

Toxicity of endosulfan on the tadpole stage of an amphibian (*Rana temporaria*): a video-tracking analysis

Lavorato Manuela¹, Libon Sylvie¹, De Pauw Edwin², Kestemont Patrick³, Denoël Mathieu¹

¹ Behavioural Biology Unit, University of Liège, Quai Van Beneden 22, 4020 Liège, Belgium

² Laboratory of Mass Spectrometry, University of Liège, Allée de la Chimie 3, 4000 Liège, Belgium

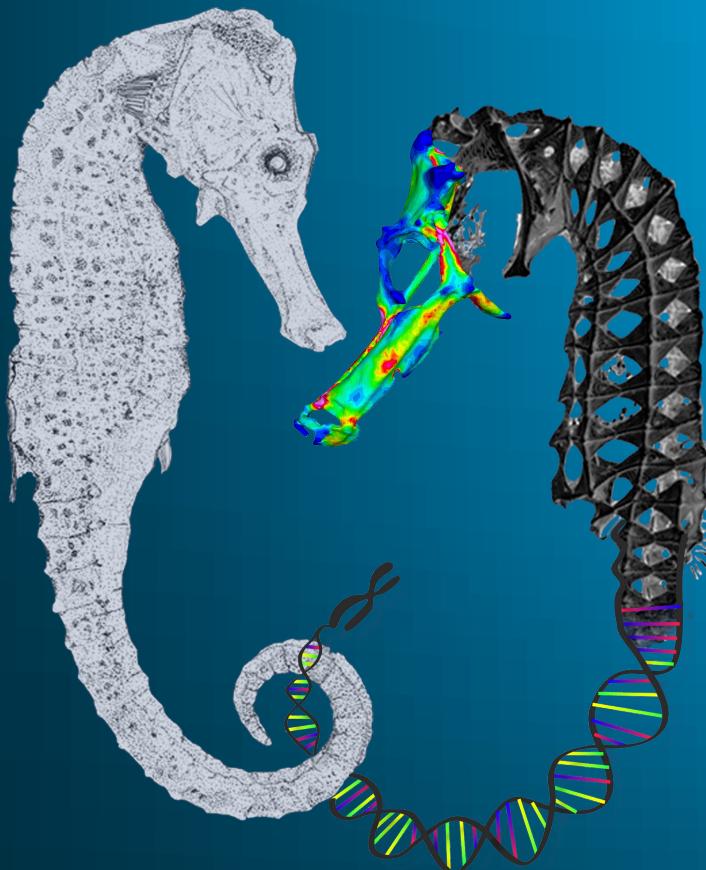
³ URBO, University of Namur, 5000 Namur, Belgium

Endosulfan is a persistent chemical that has been demonstrated to bioaccumulate in exposed organisms. This organochlorine compound is used in agriculture as an insecticide and acaricide with neurotoxic effects in mammal and aquatic animals. An automated video-tracking and motion analysis system (Ethovision) was used to examine behavioural effects on 140 amphibian tadpoles *Rana temporaria* exposed to a high, but environmental concentration of endosulfan (0.05 mg/L) and to two control conditions (with and without solvent). Ethovision offers a wide range of video tracking options, and an extensive analysis of locomotor tracks. The exposure to the contaminant had significant effects on varied behavioural traits. Endosulfan induced a significant decrease in distance moved, velocity and mobility of tadpoles at the 10th and 20th day. Space use was also significantly affected, but only at the 10th day: contaminated tadpoles used a more open area than the controls. Behavioural effects may indicate the neurotoxic action of endosulfan. Although 96h-LC50 tests did not show any mortality effect at the studied concentration on *Rana temporaria*, the present results evidenced more subtle effects at the behavioural level. They may have detrimental consequences in term of resource use and predator avoidance, i.e. traits which can also affect fitness. Our study thus confirms and extends the results of previous studies on the toxicity of this organochlorine pesticide in showing its possible role in amphibian decline.

Keywords: amphibian, behaviour, pesticide

E-mail: mathieu.denoel@ulg.ac.be

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