\Lambda} 5,32 \times 10^4 \text{ cel/mL}$
Distribution of organisms every 30 min	Fluoxetine Ibuprofen		Scenedesmus sp .
C 2 hours			

σ

accumulate

neonates/daphnia

Mean

HABITAT SELECTION TEST

Trootmont	Total neonates in the first brood	Time of the first brood (week)		
Πσαιπσπι	Second generation (F1)	Second generation (F1)		
Control	49.00 ± 19.92	7.33 ± 1.53		
Caffeine	122.00 ± 0.00*	4 ± 0**		
Fluoxetine	43.67 ± 32.65	7.5 ± 0.71		



exposed to ibuprofen preferred the ibuprofen compartment over the fluoxetine compartment.

buprofen 51.50 ± 50.20	10.50 ± 0.71*							
			0	5	10	15	20	
			Weeks					

CONCLUSIONS

The reproductive capacity of *D. magna* may be affected by the presence of pharmaceutical products at environmentally relevant concentrations, which could bring important **consequences for the maintenance of the population**.

10 - 13 days

In addition, this pre-exposure might affect the behaviour of organisms due to the **change in their distribution and selection of habitats** through the aquatic environment.

