Marque a opção do tipo de trabalho que está inscrevendo:

(X) **Resumo**   (   ) **Relato de Experiência**   (   ) **Relato de Caso**

Waterborne glyphosate impair anti-predatory behavior in fish

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INTRODUÇÃO

Among the behavioral repertoire of the fish is the prey-predator relationship. The capacity to perceive and avoid predators is crucial for maintaining the ecological balance (Kelley and Magurran 2003; Stewart et al. 2013). When a prey fish encounters a predator, its survival depends on its capacity to escape from the attack, hence, this ability should not be compromised as far as the prey is concerned. Failure of the anti-predatory response may favor the predator, leading to the decrease in the fitness of the prey species and, consequently, affecting the food chain (Stewart et al. 2013; Colwill and Creton 2011). The main cause of this change in behavior is the contamination of water by agrochemical residues. Currently Brazil is the largest consumer of agrochemicals in the world and herbicides are the most used class. Here we describe the effects of waterborne Glyphosate (GBH) on anti-predatory reactions in zebrafish.

DESENVOLVIMENTO:

Aiming to verify the possible effects of GBH on zebrafish anti-predatory behavior, our strategy was to expose the fishs to 10% of LC 50 (Lethal concentration for 50% of the tested organism) and test the behavior of the exposed fish in an apparatus that simulates the action of a predator. A population of 72 mixed-sex adult wild-type zebrafish, weighing 0.3 - 0.5 g, from a single brood of heterogeneous breeding stock at the Universidade de Passo Fundo, Brazil, was kept in 100 L plastic tanks with constant aeration and equipped with biological filtering under a natural photoperiod (14 h light/10 h dark). During the pre-experimental period and in the course of the experiments, the fish were fed with commercial flaked food (Alcon Basic c, humidity

10%, raw protein 45%, fat extract 5%). The water temperature was maintained at 28 ± 2 ºC, pH at 7.0 ± 0.2, dissolved oxygen at 6.1 ± 0.2 mg/L, total ammonia at <0.01 mg/L, total hardness at 6 mg/L, and alkalinity at 22 mg/L CaCO3. The behavioral tests were performed in an aquarium regular glass aquarium measuring 12 cm x 12 cm x 5 cm (W x L x H), which is filled with water up to a height of 3 cm. The "predator" is the model of a garden bird of length 30 cm, and with the beak measuring 1 cm x 4 cm (W x L) (adapted Martin et al. 2017). To evaluate the effect of the GBH on fish, they were individually exposed to chemical for 30 min in a 1 L beaker, post which they were placed in the apparatus for 5 min to acclimatize. After this period, we applied the first stimulus in the form of a ceramic bird, thereby simulating the attack of a piscivorous bird. This stimulus is pertinent since the zebrafish in its natural environment can be predated by piscivorous birds (Spence, Gerlach, Lawrence, & Smith, 2008). After the first stimulus, each fish was filmed for 5 min to follow its response to the simulation of predation. After 10 min, the fish received a second stimulus and was filmed for a further 5 min.To evaluate the behavior of the exposed fish, two control groups were used: NSC (No stimulus control), where the fish remained for 15 min inside the aquarium and did not receive any stimulus (i.e., only 5 min of acclimatization followed by 10 min of exploration). The second control was the SC group (Control with Stimulus) where the fish were exposed to the same stimuli, but were not under the effect of any substance exposure. To evaluate the behavioral parameters in each period, we videotaped the fish using a Logitech Quick cam PRO 9000 camera. The parameters evaluated were distance traveled, line crossings, entries into the central area, distance traveled inside the central area, time spent inside the central area, and the distance traveled near to the walls (thigmotaxis).

CONSIDERAÇÕE S FINAIS:
Here we show that the herbicide based on glyphosate (GBH) impair the anti-predatory behavior of the fish exposed to that chemical.

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ANEXOS